ROHDE&SCHWARZ

**SERVICEUNTERLAGEN**

**Summierschleife**

**1038.7196.02**

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# 7. Prüfen und Instandsetzen der Baugruppe

## 7.1 Funktionsbeschreibung

In der Summierschleife wird aus dem Signal der Baugruppen Stepsynthese und Digitale Synthese die Grundoktave von 750 bis 1520 MHz erzeugt. Dazu wird das Stepsignal benutzt um die Oszillatorfrequenz mit einem Samplemischer auf eine Zwischenfrequenz zu mischen. Diese ZF wird auf die Ausgangsfrequenz der Digitalen Synthese mit einer Phasenregelschleife synchronisiert. Nachschaltbare Teiler erweitern den Frequenzbereich auf 93.75 bis 1520 MHz.

### 7.1.1 Oszillatoren

Die beiden Oszillatoren werden mit Hilfe der beiden Schaltbits 'OSZ1' und 'OSZ2' eingeschaltet. 'OSZ1' bedient den VCO von 750 bis 1100 MHz, 'OSZ2' den VCO von 1100 bis 1520 MHz. Eine Stromeinprägeschaltung stabilisiert den Arbeitspunkt des Schwingtransistors. Der VCO für das obere Frequenzband liefert seine kleinste Frequenz bei der größten Abstimmspannung.

### 7.1.2 Ausgangsstufe

Der Ausgangsfrequenzbereich wird durch einen Teiler durch 2 und einen Teiler durch 4 erweitert. Der Teilungsfaktor 8 entsteht durch Serienschaltung der beiden Teiler. Das Bit 'T2-ENA' schaltet den Teiler durch 2, 'T4-ENA' den durch 4. Die Schaltdioden werden mit den Bits 'SW1' bis 'SW6' angesteuert.

### 7.1.3 Samplemischer

Das Ausgangssignal der HF-Oszillatoren wird über den 3-stufigen PLL-Treiber mit dem Pegelstellglied V440 dem Sampler zugeführt. Das Ausgangssignal der Stepsynthese wird vom Pulstreiber verstärkt und der Step-Recovery-Diode zugeführt. Über R405 wird der Vorstrom und damit der Arbeitspunkt der SRD festgelegt. Sie erzeugt 350 ps Pulse mit denen über den Symmetrierübertrager T405 der Sampler gespeist wird. Der Sampler mischt das RF-Signal der Oszillatoren mit dem Kammspektrum aus dem SRD-Vervielfacher. Benutzt wird die 7. bis einschließlich 14. Oberwelle des Signals aus der Referenzstepsynthese. Es entsteht eine ZF von ca. 15 MHz (14.2 bis 15.6 MHz).

### 7.1.4 ZF-Stufe

Die Ausgangsspannung des Samplers wird über den Spannungsfolger V450 und das Pegelstellglied V453 dem ZF-Treiber V455 zugeführt. Eine Pegelregelung sorgt für einen konstanten ZF-Pegel am Phasendetektor und damit für ein konstantes K$\phi$ der Regelschleife. Ein Tiefpaß unterdrückt hochfrequentere Mischprodukte des Samplers.

### 7.1.5 Phasenregelung

Die LO-Treiberstufe V1 verstärkt das Ausgangssignal der Digitalen Synthese und stellt es dem LO-Eingang des Phasendetektors D1 zur Verfügung.
Ein Tiefpaßfilter am Ausgang von D1 unterdrückt das Spiegelband, ein zusätzlicher Pol die Zwischenfrequenz.
Der Current-Feedback Operationsverstärker N30 ist als nichtinvertierender Integrator geschaltet. Mit Hilfe des Analogmultiplexers D20 kann seine Verstärkung in 8 Stufen eingestellt und damit die VCO-Steilheit kompensiert werden. Ein kleiner durch V95 eingespeister Offsetstrom verhindert ein parasitäres Synchronisieren der PLL während des Kalibriervorgangs.
Mit Hilfe der Fet-Schalter V51 und V50 kann zwischen 2 Regelbandbreiten gewählt werden. Die kleine Bandbreite (ca. 270 kHz) ergibt bessere spektrale Reinheit, die große (ca. 2MHZ) erlaubt breitbandige Modulationen.

### 7.1.6 Voreinstellung, Ablaufsteuerung und Interrupt

Da die Regelschleife keinen frequenzsensitiven Phasendetektor enthält, müssen die Oszillatoren innerhalb des Fangbereichs der PLL voreingestellt werden. Dazu dient eine Tabelle mit DA-Wandler-Stützwerten zwischen denen linear interpoliert wird. Der Abstand der Stützwerte beträgt 10 MHz. Der DA-Wandler D10-A stellt die dem Datenwort 'TUNE' entsprechende Voreinstellspannung ein. Diese wird mittels N15-A um den Faktor 1.73 verstärkt und gelangt über eine Ladeschaltung an den Kompensationseingang des Schleifenintegrators N30. Da zwischen Kompensationseingang und Integratorausgang nur eine Verstärkerstufe mit der Spannungsverstärkung 1 liegt, entspricht die vom DA-Wandler erzeugte Voreinstellspannung der VCO-Abstimmspannung.
Bei Frequenzwechsel wird zunächst die Regelbandbreite auf schmal geschaltet, solange die Voreinstellspannung angeklemmt bleibt. Während des Fangvorgangs ist die Bandbreite groß. Anschließend bestimmt das Bit PLL-BW die Bandbreite. Die Umschaltzeitkonstanten werden durch die Monoflops D560 festgelegt und durch den Baugruppenstrobe getriggert.
Als Asynchronerkennung dient die vom Operationsverstärker N17 gebildete Differenz zwischen Voreinstellspannung und VCO-Abstimmspannung. Der Fensterkomperator N550 legt die Entscheidungsschwellen fest und reicht den Interrupt an den Serbusdekoder weiter.

### 7.1.7 Kalibrierung

Zum Anlegen der Kalibriertabelle mit Tunewerten wird vom unteren Ende des Abstimmbereiches her die Voreinstellspannung gesucht, bei der die VCO-Abstimmspannung gleich der Voreinstellspannung ist. Die Baugruppen Digitale Synthese und Stepsynthese müssen dazu die entsprechenden Frequenzen liefern.
Um ein parasitäres Synchronisieren zu vermeiden, muß das Bit 'CAL-OFF' low sein. Ein kleiner Offsetstrom am Integratoreingang sorgt dann dafür, daß die Schleife auf Nebenwellen nicht mehr rasten kann.

## 7.2 Meßgeräte und Hilfsmittel

- HF-Spektrumanalysator (FSA)
- Gleichspannungsquelle
- Signalgenerator (SMGU, SMHU, SME, SMT)
- DC-Voltmeter (UDS5)
- 2-Kanal Speicheroszilloskop (>100 MHz)
- Servicekit (Sachnr. 1039.3520-)

## 7.3 Fehlersuche

*Die Sollwerte der Diagnosepunkte, die während der Fehlersuche überprüft werden, sind unter 7.4.10 'Tabellen und Schnittstellen' zu finden.*

### 7.3.1 Synchronisierfehler

| | |
|---|---|
| **PLL rastet nicht** | VCO-Voreinstellung prüfen<br>SRD-Kammgenerator abgleichen<br>Samplemischer prüfen<br>ZF-Stufe abgleichen |
| **PLL rastet auf falscher Frequenz** | Ablaufsteuerung prüfen<br>ZF-Stufe abgleichen<br>Kalibrierung prüfen |

### 7.3.2 Verzerrungen bei breitbandiger Modulation

| | |
|---|---|
| **Nutzübertragungsfunktion fehlerhaft** | VCO's abgleichen<br>Kalibrierung prüfen<br>Kϕ abgleichen |

### 7.3.3 Spektrale Reinheit

| | |
|---|---|
| **Nebenwellen nahe dem Träger** | SRD-Kammgenerator prüfen<br>Kϕ abgleichen<br>Arbeitspunkt Sampler prüfen |
| **Nebenwellen ca. 15MHz vom Träger** | Pegel an RF- und LO-Port des PD prüfen |

### 7.3.4 Kalibrierung

| | |
|---|---|
| **Kalibrierroutine konvergiert nicht** | VCO's abgleichen<br>Offsetspeisung am Integrator prüfen |

## 7.4 Prüfen und Abgleich

*Alle Meßwerte ohne Toleranzangaben sind als Richtwerte zu verstehen. Spannungsangaben ohne weitere Bezeichnung bedeuten DC-Spannungen.*
*Im Servicekit ist ein Adapter enthalten, mit dem die Baugruppe zugänglich gemacht werden kann. Der Adapter wird statt der Baugruppe in das Chassis gesteckt und die HF-Verbindungen an den entsprechenden Buchsen auf der Unterseite wieder hergestellt. Die Baugruppe kann jetzt auf den Adapter gesteckt werden.*
*Wird die Baugruppe mit geöffnetem Deckel auf der Bauteilseite betrieben, so müssen die beiden Oszillatorkammern mit einem Prüfdeckel geschlossen werden.*

### 7.4.1 Prüfen der Datenübertragung und Stromversorgung

Gemäß Gerätestandard wird die Baugruppe über eine serielle Schnittstelle unter Verwendung des Bausteins SERBUS-D angesteuert. Die Einstellungen und die zugehörigen Daten sind im Kapitel 'Digitale Schnittstellen' zu finden.
Die Stromaufnahme kann überprüft werden, indem anstelle der Spulen L580 bis L584 ein Amperemeter eingeschleift wird. Die Sollwerte der jeweiligen Versorgungsspannungen sind im Kapitel 'Externe Schnittstellen' zu finden.
Die auf der Baugruppe intern erzeugten Versorgungsspannungen sind der Tabelle im Kapitel 'Tabellen und Schnittstellen' zu entnehmen.

### 7.4.2 Prüfen der VCO-Voreinstellung

#### 7.4.2.1 Prüfen des DA-Wandlers

- Steckbrücke X15 abziehen
- Einstellungen: **FREQUENCY 1100 MHz**
  **UTILITIES DIAG TPOINT 607**

▶ Die Tunespannung am Voltmeter muß bei korrekt abgeglichenem VCO2 19V betragen. Erhöht man die Ausgangsfrequenz in 10MHz-Schritten bis 1520MHz, so muß die Voreinstellspannung kontinuierlich in Stufen von 330 bis 660mV bis ca. 2V sinken. Die Voreinstellspannung wird aus der momentan gültigen Kalibriertabelle abgeleitet und unterliegt den Exemplarschwankungen der Oszillatoren, so daß nur eine qualitative Aussage über die Funktion des DA-Wandlers möglich ist.

- Steckbrücke X15 aufstecken

#### 7.4.2.2 Prüfen der VCO-Abstimmspannung

- Steckbrücke X50 abziehen
- Widerstand R48 kurzschließen (ab Änd.-zustand 5 Brücke X16 stecken)

- Einstellungen: **FREQUENCY 1100 MHz**
  **UTILITIES DIAG TPOINT 606**

▶ Die Prüfung erfolgt analog 7.4.2.1.

- Steckbrücke X50 aufstecken
- Kurzschluß an R48 entfernen

### 7.4.2.3 Prüfen der Ablaufsteuerung

Mit Hilfe des Speicherozilloskops sind die Spannungsverläufe der Meßpunkte MP57 und MP58 aufzuzeichnen. Getriggert wird auf den Baugruppenstrobe an Meßpunkt MP40. Die Zeitkonstanten sind der Abbildung 1 zu entnehmen.

- Speicheroszilloskop Kanal 1 an MP40
  Kanal 2 an MP57 bzw. MP58

- Einstellungen: **Frequenzwechsel 800 auf 900 MHz**

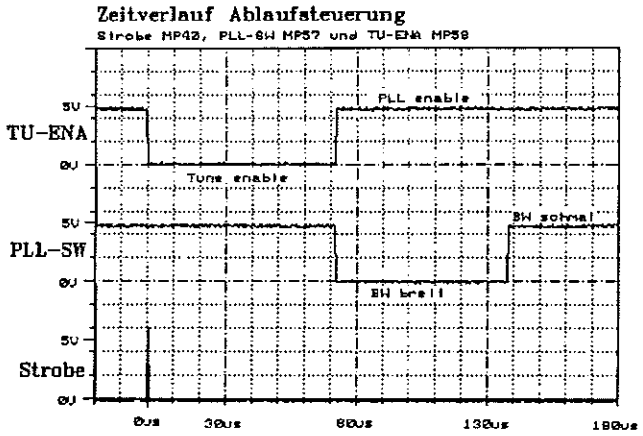



Abb.1

### 7.4.3 Oszillatoren prüfen und abgleichen

### 7.4.3.1 Abgleich der VCO's

- Steckbrücke X50 abziehen, Gleichspannungsquelle an X50B anschließen und 2V einstellen
- Spektrumanalysator an X91 (FSUM) anschließen

- Einstellungen: **FREQUENCY 800 MHz**
  **UTILITIES DIAG TPOINT 605**

▶ Die Frequenz des Ausgangssignals FSUM an X91 ist mit Hilfe des Trimmers C100 auf 750 ±0.5 MHz abzugleichen.

- Gleichspannungsquelle an X50B auf 19V einstellen

- Einstellungen: **FREQUENCY 1200 MHz**
  **UTILITIES DIAG TPOINT 605**

▶ Die Frequenz des Ausgangssignals FSUM an X91 ist mit Hilfe des Trimmers C120 auf 1100 ±0.5 MHz abzugleichen.

▶ Die Diagnosespannung 'Oszillatorpegel' muß bei beiden VCO's zwischen 30 - 100mV liegen.

• Steckbrücke X50 aufstecken

### 7.4.3.2 Kennline der VCO's ausmessen

• Steckbrücke X50 abziehen und Gleichspannungsquelle an X50B anschließen und 2 V einstellen
• Spektrumanalysator an X91 (FSUM) anschließen

•Einstellungen: **FREQUENCY 800 MHz**
**UTILITIES DIAG TPOINT 604**

▶ Bei 2V Abstimmspannung muß die Frequenz von FSUM bei 750 MHz stehen. Beim Erhöhen der Abstimmspannung muß die Ausgangsfrequenz kontinuierlich ansteigen bis bei 18 bis 20.5 V (Soll: 19 V) 1100 MHz erreicht werden. Der Ausgangspegel von FSUM muß zwischen 7 und 11dBm betragen.

• Gleichspannungsquelle an X50B auf 19 V einstellen

• Einstellungen: **FREQUENCY 1200 MHz**
**UTILITIES DIAG TPOINT 605**

▶ Bei 19V Abstimmspannung muß die Frequenz von FSUM bei 1100 MHz stehen. Beim Erniedrigen der Abstimmspannung muß die Ausgangsfrequenz kontinuierlich sinken bis bei .5 bis 3V (Soll: 2V) 1520 MHz erreicht werden. Der Ausgangspegel von FSUM muß zwischen 7 und 11dBm betragen.

▶ Die Diagnosespannung 'Ausgangssignal FSUM' muß jeweils zwischen 150 - 350mV liegen.

• Steckbrücke X50 aufstecken

### 7.4.4 Abgleich/Test des SRD-Kammgenerators

• Einstellungen: **FREQUENCY 839 MHz**
**UTILITIES DIAG TPOINT 603**

▶ Bei Baugruppen mit Änderungszustand kleiner 5 ist die Diagnosespannung 'Pulsamplitude' mit dem Poti 405 auf das Maximum abzugleichen. Mit Änd.-zustand 5 entfällt der Abgleich. Die Diagnosespannung muß in beiden Fällen zwischen 1.1 und 3.5V (typ. 1.8V) liegen.

### 7.4.5 Samplemischer prüfen

### 7.4.5.1 Arbeitspunkt Sampler

• Einstellungen: **FREQUENCY 839 MHz**

▶ Die DC-Spannung an R421 bzw. R429 muß (gemessen mit 100kOhm Vorwiderstand) größer +1V bzw. kleiner -1V sein.

### 7.4.5.2 Frequenzgang Sampler

- Steckbrücke X47 abziehen
- Widerstand R48 kurzschließen (ab Änd.-zustand 5 Brücke X16 stecken)
- Tastkopf des Oszilloskops an Meßpunkt MP67 anklemmen

- Einstellungen: **UTILITIES DIAG TPOINT 602**
  **FREQUENCY 757 MHz**
  **863 MHz**
  **969 MHz**
  **1075 MHz**
  **1181 MHz**
  **1287 MHz**
  **1393 MHz**
  **1499 MHz**

▶ Für die angegebenen Frequenzen ist zunächst die Diagnosespannung mit dem Potentiometer R440 auf 50mV abzugleichen. Die ZF an Meßpunkt MP67 muß dann 450 ±100mVss betragen. Der maximale Pegelfrequenzgang darf nicht größer als ±50mVss sein.

- Kurzschluß an R48 entfernen
- Steckbrücke X47 aufstecken

*Nach dem Messen des Samplerfrequenzganges ist unbedingt der Abgleich der ZF-Stufe erforderlich (7.4.6).*

## 7.4.6 Abgleich ZF-Stufe

### 7.4.6.1 Kϕ-Abgleich

- Tastkopf des Oszilloskops an Meßpunkt MP30 anschließen
- Steckbrücke X20 auf Masse umstecken
- Widerstand R48 kurzschließen (ab Änd.-zustand 5 Brücke X16 stecken)

- Einstellungen: **FREQUENCY 1000 MHz**
  **UTILITIES DIAG TPOINT 601**

▶ Mit Hilfe des Potentiometers R476 ist die Spannung an Meßpunkt MP30 auf 540 mVss abzugleichen.

▶ Die Kurvenform des Signals ist näherungsweise ein Dreieck. Die Diagnosespannung 'ZF-Pegel' beträgt nach dem Abgleich 190 ±90mV.

- Kurzschluß an R48 entfernen
- Steckbrücke X20 in Normalzustand zurückstecken

### 7.4.6.2 RF-Pegel am Sampler abgleichen

- Tastkopf des Oszilloskops an Meßpunkt MP67 anschließen
- Voltmeter an Meßpunkt MP69 anschließen
- Steckbrücke X47 abziehen
- Steckbrücke X20 auf Masse umstecken
- Widerstand R48 kurzschließen (ab Änd.-zustand 5 Brücke X16 stecken)

- Einstellungen: **FREQUENCY 1298 MHz**
  **UTILITIES DIAG TPOINT 602**

▶ Mit Hilfe des Potentiometers R440 ist der ZF-Signal am Oszilloskop auf 350 mVss abzugleichen

▶ Die Diagnosespannung muß dabei etwa 35 mV betragen. Die Kurvenform an MP67 muß ein unverzerrter Sinus sein.

- Steckbrücke X47 aufstecken

- Einstellungen: **FREQUENCY 1100 MHz**

▶ Die ZF-Regelspannung an MP69 muß kleiner 3.5 V sein

- Kurzschluß an R48 entfernen
- Steckbrücke X20 in Normalzustand zurückstecken

### 7.4.6.3 RF- und LO-Pegel des Phasendetektors prüfen

- Tastkopf des Oszilloskops an Meßpunkt MP68 bzw. MP9 anschließen

- Einstellungen: **FREQUENCY 1000 MHz**

▶ An Meßpunkt MP68 (RF-Port des Phasendetektors) muß eine Spitzenspannung von ca. 0.9Vss und am Meßpunkt MP9 (LO-Port des Phasendetektors) eine Spitzenspannung von 1.8Vss anliegen. Die Kurvenform muß einem Sinussignal entsprechen.

### 7.4.7 Kalibrierung prüfen

Vor der eigentlichen Prüfung der Voreins e neu anzulegen

- Einstellungen: **UTILITIES CALIB SUM** ( ihren)

- Steckbrücke X20B auf Masse umstecken nicht stecken?
- Widerstand R48 kurzschließen (ab Änd.-zustand 5 Brücke X16 stecken)
- Spektrumanalysator an X91 (FSUM) anschließen

- Einstellungen: **FREQUENCY 750.01 bis 1520 MHz in 10 MHz-Schritten**
  **UTILITIES DIAG TPOINT 600**

▶ Unmittelbar nach der Baugruppenkalibrierung darf die mit dem Analysator gemessene Frequenz maximal um 500kHz von der eingestellten Frequenz abweichen. Die am Diagnosetestpunkt 'PLL-Differenzspannung' anliegende Spannung sollte im Mittel bei -80 mV liegen und darf -200 mV nicht überschreiten.

- Steckbrücke X20 in Normalzustand zurückstecken
- Kurzschluß an R48 entfernen

## 7.4.8 Einschwingverhalten prüfen

- Tastkopf des Oszilloskops an Meßpunkt MP30 anschließen

- Einstellungen: **FREQUENCY** **751 MHz <-> 1101 MHz**
  **1100 MHz <-> 1520 MHz**

▶ Die Spannungsänderung am Ausgang des Phasendetektors darf sich 300 bis 400 us nach Baugruppenstrobe nur noch um maximal 10mV ändern. Es ergibt sich ein Spannungsverlauf wie in Abbildung 2.

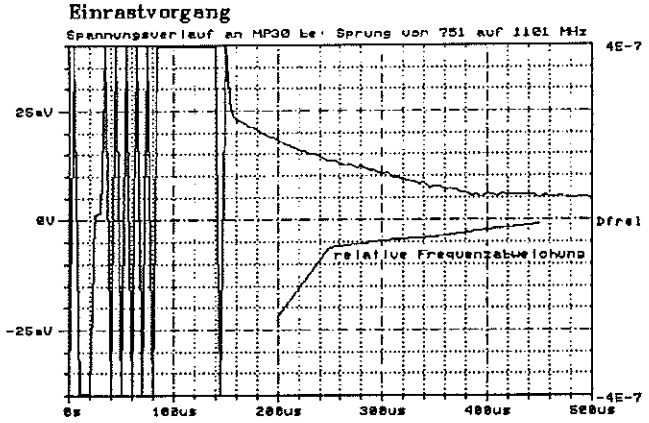



Abb.2

## 7.4.9 Tabellen und Schnittstellen

### 7.4.9.1 Digitale Schnittstelle

Subadresse 0(Serout, CLK1, WR1):

| Latch | Bezeichnung | Funktion | | | |
|---|---|---|---|---|---|
| D533 11 | KOSET-2 | Kompensation VCO-Steilheit | MSB | | |
| | 12 | KOSET-1 | | | |
| | 13 | KOSET-0 | LSB | | |
| | 14 | CAL-OFF | Offset für Kalibriervorgang | 0=ein | 1=a |
| us | | | | | |
| | 7 | TRIG-ENA | Ablaufsteuerung triggern | 0=aus | 1=ein |
| | 6 | frei | | | |
| | 5 | TUNE-9 | Voreinstellung für VCO's | MSB | |
| | 4 | TUNE-8 | | | |
| D532 11 | TUNE-7 | | | | |
| | 12 | TUNE-6 | | | |
| | 13 | TUNE-5 | | | |
| | 14 | TUNE-4 | | | |
| | 7 | TUNE-3 | | | |
| | 6 | TUNE-2 | | | |
| | 5 | TUNE-1 | | | |
| | 4 | TUNE-0 | LSB | | |

| Latch | | Bezeichnung | Funktion | | |
|---|---|---|---|---|---|
| D531 | 11 | SW6 | Pin-Schalter 6 geschaltet bei :8 | 0=aus | 1=ein |
| | 12 | SW5 | Pin-Schalter 5 geschaltet bei :4 | 0=aus | 1=ein |
| | 13 | SW4 | Pin-Schalter 4 geschaltet bei :2 | 0=aus | 1=ein |
| | 14 | SW3 | Pin-Schalter 3 geschaltet bei :4 | 0=aus | 1=ein |
| | 7 | SW2 | Pin-Schalter 2 geschaltet bei :2 | 0=aus | 1=ein |
| | 6 | SW1 | Pin-Schalter 1 geschaltet bei :1 | 0=aus | 1=ein |
| | 5 | ENA-T4 | Teiler :4 enable | 0=aus | 1=ein |
| | 4 | ENA-T2 | Teiler :2 enable | 0=aus | 1=ein |
| D530 | 11 | PLL-ENA | PLL einschalten | 0=aus | 1=ein |
| | 12 | PLL-BW | Regelbandbreite wählen | 0=breit | 1=schmal |
| | 13 | OSZ2 | VCO2 (1100 - 1520 MHz) einschalten | 0=aus | 1=ein |
| | 14 | OSZ1 | VCO1 ( 750 - 1100 MHz) einschalten | 0=aus | 1=ein |
| | 7 | DIAG-ENA | Diagnose einschalten | 0=aus | 1=ein |
| | 6 | DMUX-2 | Adresse der Diagnosepunkte | | MSB |
| | 5 | DMUX-1 | | | |
| | 4 | DMUX-0 | | | LSB |

## 7.4.9.2 Arbeitspunkte und Pegel der HF-Verstärker

| Verstärker | | Arbeitspunkt | HF-Pegel, Frequenz | Bemerkung |
|---|---|---|---|---|
| V1 | Pin2 | 1.2 V | 2 dBm 15 MHz | Pegel von Fdsyn |
| | Pin3 | 5.2 V | 7 dBm " | LO-Pegel für Phasendetektor D1 |
| V400 | Pin1,3 | 8.5 V | | |
| | Pin2 | 9.3 V | 5 dBm 110 MHz | Pegel von Fstep |
| | Pin4 | 13.2 V | 20 dBm " | Pegel für Ansteuerung Step-Recovery Diode |
| V450 | Pin1 | 9.6 V | .35 Vss 15 MHz | Sollwert gilt für X45 entfernt |
| | Pin2 | 1.4 V | " | |
| V455 | Pin2 | .9 V | 15 MHz | RF-Pegel für Phasendetektor D1 |
| | Pin4 | 5.1 V | " | |

Die integrierten HF-Verstärker vom Typ MSA0386 und MSA0486 haben in ihrem Arbeitspunkt eine Kollektorspannung von 4.5 bzw. 4.9V. Sämtliche HF-Pegel sind mit einem Tastkopf >500 Ohm zu messen.

## 7.4.9.3 Arbeitspunkt von HF-Teiler, VCO's und Pin-Schaltern

| Bauteil | Prüfstelle | Funktion | Meßwert | Bemerkung |
|---|---|---|---|---|
| V105 | Strom durch R109 | Oszillator 1 | 30 mA | Arbeitspunkt |
| V129 | Strom durch R129 | Oszillator 2 | 30 mA | der VCO's |
| V259 | Pin1 | Pin-Schalter | .9 V | bei :1,:2,:4,:8 |
| V260 | " | " | " | Teilungsfaktor |
| V270 | " | " | " | |
| V276 | " | " | " | |
| V277 | " | " | " | |
| V278 | Pin3 | " | " | |
| V280 | Pin2 | " | -1.1V | bei :1,:2,:4 |
| | | | +1.5V | bei :8 |
| V401 | MP 37 | SRD-Vorstrom | 2.9V | Pulsamplitude abgeglichen |
| V440 | MP 41 | Pegelstellglied | 1.5V | RF-Pegel am Sampler |
| V453 | MP 69 | Pegelstellglied | 1 - 4V | ZF-Amplitudenregelung |

### 7.4.9.4 Diagnosepunkte

| Diagnosepunkt | Sollwert | Wertebereich | Bemerkung |
|---|---|---|---|
| 600 | | -170 - 30 mV | PLL-Differenzspannung /* |
| | | -600 - 600 mV | /** |
| 601 | 220 mV | 180 - 250 mV | ZF-Pegel |
| 602 | 35 mV | 20 - 50 mV | RF-Pegel am Sampler |
| 603 | 1.5 V | 1.1 - 2.5 V | Pulsamplitude |
| 604 | 200 mV | 80 - 300 mV | Ausgangspegel FSUM |
| 605 | 70 mV | 30 - 150 mV | Oszillatorpegel |
| 606 | | .5 - 20.5 V | VCO-Abstimmspannung |
| 607 | | .5 - 20.5 V | Voreinstellspannung |

/* gilt nur unmittelbar nach Kalibrierung Summierschleife
/** Toleranzfenster für Interrupt

### 7.4.9.5 Versorgungsspannugen

Liste der auf der Baugruppe erzeugten Versorgungsspannungen:

| Spannung | Meßpunkt | Sollwert | Toleranzfenster |
|---|---|---|---|
| -5 V | MP 70 | -5.0 V | -4.5 ... -5.5 V |
| 21 V | MP 80 | 21.3 V | 20.2 ... 22.4 V |
| 5 V | MP 21 | 5.5 V | 5.2 ... 6.0 |

## 7.5 Zerlegung und Zusammenbau

Nach dem Öffnen des Gerätes, Entriegeln der Baugruppen und dem Lösen der HF-Verbindungen an X91, X97 und X99 kann die Baugruppe aus ihrem Steckplatz entnommen werden.
Die Schirmdeckel sind auf herkömmlich Weise verschraubt. Beim Betrieb mit geöffnetem Schirmdeckel ist darauf zu achten, daß die beiden Resonatorkammern J und K bauteileseitig mit einem geeigneten Prüfdeckel verschlossen werden.

## 7.6 Externe Schnittstellen

| Pin | Name | Ein/Ausgang | Herkunft/Ziel | Wertebereich | Signalbeschreibung |
|---|---|---|---|---|---|
| X9.A12 | SERBUS-CLK | Eingang | A3, FRO X50.40 | HCMOS-Pegel | Serbus-Clock |
| X9.A14<br>X9.A15 | SERBUS-DAT | bidir. | A3, FRO X50.39 | HCMOS-Pegel | Serbus-Daten |
| X9.A16 | SERBUS-SYNC | Eingang | A3, FRO X50.37 | HCMOS-Pegel | Serbus-Synchronisation |
| X9.A17 | SERBUS-INT | Ausgang | A3, FRO X50.38 | HCMOS-Pegel | Serbus-Interrupt |
| X9.A18 | RES-P | Eingang | A3, FRO X50.28 | HCMOS-Pegel | Serbus-Reset |
| X9.A19 | DIAG-5V | Ausgang | A3, FRO X50.44 | -5V...5V | Diagnose |
| X9.A26 | VA24-P | Eingang | A2, POWS1 | 23.400V...24.60<br>30... 80mA | Versorgungsspannung analog |

| Pin | Name | Ein/Ausgang | Herkunft/Ziel | Wertebereich | Signalbeschreibung |
|---|---|---|---|---|---|
| X9.A24 | VA15-P | Eingang | A2, POWS1 | 14.80V...15.75V<br>150...290mA | Versorgungsspannung analog |
| X9.A26 | VA7.5-P | Eingang | A2, POWS1 | 7.45V...7.95V<br>300...550mA | Versorgungsspannung analog |
| X9.A28 | VD-5P | Eingang | A2, POWS1 | 5.10V...5.25V<br>5... 20mA | Versorgungsspannung digital |
| X9.A30 | VA15-N | Eingang | A2, POWS1 | -15.75V...-14.85V<br>50...200mA | Versorgungsspannung analog |
| X91 | FSUM | Ausgang | A10, OPU1 X101 | 6...11dBm<br>93.75 - 1520MHz | Ausgangsfrequenz |
| X97 | FSTEP | Eingang | A7, REFSS X75 | 5 ±1dBm<br>103...117 MHz | Referenz-Step |
| X99 | FDSYN | Eingang | A8, DSYN X89 | 2 ±2dBm<br>14.3...15.6 MHz | Dig.Synthese |

ROHDE&SCHWARZ

# SERVICE INSTRUCTIONS

## Summing loop

## 1038.7196.02

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Part list
Coordinates list
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# 7. Checking and Repair of the Module

## 7.1 Functional Description

In the summing loop, the octave from 750 to 1520 MHz is generated from the signals of the modules Step Synthesis and Digital Synthesis. Therefore the step signal is used to convert the RF-frequency to an intermediate frequency by a sampling mixer. This IF is synchronized in a phase-locked loop with the output frequency of the Digital Synthesis. Switch-selected dividers permit to extend the frequency range to 93.75 to 1520 MHz.

### 7.1.1 Oscillators

The two oscillators are controlled using the two switching bits 'OSZ1' and 'OSZ2'. 'OSZ1' switches the VCO from 750 to 1100 MHz, 'OSZ2' the VCO from 1100 to 1520 MHz. A load-independent current feed circuit stabilizes the operating point of the oscillating transistor. The VCO for the upper frequency band provides its smallest frequency with the greatest tuning voltage.

### 7.1.2 Output Stage

The output frequency range is extended by a divider by 2 and a divider by 4. The division factor 8 results from series connection of the two dividers. The bit 'T2-ENA' switches the divider by 2, 'T4-ENA' the divider by 4. The switching diodes are driven by the bits 'SW1' to 'SW6'.

### 7.1.3 Sampling Mixer

The output signal of the RF oscillators is applied to the sampler via the 3-stage PLL driver with level controller V440. The output signal of the Step Synthesis is amplified by the pulse driver and taken to the step recovery diode. Via R405, the bias current and thus the operating point of the SRD is determined. It generates 350-ps pulses, which are applied to the sampler via balun T405. The sampler mixes the RF signal of the oscillators with the comb spectrum from the SRD multiplier, using the 7th to the 14th harmonic of the signal from the reference step synthesis. An IF of approx. 15 MHz (14.2 to 15.6 MHz) is produced.

### 7.1.4 IF Stage

The output voltage of the sampler is applied to the IF driver V455 via the buffer V450 and the level controller V453. A level control ensures a constant IF level at the phase detector and thus a constant K$\phi$ of the phase-locked loop. A lowpass filter suppresses high-frequency mixture products of the sampler.

### 7.1.5 Phase Control

The LO driver V1 amplifies the output signal of the Digital Synthesis and applies it to the LO input of phase detector D1.
A lowpass filter at the output of D1 suppresses the reflection band, an additional filter pole the intermediate frequency.
The current feedback operational amplifier N30 is connected up as non-inverting integrator. Using the analog multiplexer D20, its gain can be set in 8 steps, which permits to compensate for the slope of the VCO. A small offset current applied by V95 prevents parasitic synchronization of the PLL during calibration.
FET switches V51 and V50 permit to select between 2 control bandwidths. The small bandwidth (approx. 270 kHz) produces a better spectral purity, the large one (approx. 2 MHz) allows for broadband modulations.

### 7.1.6 Preset, Sequence Control and Interrupt

Since the control loop does not contain any frequency-sensitive phase detector, the oscillators must be preset inside the lock-in range of the PLL. Therefore a table with D/A converter tuning values is used, and linear interpolation is performed. The calibration frequecies are 10 MHz apart from each other. The D/A converter D10-A sets the preset voltage corresponding to the data word 'TUNE'. This voltage is amplified by a factor of 1.73 by means of N15-A and applied via a charging circuit to the compensation input of loop integrator N30. Since there is only one amplifier stage with the voltage gain 1 between the compensation input and the integrator output, the preset voltage generated by the D/A converter corresponds to the VCO tuning voltage.
When the frequency is changed, the control bandwidth is first switched to narrowband as long as the preset voltage remains applied. During lock-in, the bandwidth is large. Subsequently, the bandwidth is determined by the bit PLL-BW. The switching time constants are determined by monoflops D560 and triggered by the module strobe.
For identification of asynchronous mode, the difference between preset voltage and VCO tuning voltage formed by the operational amplifier N17 is used. Window comparator N550 determines the thresholds and applies the interrupt to the serbus decoder.

### 7.1.6 Calibration

For generating the calibration table with tuning values, the preset voltage is searched for starting at the lower end of the tuning range, where the VCO tuning voltage is the same as the preset voltage. The modules Digital Synthesis and Step Synthesis must provide the appropriate frequencies to this end.
In order to prevent parasitic synchronization, the bit 'CAL OFF' must be low. A small offset current at the integrator input makes sure that the loop can no longer lock on spurious signals.

## 7.2 Measuring Equipment and Accessories

- RF spectrum analyzer (FSA)
- DC voltage source
- Signal generator (SMHU, SMGU , SME, SMT)
- DC voltmeter (UDS5)
- Dual-channel storage oscilloscope (>100 MHz)
- Service kit (order number 1039.3520)

## 7.3 Troubleshooting

*The nominal values of the diagnostic points which are checked during troubleshooting are to be found below 7.4.10 'Tables and Interfaces'.*

### 7.3.1 Sync Error

| | |
|---|---|
| **PLL does not lock** | Check VCO preset<br>Adjust SRD comb generator<br>Check sampling mixer<br>Adjust IF stage |
| **PLL locks to the wrong frequency** | Check sequence control<br>Adjust IF stage<br>Check calibration |

### 7.3.2 Distortions with Broadband Modulation

| | |
|---|---|
| **Useful transmission function faulty** | Adjust VCOs<br>Check calibration<br>Adjust Kϕ |

### 7.3.3 Spectral Purity

| | |
|---|---|
| **Spuriae in the vicinity of the carrier** | Check SRD comb generator<br>Adjust<br>Check operating point of sampler |
| **Spuriae approx. 15MHz from the carrier** | Check level at RF and LO port of PD |

### 7.3.4 Calibration

| | |
|---|---|
| **Calibration routine does not converge** | Adjust VCOs<br>Check offset supply at integrator |

## 7.4 Testing and Adjustment

*All measured values without tolerance specifications are meant to be understood as approximate values. Voltage specifications without further designation are DC voltages.*
*The service kit includes an adapter which permits to make the module accessible. The adapter is plugged into the chassis instead of the module and the RF connections are restored at the appropriate sockets on the bottom side. The module can then be inserted on the adapter.*
*If the module is operated with the cover on the component side opened up, the two oscillator chambers must be closed using a test cover.*

### 7.4.1 Testing the Data Transmission and Current Supply

In accordance with the instrument standard, the module is driven via a serial interface using the SERBUS-D component. The settings and the associated data are to be obtained from the section 'Digital Interfaces'.
The current consumption can be checked by replacing coils L580 to L584 by an ammeter each. The nominal values of the respective supply voltages are to be found in the section 'External Interfaces'.
The supply voltages internally generated on the module are to be obtained from the table in the section 'Tables and Interfaces'.

### 7.4.2 Testing the VCO Preset

#### 7.4.2.1 Testing the D/A Converter

- Remove jumper X15

- Settings: **FREQUENCY 1100 MHz**
  **UTILITIES DIAG TPOINT 607**

▶ The tuning voltage at the voltmeter must be 19 V with the VCO correctly adjusted. When increasing the output frequency in 10-MHz steps up to 1520 MHz, the preset voltage must continuously decrease in steps of 330 to 660 mV to approx. 2 V. The preset voltage is derived from the currently valid calibration table and is subject to manufacturing tolerances of the oscillators so that only a qualitative statement on the function of the D/A converter is possible.

- Replace jumper X15.

#### 7.4.2.2 Testing the VCO Tuning Voltage

- Remove jumper X50.
- Short-circuit resistor R48 (revision 5 and higher insert jumper X16)

- Settings: **FREQUENCY 1100 MHz**
  **UTILITIES DIAG TPOINT 606**

▶ The test is performed as in section 7.4.2.1.

- Replace jumper X50
- Remove short-circuit at R48

### 7.4.2.3 Testing the Sequence Control

Use the storage oscilloscope to record the voltage curves of test points MP57 and MP58. The trigger is released on the module strobe at test point MP40. The time constants are to be obtained from Fig. 1.

- Storage oscilloscope channel 1 at MP40
  channel 2 at MP57 or MP58

- Settings: **Frequency change from 800 to 900 MHz**

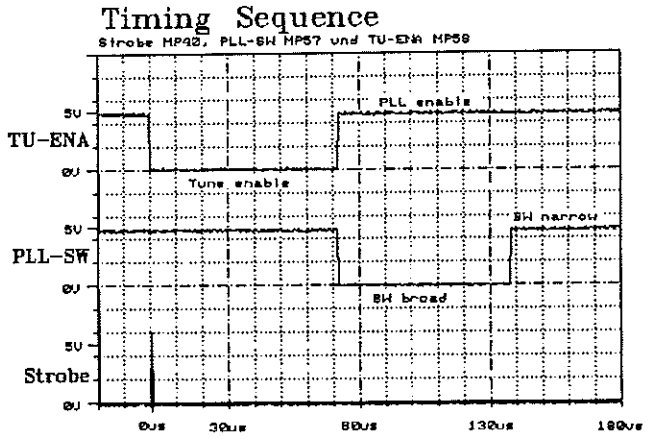



Fig.1

### 7.4.3 Testing and Adjustment of Oscillators

### 7.4.3.1 Adjusting the VCOs

- Remove jumper X50 , connect DC voltage source to X50B and set 2V
- Connect spectrum analyzer to X91 (FSUM)

- Settings: **FREQUENCY 800 MHz**
  **UTILITIES DIAG TPOINT 605**

▶ Adjust the frequency of the output signal FSUM at X91 to 750 ±0.5 MHz using trimmer C100.

- Set the DC voltage source at X50B to 19 V

- Settings: **FREQUENCY 1200 MHz**
  **UTILITIES DIAG TPOINT 605**

▶ Adjust the frequency of the output signal FSUM at X91 to 1100 ±0.5 MHz using trimmer C120.

▶ The diagnostic voltage 'oscillator level' must be between 30 and 100 mV for both VCOs.

• Insert jumper X50

### 7.4.3.2 Measuring the Characteristic of the VCOs

• Remove jumper X50, connect DC voltage source to X50B and set 2 V.
• Connect spectrum analyzer to X91 (FSUM)

• Settings: **FREQUENCY 800 MHz**
**UTILITIES DIAG TPOINT 604**

▶ With a tuning voltage of 2 V, the frequency of FSUM must be 750 MHz. When increasing the tuning voltage, the output frequency must increase continuously until 1100 MHz are achieved at 18 to 20.5 V (nominal value: 19 V). The output level of FSUM must lie between 7 and 11 dBm.

• Set DC voltage source at X50B to 19 V

• Settings: **FREQUENCY 1200 MHz**
**UTILITIES DIAG TPOINT 605**

▶ With a tuning voltage of 19 V, the frequency of FSUM must be 1100 MHz. When reducing the tuning voltage, the output frequency must decrease continuously until 1520 MHz are reached at 0.5 to 3 V (nominal value: 2 V). The output level of FSUM must lie between 7 and 11 dBm.

▶ The diagnostic voltage 'output signal FSUM' must lie between 150 and 350 mV.

• Insert jumper X50

### 7.4.4 Adjusting/testing the SRD Comb Generator

• Settings: **FREQUENCY 839 MHz**
**UTILITIES DIAG TPOINT 603**

▶ Up to revision 4 adjust the diagnostic voltage 'Pulse amplitude' to maximum using potentiometer R405. Revision 5 and higher doesn't need any adjustment.The diagnostic voltage must lie between 1.1 and 3.5 V (typ. 1.8 V) for both cases.

### 7.4.5 Testing the Sampling Mixer

### 7.4.5.1 Operating Point of Sampler

• Settings: **FREQUENCY 839 MHz**

▶ The DC voltage at R421 or R429 must be greater than +1 V or smaller than -1 V (measured with 100-kohm series resistor).

### 7.4.5.2 Frequency Response of Sampler

- Remove jumper X47
- Short-circuit resistor R48 (revision 5 and higher insert jumper X16)
- Connect probe of oscilloscope to test point MP67

- Settings: **UTILITIES DIAG TPOINT 602**
  **FREQUENCY 757 MHz**
  **863 MHz**
  **969 MHz**
  **1075 MHz**
  **1181 MHz**
  **1287 MHz**
  **1393 MHz**
  **1499 MHz**

▶ First adjust the diagnostic voltage to 50 mV using potentiometer R440 at the given frequencies. The IF at test point MP67 must be 450 ±100 mVpp. The maximum level frequency response must not be greater than ±50 mVpp.

- Remove short-circuit at R48
- Insert jumper X47

*After measuring the frequency response of the sampler, it is absolutely necessary to adjust the IF stage (7.4.6).*

## 7.4.6 Adjusting the IF Stage

### 7.4.6.1 Kϕ Adjustment

- Connect probe of oscilloscope to test point MP30
- Reconnect jumper X20 to ground
- Short-circuit resistor R48 (revision 5 and higher insert jumper X16)

- Settings: **FREQUENCY 1000 MHz**
  **UTILITIES DIAG TPOINT 601**

▶ Adjust the voltage at test point MP30 to 540 mVpp using potentiometer R476.

▶ The waveform of the signal approximates a triangle. The diagnostic voltage 'IF level' is 190 ±90 mV after the adjustment.

- Remove short-circuit at R48
- Reconnect jumper X20 to its normal position

### 7.4.6.2 Adjusting the RF Level at the Sampler

- Connect probe of oscilloscope to test point MP67
- Connect voltmeter to test point MP69
- Remove jumper X47
- Reconnect jumper X20 to ground
- Short-circuit resistor R48 (jumper X43)

- Settings: **FREQUENCY 1298 MHz**
  **UTILITIES DIAG TPOINT 602**

▶ Adjust the IF signal at the oscilloscop to 350 mVpp using potentiometer R440

▶ The diagnostic voltage must be about 35 mV. The waveform at MP67 must be sinewave without distortions.

- Insert jumper X47.

- Settings: **FREQUENCY 1100 MHz**

▶ The IF control voltage at MP69 must be smaller than 3.5 V

- Remove short-circuit at R48
- Reconnect jumper X20 to normal position

### 7.4.6.3 Testing the RF and LO Level of the Phase Detector

- Connect probe of oscilloscope to test point MP68 or MP9

- Settings: **FREQUENCY 1000 MHz**

▶ A peak voltage of approx. 0.9 Vpp must be applied to test point MP68 (RF port of phase detector) and a peak voltage of 1.8 Vpp at test point MP9 (LO port of phase detector). The waveform must correspond to a sinewave signal.

### 7.4.7 Testing the Calibration

Before testing the preset table, it must be newly set up.

- Settings: : **UTILITIES CALIB SUM** (Perform calibration)

- Reconnect jumper X20B to ground
- Short-circuit resistor R48 (revision 5 and higher insert jumper X16)
- Connect spectrum analyzer to X91 (FSUM)

- Settings: **FREQUENCY 750.01 to 1520 MHz in 10-MHz steps**
  **UTILITIES DIAG TPOINT 600**

▶ Immediately after calibration of the module, the frequency measured using the analyzer may deviate from the set frequency by max. 500 kHz. The voltage applied to diagnostic point 'PLL differential voltage' should have an average value of -80 mV and must not exceed -200 mV.

- Reconnect jumper X15 to normal position
- Remove short-circuit at R48

## 7.4.8 Testing the Transient Response

- Connect probe of oscilloscope to test point MP30
- Settings: **FREQUENCY 751 MHz <-> 1101 MHz**
  **1100 MHz <-> 1520 MHz**

▶ 300 to 400 us after the module strobe the voltage change at the output of the phase detector must not exceed 10 mV. A voltage curve as shown in Fig. 2 is obtained.

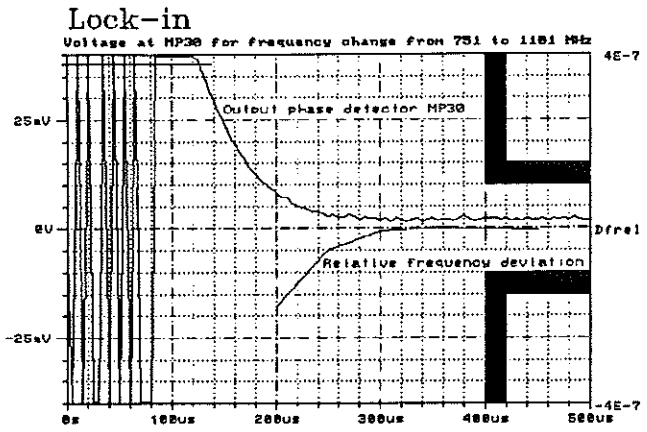



Fig.2

## 7.4.9 Tables and Interfaces

### 7.4.9.1 Digital Interface

Subaddress 0 (Serout, CLK1, WR1):

| Latch | | Designation | Function | | |
|---|---|---|---|---|---|
| D533 | 11 | KOSET-2 | Compensation VCO slope | | MSB |
| | 12 | KOSET-1 | | | |
| | 13 | KOSET-0 | | | LSB |
| | 14 | CAL-OFF | Offset for calibration | 0=on | 1=off |
| | 7 | TRIG-ENA | Trigger sequence control | 0=off | 1=on |
| | 6 | free | | | |
| | 5 | TUNE-9 | Preset for VCOs | | MSB |
| | 4 | TUNE-8 | | | |
| D532 | 11 | TUNE-7 | | | |
| | 12 | TUNE-6 | | | |
| | 13 | TUNE-5 | | | |
| | 14 | TUNE-4 | | | |
| | 7 | TUNE-3 | | | |
| | 6 | TUNE-2 | | | |
| | 5 | TUNE-1 | | | |
| | 4 | TUNE-0 | | | LSB |

| Latch | | Designation | Function | | |
|---|---|---|---|---|---|
| D531 | 11 | SW6 | Pin switch 6 switched with :8 | 0=off | 1=on |
| | 12 | SW5 | Pin switch 5 switched with :4 | 0=off | 1=on |
| | 13 | SW4 | Pin switch 4 switched with :2 | 0=off | 1=on |
| | 14 | SW3 | Pin switch 3 switched with :4 | 0=off | 1=on |
| | 7 | SW2 | Pin switch 2 switched with :2 | 0=off | 1=on |
| | 6 | SW1 | Pin switch 1 switched with :1 | 0=off | 1=on |
| | 5 | ENA-T4 | Divider :4 enable | 0=off | 1=on |
| | 4 | ENA-T2 | Divider :2 enable | 0=off | 1=on |
| D530 | 11 | PLL-ENA | Activate PLL | 0=off | 1=on |
| | 12 | PLL-BW | Select control bandwidth | 0=broad | 1=narrow |
| | 13 | OSZ2 | Activate VCO2 (1100 - 1520 MHz) | 0=off | 1=on |
| | 14 | OSZ1 | Activate VCO1 ( 750 - 1100 MHz) | 0=off | 1=on |
| | 7 | DIAG-ENA | Activate diagnosis | 0=off | 1=on |
| | 6 | DMUX-2 | Address of diagnostic points | | MSB |
| | 5 | DMUX-1 | | | |
| | 4 | DMUX-0 | | | LSB |

## 7.4.9.2 Operating Points and Levels of RF amplifiers

| Amplifier | | Operating point | RF level, Frequency | Remark |
|---|---|---|---|---|
| V1 | Pin2 | 1.2 V | 2 dBm 15 MHz | Level of Fdsyn |
| | Pin3 | 5.2 V | 7 dBm " | LO level for phase detector D1 |
| V400 | Pin1,3 | 8.5 V | | |
| | Pin2 | 9.3 V | 5 dBm 110 MHz | Level of Fstep |
| | Pin4 | 13.2 V | 20 dBm " | Level for control of step recovery diode |
| V450 | Pin1 | 9.6 V | .35 Vpp 15 MHz | Nominal value applies to V45 removed |
| | Pin2 | 1.4 V | " | |
| V455 | Pin2 | .9 V | 15 MHz | RF level for phase detector D1 |
| | Pin4 | 5.1 V | " | |

The integrated RF amplifiers of the type MSA0386 and MSA0486 feature a collector voltage of 4.5 and 4.9 V, respectively, in their operating point. All RF levels are to be measured using a probe >500 ohms.

## 7.4.9.3 Operating Points of Dividers, VCOs and Pin Switches

| Component | Test point | Function | Meas. value | Remark |
|---|---|---|---|---|
| V105 | Current across R109 | Oscillator 1 | 30 mA | Operating point |
| V129 | Current across R129 | Oscillator 2 | 30 mA | of VCOs |
| V259 | Pin1 | Pin switch | .9 V | with :1,:2,:4,:8 |
| V260 | " | " | " | division factor |
| V270 | " | " | " | |
| V276 | " | " | " | |
| V277 | " | " | " | |
| V278 | Pin3 | " | " | |
| V280 | Pin2 | " | -1.1V | with :1,:2,:4 |
| | | | +1.5V | with :8 |
| V401 | MP 37 | SRD bias current | 2.9V | Pulse amplitude adjusted |
| V440 | MP 41 | Level controller | 1.5V | RF level at sampler |
| V453 | MP 69 | Level controller | 1 - 4V | IF amplitude control |

### 7.4.9.4 Diagnostic Points

| Diagnostic point | Nom.value | Value range | Remark |
|---|---|---|---|
| 600 | | -170 - 30 mV | PLL differential voltage /* |
| | | -600 - 600 mV | /** |
| 601 | 220 mV | 180 - 250 mV | IF level |
| 602 | 35 mV | 20 - 50 mV | RF level at sampler |
| 603 | 1.5 V | 1.1 - 2.5 V | Pulse amplitude |
| 604 | 200 mV | 80 - 300 mV | Output level FSUM |
| 605 | 70 mV | 30 - 150 mV | Oscillator level |
| 606 | | .5 - 20.5 V | VCO tuning voltage |
| 607 | | .5 - 20.5 V | Preset voltage |

/* applies only immediately after calibration of summing loop
/** tolerance window for interrupt

### 7.4.9.5 Supply Voltages

List of supply voltages generated on the module:

| Voltage | Test point | Nom. value | Tolerance window |
|---|---|---|---|
| -5 V | MP 70 | -5.0 V | -4.5 ... -5.5 V |
| 21 V | MP 80 | 21.3 V | 20.2 ... 22.4 V |
| 5 V | MP 21 | 5.5 V | 5.2 ... 6.0 |

## 7.5 Removal and Assembly

After opening the instrument, unlocking the modules and disconnecting the RF connections at X91, X97 and X99, the module can be removed from its location.
The screening covers are conventionally fastened with screws.
During operation with open screening cover, make sure that the two chambers J and K are closed by an appropriate test cover on the component side.

## 7.6 Interface Description

| Pin | Name | Inp./Output | Origin/Destination | Value range | Signal description |
|---|---|---|---|---|---|
| X9.A12 | SERBUS-CLK | Input | A3, FRO X50.40 | HCMOS level | Serbus clock |
| X9.A14<br>X9.A15 | SERBUS-DAT | bidir. | A3, FRO X50.39 | HCMOS level | Serbus data |
| X9.A16 | SERBUS-SYNC | Input | A3, FRO X50.37 | HCMOS level | Serbus synchronization |
| X9.A17 | SERBUS-INT | Output | A3, FRO X50.38 | HCMOS level | Serbus interrupt |
| X9.A18 | RES-P | Input | A3, FRO X50.28 | HCMOS level | Serbus reset |
| X9.A19 | DIAG-5V | Output | A3, FRO X50.44 | -5V...5V | Diagnosis |
| X9.A26 | VA24-P | Input | A2, POWS1 | 23.400V...24.60<br>30... 80mA | Supply voltage analog |

| Pin | Name | Inp./Output | Origin/Destination | Value range | Signal description |
|---|---|---|---|---|---|
| X9.A24 | VA15-P | Input | A2, POWS1 | 14.80V...15.75V<br>150...290mA | Supply voltage analog |
| X9.A26 | VA7.5-P | Input | A2, POWS1 | 7.45V...7.95V<br>300...550mA | Supply voltage analog |
| X9.A28 | VD-5P | Input | A2, POWS1 | 5.10V...5.25V<br>5... 20mA | Supply voltage digital |
| X9.A30 | VA15-N | Input | A2, POWS1 | -15.75V...-14.85V<br>50...200mA | Supply voltage analog |
| X91 | FSUM | Output | A10, OPU1 X101 | 6...11dBm<br>93.75 - 1520MHz | Output frequency |
| X97 | FSTEP | Input | A7, REFSS X75 | 5 ±1dBm<br>103...117 MHz | Reference step |
| X99 | FDSYN | Input | A8, DSYN X89 | 2 ±2dBm<br>14.3...15.6 MHz | Dig. synthesis |

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# Schaltteillisten
# numerisch geordnet
# Part lists
# in numerical order
# Listes des pièces détachées
# par numéros de référence

(R 29500 B( 1)
095 1000 81 3

| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| C1 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C3 | CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8521.00 | MURATA | GRM42-6X7R103K 50PT | |
| C4 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C5 | CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8521.00 | MURATA | GRM42-6X7R103K 50PT | |
| C6 | CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR | CC 0099.8844.00 | PHILIPS_CO | 2238 863 18181 | |
| C8 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C10 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C11 | CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7246.00 | KEMET | T491D106KO25AS | |
| C12 | CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8750.00 | MURATA | GRM42-6C0G 150F 50PT | |
| C15 | CC 47PF+-1%50V C0G 1206 CERAMIC CHIP CAPACITOR | CC 0099.8496.00 | MURATA | GRM42-6C0G 470F 50PT | |
| C18 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C19 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C20 | CC 39PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8796.00 | MURATA | GRM42-6C0G 390F 50PT | |
| C21 | CC 5,6PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR | CC 0007.8220.00 | MURATA | GRM42-6C0G 5R6 C50PT | |
| C22 | CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8821.00 | MURATA | GRM42-6C0G 820F 50PT | |
| C23 | CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8780.00 | MURATA | GRM42-6C0G 330F 50PT | |
| C24 | CC 12PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8744.00 | MURATA | GRM42-6C0G 120 F50PT | |
| C25 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6C0G 101F 50PT | |
| C26 | CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8821.00 | MURATA | GRM42-6C0G 820F 50PT | |
| C27 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C28 | CC 5,6PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR | CC 0007.8220.00 | MURATA | GRM42-6C0G 5R6 C50PT | |
| C30 | CK 150NF+-5%63VRD3,5H9MKT CAPACITOR | CK 0099.2946.00 | ROEDERSTEI | MKT 1826-415-06-4 | |
| C31 | CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8767.00 | MURATA | GRM42-6C0G 180F 50PT | |
| C34 | CC 47PF+-1%50V C0G 1206 CERAMIC CHIP CAPACITOR | CC 0099.8496.00 | MURATA | GRM42-6C0G 470F 50PT | |
| C38 | CE 10UF+-20%50V ALU-CHIP SMD-ELECTROLYTIC CAPACIT. | CE 0008.1812.00 | VALVO | TYP 2222 139 61109 | |
| C39 | CE 10UF +-10% 10V 6032 TANTALUM SMD-CAPACITOR | CE 0007.7281.00 | KEMET | T491 C 106 K 010 AS | |
| C50 | CK 2,2NF +-1% 100V RM5 KP POLYPROPYLENE CAPACITOR | CK 0007.7617.00 | ROEDERSTEI | KP1830-222 01 1 3 W | |
| C51 | CK 33NF +-1% 63V RM5 KP POLYPROPYLENE CAPACITOR | CK 0007.7681.00 | ROEDERSTEI | KP1830-333 06 1(3)W | |
| C52 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C70 | CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7246.00 | KEMET | T491D106KO25AS | |
| C71 | CE 47UF +-10% 10V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7300.00 | KEMET | T491 D 476 K 010 AS | |
| C72 | CE 10UF +-10% 10V 6032 TANTALUM SMD-CAPACITOR | CE 0007.7281.00 | KEMET | T491 C 106 K 010 AS | |
| C73 | CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8521.00 | MURATA | GRM42-6X7R103K 50PT | |
| C80 | CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7246.00 | KEMET | T491D106KO25AS | |
| C90 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C91 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C100 | CT 9PF TAUCHTR.7RDX13 AIR-TYPE TRIMMER | CT 0249.5095.00 | TEKELEC | AT 5202 | |
| C101 | CC 10PF+-0,25 50VNP0 1206 CERAMIC CHIP CAPACITOR | CC 0099.8480.00 | MURATA | GRM42-6C0G 100 C50PT | |
| C104 | CC 3,6PF0,25PF NP0 0805 CAPACITOR | CC 0093.5614.00 | MURATA | GRM40C0G3R6C50 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| C105 | CC 6PF+-0,25PF NPO 0805 CERAMIC CHIP CAPACITOR | CC 0099.8280.00 | MURATA | GRM40 C0G 6R0 C50PT | |
| C106 | CC 100PF+-10% NPO 0805 CAPACITOR | CC 0082.2948.00 | MURATA | GRM40 C0G 101 K50PT | |
| C107 | CC 4,3PF0,25PF NPO 0805 CAPACITOR | CC 0093.5643.00 | MURATA | GRM40C0G4R3C50PT | |
| C108 | CE 22UF+-20%35V RUND SMD SMD-ELEKTROLYTIC-CAPACIT. | CE 0009.6253.00 | PANASONIC | EEV HB 1V 220P | |
| C119 | CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8850.00 | PHILIPS_CO | 2238 863 18221 | |
| C120 | CT 9PF TAUCHTR.7RDX13 AIR-TYPE TRIMMER | CT 0249.5095.00 | TEKELEC | AT 5202 | |
| C121 | CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8480.00 | MURATA | GRM42-6C0G 100 C50PT | |
| C122 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C123 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C124 | CC 2,7PF0,25PF NPO 0805 CAPACITOR | CC 0093.5572.00 | PHILIPS_CO | 2222 861 15278 | |
| C125 | CC 5,2PF0,25PF NPO 0805 CAPACITOR | CC 0093.5650.00 | MURATA | GRM40C0G5R2C50PT | |
| C126 | CC 100PF+-10% NPO 0805 CAPACITOR | CC 0082.2948.00 | MURATA | GRM40 C0G 101 K50PT | |
| C127 | CC 2,2PF0,25PF NPO 0805 CAPACITOR | CC 0093.5566.00 | MURATA | GRM40 C0G 2R2C 50PT | |
| C128 | CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8850.00 | PHILIPS_CO | 2238 863 18221 | |
| C140 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6C0G 101F 50PT | |
| C141 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C142 | CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8667.00 | PHILIPS_CO | 2238 863 15108 | |
| C143 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6C0G 101F 50PT | |
| C144 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C210 | CE 47UF +-10% 10V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7300.00 | KEMET | T491 D 476 K 010 AS | |
| C236 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C250 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C251 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6C0G 101F 50PT | |
| C255 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6C0G 101F 50PT | |
| C257 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C259 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C260 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6C0G 101F 50PT | |
| C261 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C263 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C264 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C265 | CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8444.00 | PHILIPS_CO | 2222 581 16618 | |
| C266 | CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8444.00 | PHILIPS_CO | 2222 581 16618 | |
| C268 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C269 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C271 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C272 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6C0G 101F 50PT | |
| C273 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C274 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C275 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| C276 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C277 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C279 | CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8444.00 | PHILIPS_CO | 2222 581 16618 | |
| C280 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C281 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C282 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C283 | CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8667.00 | PHILIPS_CO | 2238 863 15108 | |
| C284 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C285 | CC 4,7PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR | CC 0007.8213.00 | MURATA | GRM42-6COG 4R7C 50PT | |
| C286 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C287 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C288 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C289 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C290 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C291 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C292 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C294 | CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8444.00 | PHILIPS_CO | 2222 581 16618 | |
| C295 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C400 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C401 | CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7246.00 | KEMET | T491D106K025AS | |
| C402 | CE 22UF+-20%35V RUND SMD SMD-ELEKTROLYTIC-CAPACIT. | CE 0009.6253.00 | PANASONIC | EEV HB 1V 220P | |
| C403 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C404 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C405 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C406 | CE 22UF+-20%35V RUND SMD SMD-ELEKTROLYTIC-CAPACIT. | CE 0009.6253.00 | PANASONIC | EEV HB 1V 220P | |
| C407 | CC 0,47PF+-0,25PF50V 0805 CERAMIC CHIP CAPACITOR | 1002.4951.00 | VALVO | 2222 8611 5477 | |
| C408 | CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8515.00 | PHILIPS_CO | 2238 863 18471 | |
| C409 | CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8415.00 | MURATA | GRM42-6COG 101F 50PT | |
| C420 | CC 33PF+-10% NPO 0805 CAPACITOR | CC 0082.7340.00 | MURATA | GRM40COG330K50PT | |
| C421 | CC 33PF+-10% NPO 0805 CAPACITOR | CC 0082.7340.00 | MURATA | GRM40COG330K50PT | |
| C422 | CC 4,7PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR | CC 0007.8213.00 | MURATA | GRM42-6COG 4R7C 50PT | |
| C429 ..431 | CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8850.00 | PHILIPS_CO | 2238 863 18221 | |
| C432 | CC 1,5PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR | CC 0007.8159.00 | MURATA | GRM42-6COG 1R5 C50PT | |
| C433 | CC 1,5PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR | CC 0007.8159.00 | MURATA | GRM42-6COG 1R5 C50PT | |
| C434 ..437 | CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8850.00 | PHILIPS_CO | 2238 863 18221 | |
| C438 | CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8667.00 | PHILIPS_CO | 2238 863 15108 | |
| C439 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C440 ..443 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C445 | CC 47PF+-1%50V COG 1206 CERAMIC CHIP CAPACITOR | CC 0099.8496.00 | MURATA | GRM42-6COG 470F 50PT | |

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| 1GPK 502 3PU-D | AI | Datum Date | Schaltteilliste für Parts list for | Sachnummer Stock No | Blatt-Nr Page |
|---|---|---|---|---|---|
| ROHDE&SCHWARZ | 38 | 04.02.98 | ED SUMMIERSCHLEIFE<br>SUMMING-LOOPS | 1038.7196.01 SA | 3+ |

095 0026-0693

| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| C448 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C449 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C450 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C451 | CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8521.00 | MURATA | GRM42-6X7R103K 50PT | |
| C453 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C454 | CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8521.00 | MURATA | GRM42-6X7R103K 50PT | |
| C455 | CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8821.00 | MURATA | GRM42-6C0G 820F 50PT | |
| C456 | CC 8,2PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR | CC 0007.8242.00 | MURATA | GRM42-6C0G 8R2 C50PT | |
| C457 | CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8396.00 | MURATA | GRM42-6C0G 220F 50PT | |
| C458 | CC 120PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8838.00 | MURATA | GRM42-6C0G 121F 50PT | |
| C459 | CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8815.00 | MURATA | GRM42-6C0G 680F 50PT | |
| C460 | CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8480.00 | MURATA | GRM42-6C0G 100 C50PT | |
| C461 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C462 | CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8480.00 | MURATA | GRM42-6C0G 100 C50PT | |
| C463 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C465 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C466 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C468 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C470 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C471 | CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8850.00 | PHILIPS_CO | 2238 863 18221 | |
| C472 | CE 10UF +-10% 10V 6032 TANTALUM SMD-CAPACITOR | CE 0007.7281.00 | KEMET | T491 C 106 K 010 AS | |
| C478 | CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7246.00 | KEMET | T491D106K025AS | |
| C479 | CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR | CE 0007.7246.00 | KEMET | T491D106K025AS | |
| C485 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C495 | CC 2,2PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR | CC 0007.8171.00 | MURATA | GRM42-6C0G 2R2 C50PT | |
| C498 | CC 120PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8838.00 | MURATA | GRM42-6C0G 121F 50PT | |
| C499 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C545 | CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR | CC 0007.7398.00 | PHILIPS_CO | 2222 863 *8102 | |
| C551 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C554 | CC 47NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5195.00 | PHILIPS_CO | 2238 581 15645 | |
| C561 | CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8521.00 | MURATA | GRM42-6X7R103K 50PT | |
| C562 | CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0099.8521.00 | MURATA | GRM42-6X7R103K 50PT | |
| C565 | CE 10UF +-10% 10V 6032 TANTALUM SMD-CAPACITOR | CE 0007.7281.00 | KEMET | T491 C 106 K 010 AS | |
| C567 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C570 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C571 | CE 10UF +-10% 10V 6032 TANTALUM SMD-CAPACITOR | CE 0007.7281.00 | KEMET | T491 C 106 K 010 AS | |
| C573 | CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR | CC 0007.5237.00 | PHILIPS_CO | 2238 581 55649 | |
| C579 | CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR | CC 0099.8873.00 | PHILIPS_CO | 2238 863 18331 | |
| C580 | CE 220UF+-20%35V RM5 ELECTROLYTIC CAPACITOR | CE 0008.7904.00 | PANASONIC | ECA 1 VFG 221 B | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| C581 | CE 100UF+-20%35V RM5 ELECTROLYTIC CAPACITOR | 0008.7510.00 | PHILIPS_CO | 2222 116 90042 | |
| C582 | CE 220UF+-20%35V RM5 ELECTROLYTIC CAPACITOR | CE 0008.7904.00 | PANASONIC | ECA 1 VFG 221 B | |
| C583 | CE 220UF+-20%35V RM5 ELECTROLYTIC CAPACITOR | CE 0008.7904.00 | PANASONIC | ECA 1 VFG 221 B | |
| C584 | CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR | CE 0008.7891.00 | PANASONIC | ECA-1EFG101I | |
| C589 | CE 100UF+-20%16V RUND SMD SMD-ELECTOLYTIC CAPACIT. | CE 0009.6553.00 | SANYO | 16CV100FS | |
| D1 | BM SRA1 MIXER 0.5GHZ MIXER | BM 0207.3465.00 | MINI-CIRCU | SRA1 | |
| D10 | BJ PM7533GS 1X10B-DAC D/A-CONVERTER | 2033.1473.00 | ANALOG_DEV | AD7533KR | |
| D20 | BL PC74HC4051T 8CH.AN.MUX 8CHANNEL ANAL.MULTIPLEXER | BL 0007.3592.00 | PHILIPS_SE | (PC)74HC4051(D/T) | |
| D260 | BL UPB581C 2:1 PRESC IC PRESCALERDIVIDER | 0840.6113.00 | NEC | (UP)B581C | |
| D270 | BL UPB582C 4:1 PRESC IC PRESCALER | 0820.3390.00 | NEC | (UP)B582C | |
| D500 | BG TH3032.1C SERBUSD ASIC IC GATE ARRAY | 0008.6143.00 | THESYS | TH3032.1C | |
| D530 ..533 | BL PC74HCT4094T 8ST.SHREG SHIFT REGISTER | BL 0007.6885.00 | PHILIPS | (PC)74HCT4094(D) | |
| D540 | BL PC74HCT4051T 8CH.A.MUX ANALOG MULTIPLEXER | BL 0007.6827.00 | PHILIPS | (PC)74HCT4051(T) | |
| D545 | BL PC74HCT132T 4X2IN SCHM NAND SCHMITT TRIGGER | BL 0007.6340.00 | PHILIPS | (PC)74HCT132(D/T) | |
| D560 | BL PC74HCT123T 2XMONOFLOP DUAL MULTIVIBRATOR | BL 0007.6333.00 | PHILIPS_SE | (PC)74HCT123(D/T) | |
| D570 | BL PC74HCT132T 4X2IN SCHM NAND SCHMITT TRIGGER | BL 0007.6340.00 | PHILIPS | (PC)74HCT132(D/T) | |
| L6 | LD 470NH 10% 0,15A 1210 SMD-INDUCTOR | LD 0007.9926.00 | SIEMENS | B82422-A3471-J(K)100 | |
| L18 | LD 10UH 10% 0,18A 1210 SMD-INDUCTOR | LD 0007.9255.00 | SIEMENS | B82422-A1103-J(K)100 | |
| L20 | LD 820NH 5% OR85 0,42A HIGH FREQUENCY CHOKE | 0355.9890.00 | DELEVAN | 1025-18 | |
| L21 | LD 1,00UH10%1,000HMO,390A CHOKE | LD 0067.2863.00 | DALE | IM2 | |
| L22 | LD 1,5UH 5% OR2 0,56A CHOKE | 0067.3247.00 | DELEVAN | 1025-24 | |
| L26 | LD 2,70UH10%0,550HMO,355A CHOKE | LD 0067.2911.00 | DALE | IM2 | |
| L90 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L91 | LD 10UH 10% 0,18A 1210 SMD-INDUCTOR | LD 0007.9255.00 | SIEMENS | B82422-A1103-J(K)100 | |
| L100 | LD 100NH 10% 0,080HM 1,4A CHOKE | LD 0067.2740.00 | DALE | IM2 | |
| L102 | LD 100NH10%OR21 660MA1206 CERAMIC CHIP COIL | 0691.0733.00 | STETTNER | 5503 00404 | |
| L103 | LD 100NH10%OR21 660MA1206 CERAMIC CHIP COIL | 0691.0733.00 | STETTNER | 5503 00404 | |
| L105 | LD 100NH10%OR21 660MA1206 CERAMIC CHIP COIL | 0691.0733.00 | STETTNER | 5503 00404 | |
| L109 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L120 | LD 100NH 10% 0,080HM 1,4A CHOKE | LD 0067.2740.00 | DALE | IM2 | |
| L122 | LD 100NH10%OR21 660MA1206 CERAMIC CHIP COIL | 0691.0733.00 | STETTNER | 5503 00404 | |
| L123 | LD 100NH10%OR21 660MA1206 CERAMIC CHIP COIL | 0691.0733.00 | STETTNER | 5503 00404 | |
| L125 | LD 100NH10%OR21 660MA1206 CERAMIC CHIP COIL | 0691.0733.00 | STETTNER | 5503 00404 | |
| L140 | LD 100NH 10% 0,44A 1210 SMD-INDUCTOR | LD 0007.9249.00 | SIEMENS | B82422-A3101-J(K)100 | |
| L160 | LL LUFTSPULE | 1038.7338.00 | | | |
| L161 | LL LUFTSPULE | 1038.7338.00 | | | |
| L179 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L250 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L251 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| L256 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L260 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L261 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L262 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L263 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L264 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L268 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L269 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L271 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L272 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L277 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L280 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L285 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L286 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L293 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L401 | LD 10UH 10% 0,18A 1210 SMD-INDUCTOR | LD 0007.9255.00 | SIEMENS | B82422-A1103-J(K)100 | |
| L403 | LD 32 NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL | 0008.9436.00 | COMPONEX | E 558 CN-10 0020 | |
| L404 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L405 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L430 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L431 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L432 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L433 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L434 | LD 1UH 10% 0,38A 1210 SMD-INDUCTOR | LD 6006.0130.00 | SIEMENS | B82422-A1102-J(K)100 | |
| L435 | LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR | LD 0520.7870.00 | SIEMENS | B82422-A1222-J(K)100 | |
| L450 | LD 22UH 10% 0,14A 1210 SMD-INDUCTOR | LD 0520.7886.00 | SIEMENS | B82422-A1223-J(K)100 | |
| L451 | LD 22UH 10% 0,14A 1210 SMD-INDUCTOR | LD 0520.7886.00 | SIEMENS | B82422-A1223-J(K)100 | |
| L452 | LD 0,18UH10%0,120HM1,120A CHOKE | LD 0067.2770.00 | DALE | IM2 | |
| L453 | LD 0,15UH10%0,100HM1,230A CHOKE | LD 0067.2763.00 | DALE | IM2 | |
| L454 | LD 10UH 10% 0,18A 1210 SMD-INDUCTOR | LD 0007.9255.00 | SIEMENS | B82422-A1103-J(K)100 | |
| L456 | LD 12,0UH10%2,700HM0,160A CHOKE | LD 0067.2992.00 | DALE | IM2 | |
| L570 | LD 22UH 10% 0,14A 1210 SMD-INDUCTOR | LD 0520.7886.00 | SIEMENS | B82422-A1223-J(K)100 | |
| L580 | LD 8,2UH BEI 0,94A0,490HM CHOKE | LD 0026.4110.00 | DALE | IM 6 | |
| L581 | LD 15UH 10% 1R2 0,46A CHOKE | LD 0026.4149.00 | DALE | IM 6 | |
| L582 | LD 15UH 10% 1R2 0,46A CHOKE | LD 0026.4149.00 | DALE | IM 6 | |
| L583 | LD 8,2UH BEI 0,94A0,490HM CHOKE | LD 0026.4110.00 | DALE | IM 6 | |
| L584 | LD 8,2UH BEI 0,94A0,490HM CHOKE | LD 0026.4110.00 | DALE | IM 6 | |
| L589 | LD 4,7UH 10% 0,15A 1210 SMD-INDUCTOR | LD 0008.1687.00 | SIEMENS | B82422-A1472-J(K)100 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| MP9 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP21 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP30 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP32 ...37 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP40 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP41 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP55 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP56 ...58 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP67 ...70 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| MP80 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| N10 | BO NE5534D OPAMP OPERATIONAL AMPLIFIER | 0815.7555.00 | SIGNETICS | NE5534(D) | |
| N15 | BO NE5532D 2XLN OPAMP OPERATIONAL AMPLIFIER | 0007.7798.00 | SIGNETICS | NE5532D | |
| N17 | BO OP97FS LP PREC OPAMP OPAMP | 1036.4390.00 | PMI | OP97F(S) | |
| N30 | BO AD846BN CF OPAMP CURRENT-FEEDBACK OPAMP | 0007.9855.00 | ANALOG_DEV | AD846BN | |
| N140 | BM MSA0386 DC-2.4G MMIC BROAD-BAND AMPLIFIER | 0848.4461.00 | AVANTEK | MSA0386 | |
| N250 | BM MSA0486 DC-3.2G MMIC BROADBAND AMPLIFIER | 0846.4293.00 | AVANTEK | MSA-0486 | |
| N260 | BM MSA0386 DC-2.4G MMIC BROAD-BAND AMPLIFIER | 0848.4461.00 | AVANTEK | MSA0386 | |
| N270 | BM MSA0386 DC-2.4G MMIC BROAD-BAND AMPLIFIER | 0848.4461.00 | AVANTEK | MSA0386 | |
| N280 | BM MSA0486 DC-3.2G MMIC BROADBAND AMPLIFIER | 0846.4293.00 | AVANTEK | MSA-0486 | |
| N290 | BM MSA0486 DC-3.2G MMIC BROADBAND AMPLIFIER | 0846.4293.00 | AVANTEK | MSA-0486 | |
| N430 | BM MSA0486 DC-3.2G MMIC BROADBAND AMPLIFIER | 0846.4293.00 | AVANTEK | MSA-0486 | |
| N435 | BM MSA0386 DC-2.4G MMIC BROAD-BAND AMPLIFIER | 0848.4461.00 | AVANTEK | MSA0386 | |
| N438 | BM MSA0386 DC-2.4G MMIC BROAD-BAND AMPLIFIER | 0848.4461.00 | AVANTEK | MSA0386 | |
| N470 | BO NE5534D OPAMP OPERATIONAL AMPLIFIER | 0815.7555.00 | SIGNETICS | NE5534(D) | |
| N550 | BO LM2903D 2XLP COMPAR DUAL | 0520.7734.00 | SIGNETICS | LM2903(D) | |
| P9 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| P30 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| P32 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| P33 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| P40 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| P55 ..58 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| P70 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| P80 | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| R1 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R3 | RG 332 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5650.00 | PHILIPS_CO | RC02 | |
| R4 | RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0841.00 | PHILIPS_CO | RC02 | |
| R5 | RG 825 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.7259.00 | ROEDERSTEI | D25 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| R7 | RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5489.00 | ROEDERSTEI | D25 | |
| R8 | RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5489.00 | ROEDERSTEI | D25 | |
| R9 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R10 | RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5489.00 | ROEDERSTEI | D25 | |
| R11 | RG 392 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5672.00 | ROEDERSTEI | D25 | |
| R12 | RG 332 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5650.00 | PHILIPS_CO | RC02 | |
| R13 | RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5766.00 | PHILIPS_CO | RC02 | |
| R14 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R15 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R16 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R17 | RG 20,0KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5866.00 | ROEDERSTEI | D25 | |
| R18 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R19 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R20 | RG 332 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5650.00 | PHILIPS_CO | RC02 | |
| R21 | RG 392 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5672.00 | ROEDERSTEI | D25 | |
| R22 | RG 681 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9080.00 | ROEDERSTEI | D25 | |
| R23 | RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5489.00 | ROEDERSTEI | D25 | |
| R25 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R27 | RG 82,5KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.1925.00 | ROEDERSTEI | D25 | |
| R28 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R29 | RG 750 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9097.00 | ROEDERSTEI | D25 | |
| R30 | RG 221 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R31 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R32 | RG 20,0KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5866.00 | ROEDERSTEI | D25 | |
| R33 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R34 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R35 | RG 1,0 OHM+-1%TK100 1206 CHIP-RESISTOR | RG 0007.8265.00 | PHILIPS_CO | RC 02 | |
| R36 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R38 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R39 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R40 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R41 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R42 | RG 56,2KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.1883.00 | ROEDERSTEI | D25 | |
| R43 | RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R44 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R45 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R46 | RG 56,2KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.1883.00 | ROEDERSTEI | D25 | |
| R47 | RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5743.00 | ROEDERSTEI | D25 | |
| R48 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| R49 | RG 150 KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5972.00 | ROEDERSTEI | D25 | |
| R50 | RG 562 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R51 | RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8849.00 | ROEDERSTEI | D25 | |
| R52 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R53 | RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5914.00 | ROEDERSTEI | D25 | |
| R54 | RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5743.00 | ROEDERSTEI | D25 | |
| R55 | RG 16,2KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0870.00 | ROEDERSTEI | D25 | |
| R56 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R57 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R58 | RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R59 | RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R60 | RG 5,62KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0735.00 | ROEDERSTEI | D25 | |
| R61 | RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5789.00 | ROEDERSTEI | D25 | |
| R62 | RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5720.00 | ROEDERSTEI | D25 | |
| R63 | RG 909 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.7265.00 | ROEDERSTEI | D25 | |
| R64 | RG 562 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R65 | RG 432 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5689.00 | ROEDERSTEI | D25 | |
| R66 | RG 274 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5637.00 | ROEDERSTEI | D25 | |
| R67 | RG 182 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5595.00 | ROEDERSTEI | D25 | |
| R68 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R70 | RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5489.00 | ROEDERSTEI | D25 | |
| R71 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R72 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R73 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R75 | RG 825 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.7259.00 | ROEDERSTEI | D25 | |
| R76 | RG 121 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8903.00 | ROEDERSTEI | D25 | |
| R77 | RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR | RG 0006.8649.00 | PHILIPS_CO | RC02 | |
| R78 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R79 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R80 | RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0770.00 | ROEDERSTEI | D25 | |
| R81 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R82 | RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5789.00 | ROEDERSTEI | D25 | |
| R83 | RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0770.00 | ROEDERSTEI | D25 | |
| R84 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R86 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R89 | RG 150 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5589.00 | ROEDERSTEI | D25 | |
| R90 | RG 18,2KOH+-0,1%TK25 1206 SMD-RESISTOR | 0009.7637.00 | PHILIPS_CO | MPC 01 | |
| R91 | RG 10,0KOH+-0,1%TK25 1206 SMD-RESISTOR | 0009.7666.00 | PHILIPS_CO | MPC 01 | |
| R92 | RG 10,0KOH+-0,1%TK25 1206 SMD-RESISTOR | 0009.7666.00 | PHILIPS_CO | MPC 01 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| R93 | RG 18,2KOH+-O,1%TK25 1206 SMD-RESISTOR | 0009.7637.00 | PHILIPS_CO | MPC 01 | |
| R94 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R95 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R96 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R97 | RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5743.00 | ROEDERSTEI | D25 | |
| R98 | RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5914.00 | ROEDERSTEI | D25 | |
| R99 | RG 8,250HM+-1%TK100 1206 CHIP-RESISTOR | RG 0007.8488.00 | PHILIPS | RC 02 | |
| R101 | RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8826.00 | ROEDERSTEI | D25 | |
| R103 | RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8826.00 | ROEDERSTEI | D25 | |
| R105 | RG 0,05W 82R +-1% 0805 RESISTOR | RG 0007.8994.00 | HONEST_JAP | RN 73 C(E)2X..F (1%) | |
| R106 | RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5720.00 | ROEDERSTEI | D25 | |
| R107 | RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0758.00 | ROEDERSTEI | D25 | |
| R108 | RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5766.00 | PHILIPS_CO | RC02 | |
| R109 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R110 | RG 3,92KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5808.00 | ROEDERSTEI | D25 | |
| R111 | RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0841.00 | PHILIPS_CO | RC02 | |
| R112 | RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R113 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R114 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R115 | RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5743.00 | ROEDERSTEI | D25 | |
| R116 | RG 100,OKOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R120 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R121 | RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8826.00 | ROEDERSTEI | D25 | |
| R122 | RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8826.00 | ROEDERSTEI | D25 | |
| R123 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R125 | RG 0,05W 82R +-1% 0805 RESISTOR | RG 0007.8994.00 | HONEST_JAP | RN 73 C(E)2X..F (1%) | |
| R126 | RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5720.00 | ROEDERSTEI | D25 | |
| R127 | RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0758.00 | ROEDERSTEI | D25 | |
| R128 | RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5766.00 | PHILIPS_CO | RC02 | |
| R129 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R130 | RG 3,92KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5808.00 | ROEDERSTEI | D25 | |
| R131 | RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0841.00 | PHILIPS_CO | RC02 | |
| R132 | RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R133 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R134 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R135 | RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5743.00 | ROEDERSTEI | D25 | |
| R136 | RG 100,OKOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R141 | RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8849.00 | ROEDERSTEI | D25 | |
| R142 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |

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| Kennz. Comp. No. | Benennung Designation | | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|---|
| R143 | RG 100 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R144 | RG 4,75KOHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R160 | RG 0,05W 51R1 +-1% RESISTOR | 0805 | 0007.9132.00 | HONEST_JAP | MR 08 M .... | |
| R179 | RG 100 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R210 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R211 | RG 4,75OHM+-1%TK100 CHIP-RESISTOR | 1206 | RG 0007.8420.00 | PHILIPS | RC 02 | |
| R212 | RG 100 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R236 | RG 47,5 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5566.00 | ROEDERSTEI | D25 | |
| R237 | RG 562 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R238 | RG 8,25OHM+-1%TK100 CHIP-RESISTOR | 1206 | RG 0007.8488.00 | PHILIPS | RC 02 | |
| R239 | RG 562 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R245 | RG 16,2 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8690.00 | ROEDERSTEI | D25 | |
| R247 | RG 16,2 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8690.00 | ROEDERSTEI | D25 | |
| R248 | RG 16,2 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8690.00 | ROEDERSTEI | D25 | |
| R250 | RG 47,5 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5566.00 | ROEDERSTEI | D25 | |
| R251 | RG 33,2 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5520.00 | ROEDERSTEI | D25 | |
| R252 | RG 162 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8932.00 | ROEDERSTEI | D25 | |
| R253 | RG 162 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8932.00 | ROEDERSTEI | D25 | |
| R256 | RG 121 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8903.00 | ROEDERSTEI | D25 | |
| R260 | RG 68,1 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8849.00 | ROEDERSTEI | D25 | |
| R268 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R269 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R271 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R275 | RG 1,0 KO +-1%TK100 CHIP RESISTOR | 1206 | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R276 | RG 562 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R277 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R278 ..280 | RG 47,5 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5566.00 | ROEDERSTEI | D25 | |
| R281 | RG 301 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5643.00 | ROEDERSTEI | D25 | |
| R282 | RG 15,0 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5450.00 | ROEDERSTEI | D25 | |
| R283 | RG 301 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5643.00 | ROEDERSTEI | D25 | |
| R284 | RG 1,0 KO +-1%TK100 CHIP RESISTOR | 1206 | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R285 | RG 100 OHM+-1%TK100 CHIP RESISTOR | 1206 | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R286 | RG 4,75KOHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R287 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R288 | RG 22,1 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5489.00 | ROEDERSTEI | D25 | |
| R289 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R290 | RG 1,82KOHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5720.00 | ROEDERSTEI | D25 | |
| R291 | RG 150 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5589.00 | ROEDERSTEI | D25 | |
| R292 | RG 221 OHM+-1%TK100 RESISTOR CHIP | 1206 | RG 0007.5614.00 | ROEDERSTEI | D25 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| R293 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R294 | RG 562 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R296 | RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8849.00 | ROEDERSTEI | D25 | |
| R297 | RG 150 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5589.00 | ROEDERSTEI | D25 | |
| R298 | RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5520.00 | ROEDERSTEI | D25 | |
| R299 | RG 150 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5589.00 | ROEDERSTEI | D25 | |
| R400 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R402 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R403 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R404 | RG 332 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5650.00 | PHILIPS_CO | RC02 | |
| R405 | RS 0,25W2OKOHM +-20% SMD POTENTIOMETER NICHT BESTUECKT NOT FITTED | RS 0007.9655.00 | BOURNS | 3314G--1- | |
| R406 | RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5950.00 | ROEDERSTEI | D25 | |
| R407 | RG 100,OKOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R408 | RG 182 KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5989.00 | ROEDERSTEI | D25 | |
| R409 | RG 150 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5589.00 | ROEDERSTEI | D25 | |
| R410 | RG 100,OKOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R411 | RG 5,62KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0735.00 | ROEDERSTEI | D25 | |
| R412 | RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9968.00 | ROEDERSTEI | D25 | |
| R413 | RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5466.00 | ROEDERSTEI | D25 | |
| R415 | RG 243 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5620.00 | ROEDERSTEI | D25 | |
| R419 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R420 | RG 0,05W 100R +-1% 0805 RESISTOR | RG 0007.9003.00 | HONEST_JAP | RN 73 C(E)2X..F (1%) | |
| R421 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R422 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R424 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R425 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R426 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R428 | RG 0,05W 47R +-1% 0805 RESISTOR | RG 0007.8965.00 | HONEST_JAP | RN 73 C(E)2X..F (1%) | |
| R429 | RG 0,05W 47R +-1% 0805 RESISTOR | RG 0007.8965.00 | HONEST_JAP | RN 73 C(E)2X..F (1%) | |
| R430 | RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5566.00 | ROEDERSTEI | D25 | |
| R431 | RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5543.00 | ROEDERSTEI | D25 | |
| R432 | RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5543.00 | ROEDERSTEI | D25 | |
| R433 | RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5450.00 | ROEDERSTEI | D25 | |
| R434 | RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8849.00 | ROEDERSTEI | D25 | |
| R435 | RG 562 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R436 | RG 8,250HM+-1%TK100 1206 CHIP-RESISTOR | RG 0007.8488.00 | PHILIPS | RC 02 | |
| R437 | RG 562 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R438 | RG 150 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5589.00 | ROEDERSTEI | D25 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| R439 | RG 150 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5589.00 | ROEDERSTEI | D25 | |
| R440 | RS 0,25W5OKOHM +-20% SMD POTENTIOMETER | RS 0007.9661.00 | BOURNS | 3314G--1- | |
| R441 | RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8849.00 | ROEDERSTEI | D25 | |
| R442 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R443 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R444 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R448 | RG 100,OKOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1948.00 | ROEDERSTEI | D25 | |
| R451 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R453 | RG 392 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5672.00 | ROEDERSTEI | D25 | |
| R454 | RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5743.00 | ROEDERSTEI | D25 | |
| R455 | RG 3,92KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5808.00 | ROEDERSTEI | D25 | |
| R456 | RG 475 KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.6079.00 | ROEDERSTEI | D25 | |
| R457 | RG 1,OMOHM+-1%TK100 1206 CHIP RESISTOR | RG 0815.7532.00 | PHILIPS_CO | RC 02 | |
| R458 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R459 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R460 | RG 2,74OHM+-1%TK100 1206 CHIP-RESISTOR | RG 0007.8365.00 | PHILIPS | RC 02 | |
| R465 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R467 | RG 392 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5672.00 | ROEDERSTEI | D25 | |
| R468 | RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR | RG 0006.8649.00 | PHILIPS_CO | RC02 | |
| R469 | RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR | RG 0006.8649.00 | PHILIPS_CO | RC02 | |
| R471 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R472 | RG 274 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5637.00 | ROEDERSTEI | D25 | |
| R473 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R474 | RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0770.00 | ROEDERSTEI | D25 | |
| R475 | RG 182 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5595.00 | ROEDERSTEI | D25 | |
| R476 | RS 0,25W2OKOHM +-20% SMD POTENTIOMETER | RS 0007.9655.00 | BOURNS | 3314G--1- | |
| R477 ..479 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R480 | RG 825 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.7259.00 | ROEDERSTEI | D25 | |
| R481 | RG 681 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9080.00 | ROEDERSTEI | D25 | |
| R482 | RG 221 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R483 | RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5489.00 | ROEDERSTEI | D25 | |
| R485 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RC02 | |
| R486 | RG 221 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5614.00 | ROEDERSTEI | D25 | |
| R499 | RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5766.00 | PHILIPS_CO | RC02 | |
| R500 | RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R501 | RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R502 | RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RC02 | |
| R503 | RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RC02 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| R504 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R505 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R506 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R508 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R509 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RCO2 | |
| R510 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R511 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R512 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R513 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R514 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R515 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R516 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R517 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NICHT BESTUECKT/NOT FITTED | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R518 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R520 ..524 | RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5566.00 | ROEDERSTEI | D25 | |
| R525 ..529 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| R530 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R531 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R533 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R534 | RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR | RG 0007.0793.00 | PHILIPS_CO | RCO2 | |
| R545 | RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5843.00 | ROEDERSTEI | D25 | |
| R546 | RG 39,2KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5937.00 | ROEDERSTEI | D25 | |
| R547 | RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5820.00 | ROEDERSTEI | D25 | |
| R550 | RG 121,0KOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1960.00 | ROEDERSTEI | D25 | |
| R551 | RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0770.00 | ROEDERSTEI | D25 | |
| R552 | RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0770.00 | ROEDERSTEI | D25 | |
| R553 | RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5766.00 | PHILIPS_CO | RCO2 | |
| R554 | RG 56,2KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.1883.00 | ROEDERSTEI | D25 | |
| R555 | RG 121,0KOH+-1%TK100 1206 CHIP RESISTOR | RG 0007.1960.00 | ROEDERSTEI | D25 | |
| R556 | RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR | RG 0007.0770.00 | ROEDERSTEI | D25 | |
| R560 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RCO2 | |
| R561 | RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5914.00 | ROEDERSTEI | D25 | |
| R562 | RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR | RG 0006.7271.00 | PHILIPS_CO | RCO2 | |
| R563 | RG 18,2KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5850.00 | ROEDERSTEI | D25 | |
| R564 | RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5714.00 | ROEDERSTEI | D25 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| R565 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R567 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R568 | RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5843.00 | ROEDERSTEI | D25 | |
| R569 | RG 562 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.9068.00 | PHILIPS_CO | RC02 | |
| R571 | RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR | RG 0006.8649.00 | PHILIPS_CO | RC02 | |
| R572 | RG 100 OHM+-1%TK100 1206 CHIP RESISTOR | RG 0006.8884.00 | PHILIPS_CO | RC02 | |
| R579 | RG 475 OHM+-1%TK100 1206 RESISTOR CHIP | RG 0007.5695.00 | ROEDERSTEI | D25 | |
| V1 | AK BFS17 N 30V 50MA TRANSISTOR | AK 0010.6460.00 | VALVO | BFS17 | |
| V40 | AK BCX19 N 45V 500MA TRANSISTOR | 6014.2567.00 | PHILIPS_SE | BCX19 | |
| V41 | AM BSR56 N-D 40V JFET FET | AM 0007.3111.00 | VALVO | BSR56 | |
| V42 | AK BCX19 N 45V 500MA TRANSISTOR | 6014.2567.00 | PHILIPS_SE | BCX19 | |
| V43 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V44 | AM BSR56 N-D 40V JFET FET | AM 0007.3111.00 | VALVO | BSR56 | |
| V47 | AM BSR56 N-D 40V JFET FET | AM 0007.3111.00 | VALVO | BSR56 | |
| V50 | AM SST108 N-D 25V JFET JFET TRANSISTOR | 6007.3949.00 | SILICONIX | SST108 | |
| V51 | AM SST108 N-D 25V JFET JFET TRANSISTOR | 6007.3949.00 | SILICONIX | SST108 | |
| V52 | AD BAS16 75V UDI DIODE | AD 0007.4924.00 | VALVO | BAS16 (A6P) | |
| V53 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V54 | AK BCX19 N 45V 500MA TRANSISTOR | 6014.2567.00 | PHILIPS_SE | BCX19 | |
| V55 | AD BAS16 75V UDI DIODE | AD 0007.4924.00 | VALVO | BAS16 (A6P) | |
| V56 | AK BCX19 N 45V 500MA TRANSISTOR | 6014.2567.00 | PHILIPS_SE | BCX19 | |
| V57 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V70 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V75 | AE BZV55/C5V6 0.5W ZDI ZENER DIODE | AE 0006.9845.00 | PHILIPS | BZV55B5V6 | |
| V78 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V79 | AE BZX79B30 2% 0.5W ZDI ZENER | AE 0008.7633.00 | PHILIPS_SE | BZX79B30 | |
| V85 | AE 1N827 6,2V REFDI REFERENCE DIODE | AE 0418.0029.00 | COMPENSATE | 1N827(A) | |
| V95 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V100 | AE BB405B 11/ 2PF CDI TUNING DIODE | AE 0596.6839.00 | PHILIPS | BB405B | |
| V101 | AE BBY31 11/02PF CDI TUNNING DIODE | AE 0007.3128.00 | VALVO | BBY31 | |
| V105 | AK NE85639 N 12V 100MA TRANSISTOR | 1027.4161.00 | NEC | NE85639E | |
| V106 | AK BC850B N 45V 200MA TRANSISTOR | AK 0007.7969.00 | VALVO | BC850B | |
| V107 | AK BCX19 N 45V 500MA TRANSISTOR | 6014.2567.00 | PHILIPS_SE | BCX19 | |
| V108 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V120 | AE BB405B 11/ 2PF CDI TUNING DIODE | AE 0596.6839.00 | PHILIPS | BB405B | |
| V122 | AE BBY31 11/02PF CDI TUNNING DIODE | AE 0007.3128.00 | VALVO | BBY31 | |
| V125 | AK NE85639 N 12V 100MA TRANSISTOR | 1027.4161.00 | NEC | NE85639E | |
| V126 | AK BC850B N 45V 200MA TRANSISTOR | AK 0007.7969.00 | VALVO | BC850B | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| V127 | AK BCX19 N 45V 500MA TRANSISTOR | 6014.2567.00 | PHILIPS_SE | BCX19 | |
| V128 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V140 | AE HSMS2810 SCHOTTKY DIODE | 0520.7340.00 | HEWLETT_PA | HSMS2810 | |
| V210 | AK BCP68-16 N 20V TRANS TRANSISTOR BCP68 | 0008.2019.00 | PHILIPS | BCP68-25 | |
| V211 | AE BZV55/C6V2 0,5W ZDI ZENER DIODE | AE 0006.9851.00 | PHILIPS | BZV55B6V2 | |
| V259 | AE BAR14-1 2X 100V PIN PIN DIODE | 0820.3283.00 | SIEMENS | BAR14-1 | |
| V260 | AE BAR14-1 2X 100V PIN PIN DIODE | 0820.3283.00 | SIEMENS | BAR14-1 | |
| V270 | AE BAR14-1 2X 100V PIN PIN DIODE | 0820.3283.00 | SIEMENS | BAR14-1 | |
| V275 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V276 ..280 | AE BAR14-1 2X 100V PIN PIN DIODE | 0820.3283.00 | SIEMENS | BAR14-1 | |
| V285 | AE HSMS2810 SCHOTTKY DIODE | 0520.7340.00 | HEWLETT_PA | HSMS2810 | |
| V287 | AK BCX17 P 45V 500MA TRANSISTOR | AK 0007.2080.00 | PHILIPS | BCX17 | |
| V400 | AK BFG97 NPN 15V 100MA TRANSISTOR BFG97 | 0008.1741.00 | PHILIPS | BFG97 | |
| V401 | AE 5082-0833 25V STEPRDI DIODE | AE 0343.0086.00 | HEWLETT_PA | HP5082-0833 | |
| V402 | AK BCP68-16 N 20V TRANS TRANSISTOR BCP68 | 0008.2019.00 | PHILIPS | BCP68-25 | |
| V403 | AE HSMS2810 SCHOTTKY DIODE | 0520.7340.00 | HEWLETT_PA | HSMS2810 | |
| V405 | AD BAS16 75V UDI DIODE | AD 0007.4924.00 | VALVO | BAS16 (A6P) | |
| V406 | AD BAS16 75V UDI DIODE | AD 0007.4924.00 | VALVO | BAS16 (A6P) | |
| V407 | AK BFG97 NPN 15V 100MA TRANSISTOR BFG97 | 0008.1741.00 | PHILIPS | BFG97 | |
| V408 | AK BFG31 PNP 100MA TRANSISTOR | 0009.7672.00 | PHILIPS | BFG31 | |
| V420 | AE HSMS2812 2XSCHOTTKY SCHOTTKY DIODE | 0520.7528.00 | HEWLETT_PA | HSMS2812 L31 | |
| V421 | AE HSMS2812 2XSCHOTTKY SCHOTTKY DIODE | 0520.7528.00 | HEWLETT_PA | HSMS2812 L31 | |
| V440 | AE BAR14-1 2X 100V PIN PIN DIODE | 0820.3283.00 | SIEMENS | BAR14-1 | |
| V445 | AE HSMS2810 SCHOTTKY DIODE | 0520.7340.00 | HEWLETT_PA | HSMS2810 | |
| V450 | AM SST310 N-D 25V JFET JFET | 1036.4577.00 | SILICONIX | SST310 | |
| V453 | AE BAR14-1 2X 100V PIN PIN DIODE | 0820.3283.00 | SIEMENS | BAR14-1 | |
| V455 | AK BFG97 NPN 15V 100MA TRANSISTOR BFG97 | 0008.1741.00 | PHILIPS | BFG97 | |
| V456 | AE HSMS2800 SCHOTTKY DIODE | AE 0836.8421.00 | HEWLETT_PA | HSMS-2800(#L31) | |
| V457 | AE HSMS2800 SCHOTTKY DIODE | AE 0836.8421.00 | HEWLETT_PA | HSMS-2800(#L31) | |
| V554 | AD BAS16 75V UDI DIODE | AD 0007.4924.00 | VALVO | BAS16 (A6P) | |
| V565 | AE BZV55/C5V6 0.5W ZDI ZENER DIODE | AE 0006.9845.00 | PHILIPS | BZV55B5V6 | |
| W1 | DW HF-KABEL W1 | 1038.7309.00 | | | |
| W2 | DW HF-KABEL W2 | 1038.7315.00 | | | |
| X90 | FP STECKERLEISTE 32POL. CONNECTOR 32P. | FP 0008.5718.00 | DEUT_ELCO | 16 8457 064 002 027 | |
| X91 | FJ EINBAUWINKELST. SMC ANGLE CONNECTOR | FJ 0249.9684.00 | IMS | 82.1524.201 | |
| X97 | FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR | FJ 0602.8804.00 | IMS | 81.1524.201 | |
| X99 | FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR | FJ 0602.8804.00 | IMS | 81.1524.201 | |
| X15A | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X15B | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |

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| Kennz. Comp. No. | Benennung Designation | Sachnummer Stock No. | Hersteller Manufacturer | Bezeichnung Designation | enthalten in contained in |
|---|---|---|---|---|---|
| X15C | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X16A | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X16B | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X20A | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X20B | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X20C | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X20D | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X30A | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X30B | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X47A | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X47B | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X47C | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X47D | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X50A | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X50B | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X50C | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| X50D | VL EINPRESSSTIFT L=6,8 PIN | VL 0010.7250.00 | AMP | 1-928776-5 | |
| Z90 | LD SMD-T-FILTER 3,3NF SMD-FILTER | 1039.1362.00 | MURATA | NFM61R20T332T1 | |
| Z405 | LD SMD-T-FILTER 3,3NF SMD-FILTER | 1039.1362.00 | MURATA | NFM61R20T332T1 | |
| Z520 ..524 | LD SMD-T-FILTER 100PF SMD-FILTER | 1039.1356.00 | MURATA | NFM61R00T101T1 | |
| Z580 ..584 | LD SMD-T-FILTER 3,3NF SMD-FILTER | 1039.1362.00 | MURATA | NFM61R20T332T1 | |

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ROHDE&SCHWARZ

# XY-Liste

# XY List

**Erklärung der Spaltenbezeichnungen:**

Part: Bauelement-Kennzeichen.

Side: Leiterplatten-Seite, auf der sich das Bauelement befindet.

X/Y: Koordinaten (Millimeter) des Bauelementes auf der Leiterplatte bezogen auf den Nullpunkt.

SQR, PG: Planquadrat und Seite des Schaltbildes für das jeweilige Bauelement.

**Explanation of column designations:**

Part: Identification of instrument part.

Side: Side of the PC board on which instrument part is positioned.

X/Y: Coordinates (millimeter) of the component on the PC board in reference to zero point.

SQR, PG: Square and page of the diagram for the respective instrument part.

14m

## Service-Relevante Bauteile / Service-Relevant Components

| Part | Side | X | Y | Sqr | Pg |
|---|---|---|---|---|---|
| L403 | B | 218 | 32 | 4E | 5 |
| MP9 | B | 297 | 50 | 4C | 2 |
| MP30 | B | 240 | 127 | 7C | 2 |
| MP32 | B | 146 | 126 | 11C | 2 |
| MP33 | B | 157 | 124 | 9F | 2 |
| MP35 | B | 15 | 97 | 8C | 3 |
| MP36 | B | 86 | 102 | 8E | 3 |
| MP37 | B | 232 | 29 | 3E | 5 |
| MP40 | B | 150 | 70 | 9B | 6 |
| MP41 | B | 166 | 109 | 5C | 5 |
| MP55 | B | 138 | 51 | 5A | 6 |
| MP56 | B | 150 | 53 | 9E | 6 |
| MP57 | B | 138 | 81 | 11F | 6 |
| MP58 | B | 143 | 81 | 10D | 6 |
| MP68 | B | 266 | 113 | 10E | 5 |
| MP70 | B | 192 | 138 | 3F | 2 |
| MP80 | B | 178 | 139 | 12D | 2 |
| P30 | B | 237 | 127 | 7C | 2 |
| R405 | B | 234 | 32 | 4E | 5 |
| R440 | B | 179 | 109 | 5C | 5 |
| R476 | B | 248 | 111 | 10C | 5 |
| T405 | B | 218 | 49 | 4E | 5 |
| X15A | B | 166 | 135 | 9E | 2 |
| X15B | B | 163 | 135 | 9E | 2 |
| X15C | B | 166 | 137 | 9E | 2 |
| X20A | B | 240 | 122 | 7B | 2 |
| X20B | B | 237 | 122 | 7B | 2 |
| X20C | B | 237 | 124 | 7B | 2 |
| X20D | B | 240 | 124 | 7B | 2 |
| X30A | B | 108 | 138 | 8B | 2 |
| X30B | B | 108 | 141 | 8B | 2 |
| X47A | B | 242 | 94 | 12C | 5 |
| X47B | B | 242 | 91 | 12C | 5 |
| X47C | B | 239 | 91 | 12C | 5 |
| X47D | B | 239 | 94 | 12C | 5 |
| X50A | B | 80 | 125 | 11C | 2 |
| X50B | B | 77 | 125 | 11C | 2 |
| X50C | B | 80 | 128 | 11C | 2 |
| X50D | B | 77 | 128 | 11C | 2 |
| X90A | B | 189 | 11 | 1C | 6 |
| X90C | B | 189 | 11 | 1D | 6 |
| X91 | B | 17 | 15 | 12D | 4 |
| X97 | B | 271 | 15 | 1E | 5 |
| X99 | B | 296 | 15 | 2B | 2 |
| Z90 | B | 277 | 46 | 2C | 2 |
| Z405 | B | 204 | 25 | 2D | 5 |
| Z520 | B | 197 | 37 | 4D | 6 |
| Z521 | B | 146 | 37 | 4D | 6 |
| Z522 | B | 192 | 37 | 4C | 6 |
| Z523 | B | 141 | 37 | 4C | 6 |
| Z524 | B | 136 | 37 | 4B | 6 |
| Z580 | B | 202 | 37 | 4F | 6 |
| Z581 | B | 131 | 37 | 4F | 6 |
| Z582 | B | 126 | 37 | 4E | 6 |
| Z583 | B | 93 | 33 | 4E | 6 |
| Z584 | B | 93 | 28 | 4A | 6 |

## Nicht-Service-Relevante Bauteile / Non-Service-Relevant Components

| Part | Side | X | Y | Sqr | Pg |
|---|---|---|---|---|---|
| C1 | B | 291 | 26 | 2B | 2 |
| C3 | B | 285 | 41 | 3B | 2 |
| C4 | B | 300 | 48 | 4C | 2 |
| C5 | B | 292 | 46 | 3B | 2 |
| C6 | B | 296 | 60 | 4B | 2 |
| C8 | A | 193 | 129 | 8E | 2 |
| C10 | A | 204 | 135 | 3D | 2 |
| C11 | B | 213 | 137 | 7E | 2 |
| C12 | A | 190 | 136 | 7E | 2 |
| C15 | A | 166 | 124 | 9E | 2 |
| C18 | A | 168 | 135 | 10E | 2 |
| C19 | A | 181 | 127 | 11E | 2 |
| C20 | B | 243 | 139 | 7B | 2 |
| C21 | B | 241 | 139 | 7B | 2 |
| C22 | B | 279 | 126 | 6B | 2 |
| C23 | B | 273 | 124 | 6C | 2 |
| C24 | B | 258 | 124 | 6C | 2 |
| C25 | B | 264 | 126 | 6B | 2 |
| C26 | B | 248 | 126 | 7B | 2 |
| C27 | A | 137 | 129 | 2D | 2 |
| C28 | B | 273 | 127 | 6C | 2 |
| C30 | B | 108 | 135 | 8B | 2 |
| C31 | B | 100 | 129 | 9C | 2 |
| C34 | A | 123 | 123 | 8B | 2 |
| C38 | B | 108 | 124 | 8C | 2 |
| C39 | B | 129 | 140 | 7B | 2 |
| C50 | B | 82 | 131 | 11B | 2 |
| C51 | B | 90 | 131 | 10B | 2 |
| C52 | B | 90 | 125 | 10C | 2 |
| C70 | B | 283 | 136 | 3E | 2 |
| C71 | B | 247 | 137 | 2E | 2 |
| C72 | B | 265 | 138 | 3F | 2 |
| C73 | B | 236 | 133 | 1E | 2 |
| C80 | B | 175 | 140 | 12D | 2 |
| C90 | A | 218 | 129 | 11D | 2 |
| C91 | A | 231 | 129 | 11C | 2 |
| C100 | B | 57 | 135 | 2E | 3 |
| C101 | B | 68 | 119 | 3D | 3 |
| C104 | B | 56 | 111 | 4E | 3 |
| C105 | B | 56 | 110 | 4E | 3 |
| C106 | B | 53 | 103 | 4E | 3 |
| C107 | B | 55 | 102 | 5D | 3 |
| C108 | B | 73 | 107 | 7B | 3 |
| C119 | B | 68 | 93 | 7F | 3 |
| C120 | B | 27 | 130 | 2B | 3 |
| C121 | B | 16 | 125 | 3B | 3 |
| C122 | B | 12 | 127 | 2B | 3 |
| C123 | B | 16 | 110 | 4B | 3 |
| C124 | B | 26 | 116 | 4B | 3 |
| C125 | B | 25 | 115 | 4B | 3 |
| C126 | B | 23 | 108 | 4B | 3 |
| C127 | B | 25 | 107 | 5B | 3 |
| C128 | B | 39 | 95 | 7C | 3 |
| C140 | B | 37 | 113 | 10D | 3 |
| C141 | B | 48 | 96 | 10D | 3 |
| C142 | B | 38 | 92 | 10C | 3 |
| C143 | B | 57 | 82 | 11D | 3 |
| C144 | B | 27 | 96 | 11C | 3 |
| C210 | B | 74 | 74 | 2A | 4 |
| C236 | A | 33 | 14 | 11D | 4 |
| C250 | A | 61 | 82 | 3E | 4 |
| C251 | B | 51 | 72 | 3D | 4 |
| C255 | B | 69 | 72 | 2D | 4 |
| C257 | A | 28 | 82 | 4E | 4 |
| C259 | B | 34 | 47 | 7D | 4 |
| C260 | B | 29 | 64 | 4D | 4 |
| C261 | B | 23 | 51 | 6D | 4 |
| C263 | B | 45 | 47 | 8D | 4 |
| C264 | A | 31 | 30 | 7D | 4 |
| C265 | B | 23 | 64 | 5D | 4 |
| C266 | A | 24 | 64 | 6D | 4 |
| C268 | A | 39 | 48 | 8D | 4 |
| C269 | A | 15 | 70 | 4E | 4 |
| C271 | A | 32 | 65 | 4B | 4 |
| C272 | B | 41 | 69 | 4C | 4 |
| C273 | B | 54 | 61 | 5C | 4 |
| C274 | B | 67 | 55 | 6C | 4 |
| C275 | B | 84 | 52 | 7C | 4 |
| C276 | A | 77 | 62 | 7B | 4 |
| C277 | A | 62 | 40 | 8B | 4 |
| C279 | A | 54 | 51 | 5B | 4 |
| C280 | B | 63 | 35 | 9D | 4 |
| C281 | A | 41 | 26 | 10D | 4 |
| C282 | B | 50 | 13 | 10D | 4 |
| C283 | B | 20 | 22 | 11C | 4 |
| C284 | B | 24 | 32 | 11C | 4 |
| C285 | B | 65 | 30 | 9D | 4 |
| C286 | B | 67 | 44 | 8C | 4 |
| C287 | B | 68 | 13 | 9D | 4 |
| C288 | B | 26 | 51 | 6D | 4 |
| C289 | B | 67 | 57 | 6C | 4 |
| C290 | B | 24 | 21 | 11D | 4 |
| C291 | B | 41 | 22 | 10D | 4 |
| C292 | A | 43 | 65 | 5B | 4 |
| C294 | A | 57 | 63 | 6C | 4 |
| C295 | A | 50 | 60 | 5A | 4 |
| C400 | B | 271 | 23 | 1E | 5 |
| C401 | B | 239 | 42 | 2F | 5 |
| C402 | B | 252 | 48 | 1F | 5 |
| C403 | A | 236 | 48 | 2F | 5 |
| C404 | B | 251 | 22 | 2E | 5 |
| C405 | B | 232 | 22 | 3E | 5 |
| C406 | B | 252 | 41 | 1F | 5 |
| C407 | B | 218 | 39 | 4E | 5 |
| C408 | B | 218 | 45 | 4E | 5 |
| C409 | B | 214 | 30 | 4F | 5 |
| C420 | B | 217 | 69 | 5E | 5 |
| C421 | B | 221 | 69 | 5E | 5 |
| C422 | A | 220 | 83 | 6E | 5 |
| C429 | B | 127 | 96 | 3B | 5 |
| C430 | B | 76 | 82 | 2B | 5 |
| C431 | B | 106 | 96 | 3B | 5 |
| C432 | B | 113 | 96 | 3B | 5 |
| C433 | B | 120 | 96 | 3B | 5 |
| C434 | B | 146 | 96 | 4B | 5 |
| C435 | B | 164 | 96 | 5B | 5 |
| C436 | B | 179 | 96 | 6B | 5 |
| C437 | B | 197 | 96 | 6B | 5 |
| C438 | B | 204 | 96 | 7B | 5 |
| C439 | B | 203 | 109 | 6A | 5 |
| C440 | A | 187 | 102 | 6C | 5 |
| C441 | A | 104 | 107 | 2C | 5 |
| C442 | A | 137 | 107 | 4C | 5 |
| C443 | B | 170 | 106 | 5B | 5 |
| C445 | A | 247 | 93 | 11D | 5 |
| C448 | B | 244 | 70 | 8E | 5 |
| C449 | B | 238 | 72 | 7D | 5 |
| C450 | A | 241 | 75 | 7E | 5 |
| C451 | B | 247 | 67 | 8E | 5 |
| C453 | B | 241 | 80 | 7E | 5 |
| C454 | B | 271 | 67 | 9E | 5 |
| C455 | B | 275 | 74 | 9E | 5 |
| C456 | B | 269 | 80 | 9E | 5 |
| C457 | B | 274 | 95 | 10E | 5 |
| C458 | B | 275 | 89 | 10E | 5 |
| C459 | B | 267 | 104 | 10E | 5 |
| C460 | B | 252 | 78 | 10D | 5 |
| C461 | B | 252 | 81 | 10D | 5 |
| C462 | B | 265 | 77 | 9E | 5 |
| C463 | B | 257 | 94 | 10D | 5 |
| C465 | A | 228 | 85 | 7E | 5 |
| C466 | B | 238 | 85 | 7E | 5 |
| C468 | B | 268 | 60 | 9E | 5 |
| C470 | B | 251 | 92 | 8B | 5 |
| C471 | B | 242 | 100 | 11D | 5 |
| C472 | B | 237 | 103 | 10C | 5 |
| C478 | B | 252 | 100 | 11C | 5 |
| C479 | B | 263 | 102 | 11C | 5 |
| C485 | B | 262 | 83 | 9C | 5 |
| C495 | B | 276 | 95 | 10E | 5 |
| C498 | B | 224 | 20 | 4D | 5 |
| C499 | B | 232 | 17 | 3E | 5 |
| C545 | A | 114 | 72 | 8D | 6 |
| C551 | A | 168 | 66 | 11E | 6 |
| C554 | A | 171 | 72 | 8C | 6 |
| C561 | A | 146 | 57 | 9E | 6 |
| C562 | A | 152 | 63 | 9E | 6 |
| C565 | B | 128 | 72 | 11C | 6 |
| C567 | A | 157 | 66 | 11D | 6 |

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|---|---|---|---|---|---|
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| Part | Side | X | Y | Sqr | Pg |
|---|---|---|---|---|---|
| C570 | B | 187 | 61 | 9D | 6 |
| C571 | B | 134 | 68 | 9C | 6 |
| C573 | B | 93 | 66 | 11D | 6 |
| C579 | A | 150 | 76 | 9B | 6 |
| C580 | B | 191 | 29 | 4F | 6 |
| C581 | B | 134 | 34 | 4F | 6 |
| C582 | B | 119 | 32 | 4E | 6 |
| C583 | B | 119 | 21 | 4E | 6 |
| C584 | B | 98 | 25 | 4A | 6 |
| C589 | B | 134 | 19 | 3E | 6 |
| D1 | B | 289 | 107 | 5B | 2 |
| D10-A | B | 197 | 137 | 6E | 2 |
| D10-B | | | | 3D | 2 |
| D20-A | B | 131 | 135 | 4F | 2 |
| D20-B | | | | 2D | 2 |
| D260 | B | 28 | 61 | 5D | 4 |
| D270 | B | 57 | 60 | 5C | 4 |
| D500-A | B | 160 | 26 | 2D | 6 |
| D500-B | | | | 2C | 6 |
| D530-A | B | 106 | 70 | 6E | 6 |
| D530-B | | | | 10D | 6 |
| D531-A | B | 106 | 57 | 6D | 6 |
| D531-B | | | | 11D | 6 |
| D532-A | B | 187 | 67 | 6C | 6 |
| D532-B | | | | 10D | 6 |
| D533-A | B | 196 | 76 | 6B | 6 |
| D533-B | | | | 9D | 6 |
| D540-A | B | 124 | 70 | 7E | 6 |
| D540-B | | | | 11C | 6 |
| D545-A | B | 126 | 57 | 7F | 6 |
| D545-B | | | | 8C | 6 |
| D545-C | | | | 11B | 6 |
| D545-D | | | | 11B | 6 |
| D545-E | | | | 9C | 6 |
| D560-A | B | 149 | 57 | 9F | 6 |
| D560-B | | | | 9E | 6 |
| D560-C | | | | 10C | 6 |
| D570-A | B | 147 | 70 | 9B | 6 |
| D570-B | | | | 10F | 6 |
| D570-C | | | | 11F | 6 |
| D570-D | | | | 10B | 6 |
| D570-E | | | | 10C | 6 |
| L6 | B | 292 | 63 | 4B | 2 |
| L18 | B | 162 | 128 | 11F | 2 |
| L20 | B | 281 | 122 | 5B | 2 |
| L21 | B | 266 | 122 | 6B | 2 |
| L22 | B | 251 | 122 | 7B | 2 |
| L26 | B | 243 | 122 | 7B | 2 |
| L90 | B | 274 | 46 | 2C | 2 |
| L91 | B | 288 | 51 | 3C | 2 |
| L100 | B | 59 | 136 | 2E | 3 |
| L102 | B | 60 | 116 | 3E | 3 |
| L103 | B | 54 | 109 | 4E | 3 |
| L105 | B | 63 | 106 | 5E | 3 |
| L109 | A | 76 | 97 | 7B | 3 |

| Part | Side | X | Y | Sqr | Pg |
|---|---|---|---|---|---|
| L120 | B | 25 | 131 | 2B | 3 |
| L122 | B | 24 | 124 | 3B | 3 |
| L123 | B | 23 | 114 | 4B | 3 |
| L125 | B | 32 | 111 | 5B | 3 |
| L140 | B | 45 | 97 | 10D | 3 |
| L160 | B | 55 | 125 | 2C | 3 |
| L161 | B | 29 | 130 | 2D | 3 |
| L179 | B | 57 | 31 | 8B | 4 |
| L250 | B | 55 | 76 | 3D | 4 |
| L251 | A | 70 | 79 | 3E | 4 |
| L256 | B | 19 | 79 | 4E | 4 |
| L260 | B | 34 | 41 | 7D | 4 |
| L261 | A | 37 | 30 | 7E | 4 |
| L262 | A | 45 | 30 | 7E | 4 |
| L263 | B | 46 | 53 | 8C | 4 |
| L264 | B | 86 | 41 | 7B | 4 |
| L268 | B | 41 | 41 | 8D | 4 |
| L269 | B | 26 | 67 | 4D | 4 |
| L271 | B | 38 | 65 | 4B | 4 |
| L272 | B | 48 | 65 | 5B | 4 |
| L277 | B | 60 | 41 | 8B | 4 |
| L280 | B | 57 | 16 | 10D | 4 |
| L285 | B | 27 | 15 | 11D | 4 |
| L286 | A | 36 | 11 | 10E | 4 |
| L293 | B | 81 | 58 | 7B | 4 |
| L401 | B | 226 | 13 | 3E | 5 |
| L404 | B | 203 | 29 | 2D | 5 |
| L405 | B | 213 | 18 | 2D | 5 |
| L430 | B | 102 | 99 | 3C | 5 |
| L431 | A | 112 | 111 | 3C | 5 |
| L432 | A | 132 | 107 | 3C | 5 |
| L433 | B | 142 | 99 | 4C | 5 |
| L434 | B | 194 | 99 | 6C | 5 |
| L435 | A | 180 | 102 | 6C | 5 |
| L450 | A | 247 | 72 | 7E | 5 |
| L451 | A | 257 | 77 | 7F | 5 |
| L452 | B | 271 | 86 | 10E | 5 |
| L453 | B | 271 | 102 | 10E | 5 |
| L454 | B | 244 | 83 | 8E | 5 |
| L456 | B | 236 | 78 | 7E | 5 |
| L570 | B | 181 | 58 | 9D | 6 |
| L580 | B | 199 | 33 | 4F | 6 |
| L581 | B | 141 | 32 | 4F | 6 |
| L582 | B | 110 | 32 | 4E | 6 |
| L583 | B | 127 | 32 | 4E | 6 |
| L584 | B | 105 | 32 | 4A | 6 |
| L589 | B | 132 | 15 | 4E | 6 |
| MP21 | B | 75 | 61 | 3A | 4 |
| MP34 | B | 93 | 122 | 9C | 2 |
| MP67 | B | 247 | 80 | 8E | 5 |
| MP69 | B | 237 | 94 | 12C | 5 |
| N10 | B | 185 | 135 | 7E | 2 |
| N15-A | B | 181 | 127 | 8E | 2 |
| N15-B | | | | 11D | 2 |
| N15-C | | | | 11F | 2 |

| Part | Side | X | Y | Sqr | Pg |
|---|---|---|---|---|---|
| N17 | B | 227 | 129 | 10C | 2 |
| N30 | B | 121 | 127 | 7C | 2 |
| N140 | B | 41 | 105 | 10D | 3 |
| N250 | B | 63 | 72 | 2D | 4 |
| N260 | B | 26 | 44 | 6D | 4 |
| N270 | B | 73 | 55 | 6C | 4 |
| N280 | B | 65 | 13 | 9D | 4 |
| N290 | B | 38 | 22 | 10D | 4 |
| N430 | B | 94 | 96 | 2B | 5 |
| N435 | B | 134 | 96 | 4B | 5 |
| N438 | B | 186 | 96 | 6B | 5 |
| N470 | B | 248 | 102 | 11C | 5 |
| N550-A | B | 157 | 66 | 7C | 6 |
| N550-B | | | | 7C | 6 |
| N550-C | | | | 11E | 6 |
| KP1 | B | 17 | 20 | 11D | 4 |
| KP2 | B | 17 | 22 | 11D | 4 |
| KP3 | B | 20 | 27 | 11C | 4 |
| KP4 | B | 42 | 88 | 10D | 3 |
| KP5 | B | 209 | 96 | 7B | 5 |
| P9 | B | 297 | 47 | 4C | 2 |
| P32 | B | 144 | 126 | 11C | 2 |
| P33 | B | 155 | 124 | 9F | 2 |
| P40 | B | 150 | 73 | 9B | 6 |
| P55 | B | 138 | 54 | 5A | 6 |
| P56 | B | 153 | 53 | 9E | 6 |
| P57 | B | 135 | 81 | 11F | 6 |
| P58 | B | 140 | 81 | 10D | 6 |
| P70 | B | 192 | 141 | 3F | 2 |
| P80 | B | 181 | 139 | 12D | 2 |
| R1 | B | 292 | 21 | 2B | 2 |
| R3 | B | 291 | 33 | 2B | 2 |
| R4 | B | 285 | 38 | 3B | 2 |
| R5 | B | 292 | 41 | 3C | 2 |
| R7 | B | 299 | 36 | 3B | 2 |
| R8 | B | 199 | 126 | 8F | 2 |
| R9 | B | 292 | 52 | 4B | 2 |
| R10 | B | 207 | 126 | 3E | 2 |
| R11 | A | 211 | 140 | 7F | 2 |
| R12 | A | 201 | 140 | 7F | 2 |
| R13 | A | 190 | 133 | 8E | 2 |
| R14 | A | 178 | 123 | 8E | 2 |
| R15 | A | 162 | 130 | 9E | 2 |
| R16 | A | 163 | 124 | 9F | 2 |
| R17 | A | 166 | 132 | 9E | 2 |
| R18 | A | 166 | 127 | 9E | 2 |
| R19 | A | 186 | 138 | 11E | 2 |
| R20 | A | 195 | 140 | 6F | 2 |
| R21 | B | 127 | 132 | 6D | 2 |
| R22 | B | 123 | 130 | 7C | 2 |
| R23 | A | 135 | 125 | 2D | 2 |
| R25 | B | 246 | 126 | 7C | 2 |
| R27 | A | 119 | 137 | 7B | 2 |
| R28 | B | 127 | 121 | 7B | 2 |
| R29 | B | 295 | 114 | 5B | 2 |

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| Part | Side | X | Y | Sqr | Pg |
|---|---|---|---|---|---|
| R30 | B | 112 | 138 | 8B | 2 |
| R31 | B | 100 | 131 | 9C | 2 |
| R32 | A | 116 | 123 | 8B | 2 |
| R33 | A | 123 | 126 | 9B | 2 |
| R34 | A | 123 | 121 | 8B | 2 |
| R35 | A | 113 | 138 | 8B | 2 |
| R36 | A | 123 | 130 | 8B | 2 |
| R38 | A | 113 | 122 | 7C | 2 |
| R39 | A | 129 | 140 | 7B | 2 |
| R40 | A | 149 | 140 | 9D | 2 |
| R41 | A | 149 | 137 | 9D | 2 |
| R42 | A | 149 | 135 | 9D | 2 |
| R43 | A | 123 | 133 | 9E | 2 |
| R44 | A | 140 | 134 | 9C | 2 |
| R45 | A | 141 | 138 | 9C | 2 |
| R46 | A | 146 | 134 | 9D | 2 |
| R47 | A | 149 | 130 | 8D | 2 |
| R48 | A | 152 | 132 | 8D | 2 |
| R49 | B | 100 | 135 | 9B | 2 |
| R50 | B | 87 | 125 | 11C | 2 |
| R51 | B | 93 | 125 | 9C | 2 |
| R52 | B | 91 | 140 | 10B | 2 |
| R53 | A | 102 | 140 | 10B | 2 |
| R54 | A | 104 | 124 | 9B | 2 |
| R55 | A | 105 | 135 | 10B | 2 |
| R56 | A | 102 | 138 | 10B | 2 |
| R57 | A | 106 | 124 | 9B | 2 |
| R58 | A | 149 | 127 | 11C | 2 |
| R59 | A | 160 | 124 | 9F | 2 |
| R60 | B | 140 | 131 | 5E | 2 |
| R61 | B | 140 | 133 | 5E | 2 |
| R62 | B | 140 | 136 | 5E | 2 |
| R63 | B | 140 | 128 | 5E | 2 |
| R64 | B | 127 | 135 | 5E | 2 |
| R65 | B | 127 | 124 | 5E | 2 |
| R66 | B | 133 | 137 | 5E | 2 |
| R67 | B | 127 | 127 | 5E | 2 |
| R68 | A | 132 | 123 | 4E | 2 |
| R70 | A | 269 | 137 | 2E | 2 |
| R71 | A | 261 | 132 | 3E | 2 |
| R72 | A | 263 | 137 | 2E | 2 |
| R73 | A | 255 | 137 | 2F | 2 |
| R75 | B | 292 | 43 | 3C | 2 |
| R76 | B | 163 | 137 | 9E | 2 |
| R77 | B | 162 | 132 | 9E | 2 |
| R78 | B | 235 | 138 | 1F | 2 |
| R79 | B | 235 | 135 | 1E | 2 |
| R80 | A | 175 | 126 | 10E | 2 |
| R81 | A | 175 | 128 | 11D | 2 |
| R82 | A | 175 | 136 | 11E | 2 |
| R83 | A | 178 | 133 | 11E | 2 |
| R84 | A | 173 | 131 | 11D | 2 |
| R86 | B | 103 | 130 | 9B | 2 |
| R89 | B | 288 | 81 | 5B | 2 |
| R90 | B | 222 | 126 | 11D | 2 |
| R91 | B | 214 | 133 | 10C | 2 |
| R92 | B | 115 | 141 | 10C | 2 |
| R93 | B | 238 | 139 | 10C | 2 |
| R94 | A | 216 | 125 | 11D | 2 |
| R95 | A | 234 | 129 | 11C | 2 |
| R96 | B | 140 | 138 | 7D | 2 |
| R97 | B | 145 | 141 | 7D | 2 |
| R98 | A | 132 | 137 | 7D | 2 |
| R99 | B | 292 | 73 | 4B | 2 |
| R101 | B | 65 | 115 | 3D | 3 |
| R103 | B | 48 | 108 | 4E | 3 |
| R105 | B | 55 | 106 | 4E | 3 |
| R106 | B | 51 | 102 | 4F | 3 |
| R107 | B | 47 | 99 | 4F | 3 |
| R108 | B | 49 | 104 | 4F | 3 |
| R109 | B | 68 | 95 | 6E | 3 |
| R110 | B | 65 | 95 | 5E | 3 |
| R111 | B | 63 | 99 | 5E | 3 |
| R112 | A | 65 | 90 | 6E | 3 |
| R113 | A | 64 | 97 | 7E | 3 |
| R114 | A | 70 | 106 | 7E | 3 |
| R115 | A | 73 | 102 | 8E | 3 |
| R116 | A | 83 | 102 | 8E | 3 |
| R120 | A | 15 | 125 | 2B | 3 |
| R121 | B | 18 | 121 | 3B | 3 |
| R122 | B | 18 | 113 | 4B | 3 |
| R123 | A | 17 | 113 | 4B | 3 |
| R125 | B | 24 | 111 | 4B | 3 |
| R126 | B | 20 | 108 | 4C | 3 |
| R127 | B | 17 | 100 | 4C | 3 |
| R128 | B | 16 | 105 | 4C | 3 |
| R129 | B | 36 | 96 | 6C | 3 |
| R130 | B | 34 | 96 | 5C | 3 |
| R131 | B | 31 | 100 | 5B | 3 |
| R132 | A | 25 | 93 | 6B | 3 |
| R133 | A | 28 | 90 | 7B | 3 |
| R134 | A | 15 | 91 | 7C | 3 |
| R135 | A | 17 | 95 | 8C | 3 |
| R136 | A | 17 | 97 | 8C | 3 |
| R141 | A | 55 | 97 | 10D | 3 |
| R142 | B | 27 | 93 | 10C | 3 |
| R143 | B | 30 | 91 | 10C | 3 |
| R144 | A | 23 | 99 | 11C | 3 |
| R160 | B | 52 | 116 | 3C | 3 |
| R179 | B | 57 | 25 | 8B | 4 |
| R210 | B | 83 | 64 | 1B | 4 |
| R211 | B | 86 | 61 | 3B | 4 |
| R212 | B | 82 | 75 | 1B | 4 |
| R236 | A | 30 | 11 | 11E | 4 |
| R237 | B | 44 | 13 | 10D | 4 |
| R238 | B | 48 | 15 | 10D | 4 |
| R239 | B | 51 | 22 | 10D | 4 |
| R245 | B | 64 | 82 | 2D | 4 |
| R247 | B | 69 | 79 | 2D | 4 |
| R248 | B | 74 | 82 | 2D | 4 |
| R250 | A | 55 | 79 | 3D | 4 |
| R251 | B | 42 | 72 | 3D | 4 |
| R252 | B | 45 | 73 | 3D | 4 |
| R253 | B | 36 | 72 | 3D | 4 |
| R256 | A | 23 | 82 | 4E | 4 |
| R260 | A | 34 | 33 | 7E | 4 |
| R268 | A | 41 | 44 | 8E | 4 |
| R269 | A | 18 | 67 | 4E | 4 |
| R271 | A | 35 | 65 | 4B | 4 |
| R275 | A | 25 | 74 | 5E | 4 |
| R276 | A | 18 | 70 | 5E | 4 |
| R277 | A | 66 | 37 | 8B | 4 |
| R278 | B | 31 | 53 | 6D | 4 |
| R279 | B | 67 | 64 | 6B | 4 |
| R280 | A | 49 | 26 | 10E | 4 |
| R281 | B | 72 | 35 | 9D | 4 |
| R282 | B | 68 | 30 | 9D | 4 |
| R283 | B | 72 | 22 | 9D | 4 |
| R284 | B | 20 | 28 | 11C | 4 |
| R285 | B | 27 | 26 | 11C | 4 |
| R286 | A | 25 | 35 | 11C | 4 |
| R287 | B | 34 | 57 | 7D | 4 |
| R288 | B | 37 | 53 | 7D | 4 |
| R289 | B | 43 | 57 | 7D | 4 |
| R290 | A | 43 | 67 | 5B | 4 |
| R291 | A | 50 | 62 | 5B | 4 |
| R292 | A | 46 | 70 | 5B | 4 |
| R293 | A | 69 | 67 | 5C | 4 |
| R294 | A | 69 | 64 | 5C | 4 |
| R296 | A | 81 | 66 | 7B | 4 |
| R297 | B | 78 | 41 | 7B | 4 |
| R298 | B | 75 | 44 | 7C | 4 |
| R299 | B | 69 | 41 | 7B | 4 |
| R400 | B | 243 | 29 | 3D | 5 |
| R402 | B | 257 | 27 | 2E | 5 |
| R403 | B | 254 | 27 | 2E | 5 |
| R404 | B | 226 | 26 | 4E | 5 |
| R406 | B | 213 | 33 | 4F | 5 |
| R407 | A | 217 | 24 | 4F | 5 |
| R408 | A | 217 | 21 | 5F | 5 |
| R409 | B | 271 | 20 | 1D | 5 |
| R410 | B | 230 | 29 | 3E | 5 |
| R411 | B | 264 | 21 | 2E | 5 |
| R412 | B | 251 | 19 | 2E | 5 |
| R413 | B | 268 | 25 | 2E | 5 |
| R415 | A | 245 | 46 | 1F | 5 |
| R419 | B | 243 | 16 | 3E | 5 |
| R420 | B | 220 | 66 | 5E | 5 |
| R421 | B | 227 | 72 | 6F | 5 |
| R422 | B | 215 | 72 | 6E | 5 |
| R424 | A | 220 | 85 | 6E | 5 |
| R425 | B | 220 | 89 | 6E | 5 |
| R426 | B | 218 | 89 | 6E | 5 |
| R428 | B | 221 | 74 | 6E | 5 |
| R429 | B | 217 | 74 | 6E | 5 |

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|---|---|---|---|---|---|
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| Part | Side | X | Y | Sqr | Pg |
|---|---|---|---|---|---|
| R430 | A | 102 | 107 | 3C | 5 |
| R431 | B | 113 | 93 | 3B | 5 |
| R432 | B | 120 | 93 | 3B | 5 |
| R433 | B | 118 | 103 | 3B | 5 |
| R434 | A | 142 | 107 | 4C | 5 |
| R435 | B | 152 | 92 | 4B | 5 |
| R436 | B | 154 | 96 | 4B | 5 |
| R437 | B | 161 | 92 | 5B | 5 |
| R438 | B | 170 | 100 | 5B | 5 |
| R439 | B | 177 | 96 | 6B | 5 |
| R441 | A | 183 | 104 | 6C | 5 |
| R442 | B | 201 | 109 | 6B | 5 |
| R443 | B | 203 | 102 | 7B | 5 |
| R444 | A | 178 | 112 | 7A | 5 |
| R448 | B | 166 | 106 | 5C | 5 |
| R451 | A | 241 | 83 | 7E | 5 |
| R453 | B | 265 | 63 | 9E | 5 |
| R454 | B | 262 | 67 | 9E | 5 |
| R455 | B | 250 | 63 | 8E | 5 |
| R456 | B | 262 | 81 | 9D | 5 |
| R457 | B | 253 | 87 | 10D | 5 |
| R458 | A | 251 | 90 | 10D | 5 |
| R459 | A | 257 | 93 | 10D | 5 |
| R460 | B | 253 | 72 | 8E | 5 |
| R465 | B | 262 | 78 | 9D | 5 |
| R467 | B | 267 | 63 | 9E | 5 |
| R468 | B | 266 | 110 | 10E | 5 |
| R469 | B | 245 | 89 | 8D | 5 |
| R471 | B | 245 | 73 | 8C | 5 |
| R472 | B | 248 | 91 | 8B | 5 |
| R473 | B | 242 | 107 | 11D | 5 |
| R474 | B | 248 | 107 | 10C | 5 |
| R475 | B | 241 | 110 | 10C | 5 |
| R477 | B | 238 | 106 | 10C | 5 |
| R478 | A | 260 | 98 | 11D | 5 |
| R479 | A | 258 | 106 | 11C | 5 |
| R480 | B | 238 | 78 | 7E | 5 |
| R481 | A | 240 | 70 | 7D | 5 |
| R482 | B | 269 | 110 | 11E | 5 |
| R483 | B | 271 | 107 | 11E | 5 |
| R485 | B | 262 | 87 | 9C | 5 |
| R486 | B | 277 | 110 | 11E | 5 |
| R499 | B | 229 | 38 | 4F | 5 |
| R500 | B | 150 | 15 | 2D | 6 |
| R501 | B | 150 | 17 | 2D | 6 |
| R502 | B | 150 | 20 | 2D | 6 |
| R503 | B | 150 | 22 | 2D | 6 |
| R504 | B | 150 | 25 | 2D | 6 |
| R505 | B | 150 | 27 | 2D | 6 |
| R506 | B | 150 | 30 | 2D | 6 |
| R508 | B | 150 | 32 | 2C | 6 |
| R509 | B | 150 | 35 | 2C | 6 |
| R510 | A | 184 | 17 | 3D | 6 |
| R511 | A | 184 | 19 | 3D | 6 |
| R512 | A | 184 | 22 | 3D | 6 |
| R513 | A | 183 | 24 | 3D | 6 |
| R514 | A | 184 | 27 | 3D | 6 |
| R515 | A | 182 | 29 | 3D | 6 |
| R516 | A | 184 | 32 | 3D | 6 |
| R517 | A | 184 | 34 | 3D | 6 |
| R518 | A | 176 | 18 | 3C | 6 |
| R520 | A | 184 | 14 | 4D | 6 |
| R521 | B | 154 | 37 | 4D | 6 |
| R522 | A | 184 | 37 | 4C | 6 |
| R523 | B | 145 | 29 | 4C | 6 |
| R524 | B | 145 | 21 | 4B | 6 |
| R525 | B | 197 | 47 | 5D | 6 |
| R526 | B | 146 | 47 | 5D | 6 |
| R527 | B | 192 | 47 | 5C | 6 |
| R528 | B | 141 | 47 | 5C | 6 |
| R529 | B | 136 | 47 | 5B | 6 |
| R530 | B | 96 | 66 | 6F | 6 |
| R531 | A | 178 | 62 | 5C | 6 |
| R533 | A | 96 | 63 | 6D | 6 |
| R534 | A | 200 | 69 | 5B | 6 |
| R545 | A | 114 | 70 | 8D | 6 |
| R546 | A | 118 | 67 | 8D | 6 |
| R547 | A | 118 | 75 | 8E | 6 |
| R550 | A | 161 | 72 | 7D | 6 |
| R551 | A | 161 | 66 | 7C | 6 |
| R552 | A | 165 | 60 | 7B | 6 |
| R553 | A | 166 | 72 | 8D | 6 |
| R554 | A | 169 | 69 | 8C | 6 |
| R555 | A | 171 | 60 | 7B | 6 |
| R556 | A | 164 | 69 | 8C | 6 |
| R560 | A | 156 | 58 | 9F | 6 |
| R561 | A | 156 | 56 | 9E | 6 |
| R562 | A | 145 | 70 | 9E | 6 |
| R563 | A | 147 | 70 | 9D | 6 |
| R564 | A | 147 | 79 | 9D | 6 |
| R565 | A | 129 | 81 | 12C | 6 |
| R567 | B | 174 | 53 | 11E | 6 |
| R568 | A | 122 | 77 | 12B | 6 |
| R569 | A | 139 | 77 | 9D | 6 |
| R571 | A | 130 | 64 | 12D | 6 |
| R572 | A | 154 | 66 | 11E | 6 |
| R579 | A | 152 | 82 | 9B | 6 |
| V1 | B | 293 | 36 | 3B | 2 |
| V40 | A | 155 | 141 | 9D | 2 |
| V41 | A | 116 | 128 | 10E | 2 |
| V42 | A | 144 | 139 | 9C | 2 |
| V43 | A | 145 | 128 | 8D | 2 |
| V44 | B | 98 | 135 | 9B | 2 |
| V47 | A | 123 | 138 | 10D | 2 |
| V50 | B | 85 | 139 | 11B | 2 |
| V51 | B | 93 | 139 | 10B | 2 |
| V52 | B | 82 | 128 | 11C | 2 |
| V53 | A | 103 | 130 | 9B | 2 |
| V54 | A | 96 | 138 | 10B | 2 |
| V55 | B | 104 | 142 | 9B | 2 |
| V56 | B | 160 | 137 | 9E | 2 |
| V57 | B | 159 | 135 | 9E | 2 |
| V70 | A | 258 | 135 | 3F | 2 |
| V75 | A | 255 | 140 | 2E | 2 |
| V78 | B | 229 | 137 | 2E | 2 |
| V79 | B | 236 | 140 | 2E | 2 |
| V85 | B | 182 | 124 | 10D | 2 |
| V95 | B | 138 | 141 | 7D | 2 |
| V100 | B | 57 | 117 | 2E | 3 |
| V101 | B | 58 | 114 | 3E | 3 |
| V105 | B | 57 | 103 | 4E | 3 |
| V106 | B | 66 | 104 | 6E | 3 |
| V107 | A | 65 | 94 | 6E | 3 |
| V108 | A | 70 | 101 | 7E | 3 |
| V120 | B | 27 | 131 | 2B | 3 |
| V122 | B | 24 | 121 | 3B | 3 |
| V125 | B | 27 | 108 | 4B | 3 |
| V126 | B | 34 | 106 | 6B | 3 |
| V127 | A | 32 | 94 | 6C | 3 |
| V128 | A | 17 | 92 | 7C | 3 |
| V140 | B | 33 | 90 | 10C | 3 |
| V210 | B | 79 | 72 | 2B | 4 |
| V211 | B | 77 | 64 | 1B | 4 |
| V259 | B | 24 | 72 | 4F | 4 |
| V260 | B | 29 | 71 | 4D | 4 |
| V270 | B | 34 | 71 | 4C | 4 |
| V275 | A | 25 | 68 | 5E | 4 |
| V276 | B | 50 | 36 | 8C | 4 |
| V277 | B | 45 | 36 | 8D | 4 |
| V278 | B | 40 | 34 | 8F | 4 |
| V279 | B | 47 | 50 | 7D | 4 |
| V280 | B | 51 | 67 | 4D | 4 |
| V285 | B | 25 | 28 | 11C | 4 |
| V287 | A | 59 | 65 | 5C | 4 |
| V400 | B | 261 | 19 | 2E | 5 |
| V401 | B | 218 | 36 | 4E | 5 |
| V402 | A | 247 | 43 | 2F | 5 |
| V403 | B | 211 | 41 | 4F | 5 |
| V405 | B | 245 | 19 | 3E | 5 |
| V406 | B | 248 | 26 | 3D | 5 |
| V407 | B | 240 | 19 | 3E | 5 |
| V408 | B | 235 | 23 | 3D | 5 |
| V420 | B | 220 | 79 | 6E | 5 |
| V421 | B | 220 | 84 | 6E | 5 |
| V440 | B | 174 | 96 | 5B | 5 |
| V445 | B | 198 | 101 | 6B | 5 |
| V450 | B | 238 | 82 | 7E | 5 |
| V453 | B | 244 | 78 | 8E | 5 |
| V455 | B | 252 | 69 | 8E | 5 |
| V456 | B | 265 | 75 | 9D | 5 |
| V457 | B | 253 | 83 | 10D | 5 |
| V554 | B | 176 | 71 | 8C | 6 |
| V565 | B | 119 | 81 | 12B | 6 |
| X16A | B | 149 | 124 | 8D | 2 |
| X16B | B | 151 | 124 | 8D | 2 |

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ROHDE&SCHWARZ

# Stromläufe
# Bestückungspläne
# Circuit diagrams
# Components plans
# Schémas de circuit
# Plans des composants

(R 29500 BI 4)
095.1000 BI 4