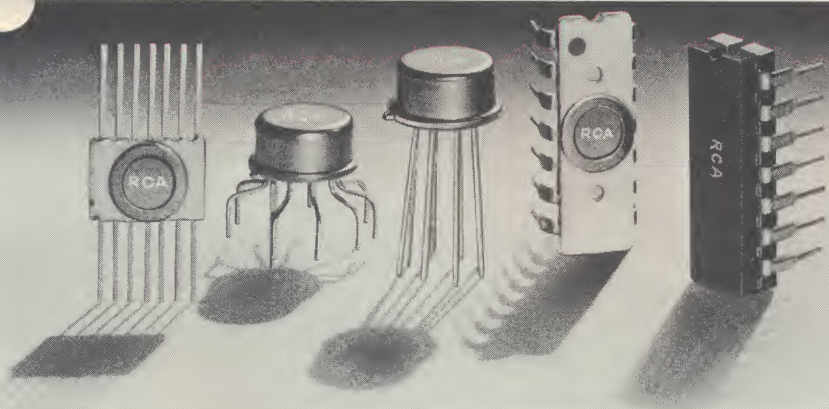


SUMMIT'S

RCA **integrated** **circuits** **product** **guide**



SUMMIT DISTRIBUTORS, INC.

**916 MAIN STREET
BUFFALO, N. Y. 14202**

RCA Electronic
Components

Harrison, New Jersey 07029

CDL-820B

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▲ Emitter-coupled current-steered logic, pronounced "EXCEL"

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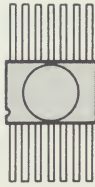
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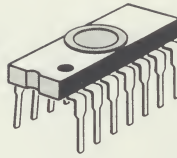
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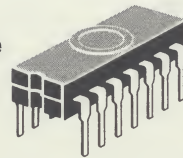
Ceramic flat pack



Ceramic dual in-line



Plastic dual in-line



Instrumentation • Telemetry • Television

CA3028A CA3028B CA3029 CA3029A CA3030 CA3030A	CA3031/702A CA3032/702C CA3033 CA3033A CA3034 CA3034V1	CA3035 CA3035V1 CA3036 CA3037 CA3037A CA3038	CA3038A CA3039 CA3041 CA3042 CA3043 CA3044	CA3044V1 CA3045 CA3046	Application
■ ■				■ ■	DC Amplifier
■ ■		■ ■ ■	■ ■ ■	■ ■	Audio Amplifier
■ ■		■ ■		■ ■	Video Amplifier
■ ■	■	■	■ ■ ■ ■	■ ■ ■	IF Amplifier
■ ■				■ ■	RF Amplifier
			■		Analog Switch
	■ ■		■		Comparator
					Detector: AM, FM, Phase, Product
■ ■	■ ■		■ ■ ■ ■ ■	■ ■ ■	Differential Amplifier
■ ■			■ ■ ■ ■ ■	■ ■	Limiter
■ ■			■ ■ ■ ■ ■	■ ■	Mixer: AF, RF
■ ■			■	■ ■	Modulator
				■ ■	Multivibrator
■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■	■		Operational Amplifier
■ ■				■ ■	Oscillator
■ ■				■ ■	Schmitt Trigger
				■ ■	Sense Amplifier
			■		Switching: Analog, Power
					Features
■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■	■	■ ■	Balanced Input
■ ■				■ ■	Balanced Output
■ ■ ■ ■ ■	■ ■	■ ■ ■ ■ ■	■	■ ■	Low Noise (1/f)
	■ ■	■ ■	■ ■ ■ ■ ■	■ ■ ■	Multiple Simultaneous Functions
	■ ■		■ ■ ■ ■ ■	■	Internal Regulated Power Supply
■ ■				■ ■	Class B Power Output
	■ ■	■ ■	■ ■ ■ ■ ■	■	AGC Capability
		■	■ ■ ■ ■ ■	■ ■	Special-Function Sub-System
			■	■ ■	Transistor or Diode Array
					Package
	■ ■			■	Ceramic Flat Pack
		■ ■ ■	■		Ceramic Dual In-Line
■ ■ ■ ■ ■			■ ■	■	Plastic Dual In-Line
■ ■	■ ■	■ ■ ■	■ ■	■	"TO-5" Style

Absolute Maximum Ratings

RCA Type	Applications and Features	Ambient Temp. Range		Input Sig. Volt.		Maximum DC Input Power
		Operating °C	Storage °C	Single Ended V	Common Mode V	P _T mW

Differential Amplifiers

CA3000	DC Amplifier •Schmitt Trigger •RC Coupled Feedback Amplifier •Mixer •Comparator •Crystal Oscillator •Sense Amplifier •Modulator •Wide AGC Range: 90dB typ.	-55 to +125	-65 to +200	±2	±2	300
CA3001	DC, IF, and Video Amplifier •Schmitt Trigger •Mixer •Modulator •Differential Input and Output •Emitter-Follower Input and Output •-3dB Bandwidth: 29MHz			±2.5	±2.5	
CA3002	IF and Video Amplifier •Product Detector •AM Detector •Schmitt Trigger •-3dB Bandwidth: 11MHz			±3.5	—	
CA3004	RF/IF Amplifiers •Push-Pull Input and Output •AGC •Detector •Wide- and Narrow-Band Amplifier •Mixer •Limiter •Modulator •Cascode Amplifier •Video Amplifier			±3.5	+3.5 to -2.5	
CA3005	CA3004 has linear transfer characteristics, excellent circuit stability and wide dynamic range CA3005 and CA3006 feature high gain, sharp limiting characteristics, and exceptional versatility			±3.5	+3.5 to -2.5	
CA3006	CA3005 and CA3006 are identical except for input offset voltage: CA3006, 1mV. max. CA3005, 2.6 mV. typ.			±3.5	+3.5 to -2.5	
CA3007	AF Amplifier •Audio Driver •Audio Amplifier •Sound Systems and Communications Equipment •Eliminates Need for Audio Driver Transformer			±2.5	±2.5	
CA3020	AF Amplifier Applications •Combines Functions of Preamplifier, Phase Inverter, Driver, and Push-Pull Output on Single Pellet •Audio Preamplifier •Power Amplifier •Servo Amplifier •Power Gain: 58dB typ. •-3dB Bandwidth: 6MHz typ. •Two Input Levels: 40kΩ and 1000Ω •Squelch Flexibility: 3 methods for applying squelch			The CA3020A is like the CA3020 except for the following: Power Output Class B Amplifier— CA3020 (V _{CC} 9V)=0.55 W typ. CA3020A (V _{CC} 12V)=1 W typ. Sensitivity— CA3020 (400mW)=35mV typ. CA3020A (800mW)=50mV typ.		
CA3026	Ratings and Characteristics are shown under Transistor Arrays					
CA3028A	RF/IF Amplifier •Differential or Cascode •Converter for FM Broadcast Band •Limiter •Mixer •Oscillator •Useful Frequency Range DC to 120MHz •Only One Power Supply Required •Audio, Sense, and DC Amplifier •Low Substrate and Feedback Capacitance for high bandwidth capability	-55 to +125	-65 to +200	6V peak to peak	For T _A ≤ 85 °C P _T = 450mW For T _A > 85 °C derate 5mW/°C	
CA3028B	CA3028B has all the features of CA3028A but in addition is controlled for Input-Offset Voltage, Input-Offset Current, Input Bias Current and features Single- and Dual-ended Operation The CA3028B is especially suitable as a DC and Differential Amplifier in Control Circuits Data for dual-ended operation; for single-ended operation, refer to CA3028A			4 to -2.5 @ V _{CC} = +6V V _{EE} = -6V	For T _A ≤ 85 °C P _T = 450mW	
				7 to -5 @ V _{CC} = +12V V _{EE} = -12V	For T _A > 85 °C derate 5mW/°C	

High-Gain Wide-Band Amplifiers

CA3011	•FM IF Amplifiers •Wide-band Amplifiers •High Amplifier Gain: 75dB typ. at 4.5MHz •Limiting Sensitivity: 600 μV typ at 10.7MHz (at knee) •Useful Frequency Range: 100kHz to >20MHz CA3011 is like the CA3012 except for max. recommended dc supply voltage: CA3011, 7.5V; CA3012, 10V	-55 to +125	-65 to +200	±3	—	300
CA3012	•Input Limiting Voltage (at knee) = 300μV at f=4.5MHz			±3	—	
CA3013	FM IF Amplifier/Limiter/FM Detector/AF Amplifiers •Comprehensive circuit functions in a single package: IF Amplifier, AM and Noise Limiter, FM Detector, Audio Preamplifier •Excellent AM Rejection: >50dB at 4.5MHz	•High Amplifier Gain: 75dB typ. at 4.5MHz •Recovered AF Voltage: 220mV typ. at 4.5MHz, 25kHz deviation CA3013 is like CA3014 except for max. recommended dc supply voltage: CA3013, 7.5V; CA3014, 10V				
CA3020	AF Amplifier Applications (Combines Functions of Preamplifier, Phase Inverter, Driver, and Push-Pull Output on Single Pellet) •Audio Preamplifier •Power Amplifier •Useful Freq. Range: DC to 8MHz with resistive load; into VHF with Tuned Circuits •Servo Amplifier •Power Gain 58db typ. •-3dB Bandwidth: 6MHz typ. •Two Input Levels: 40KΩ and 600Ω •Squelch Flexibility: 3 methods for applying squelch	-55 to +125	-65 to +200	±3	For T _A ≤ 25 °C P _T = 1W For T _A > 25 °C derate 6.7mW/°C With Heat Sink For T _C ≤ 55 °C P _T = 2W For T _C > 55 °C derate 16mW/°C	
CA3020A	The CA3020A is like the CA3020 except for the following: Power Output Class B Amplifier— CA3020 (V _{CC} =9V)=0.55mW typ. CA3020A (V _{CC} =12V)=1mW typ. Sensitivity— CA3020 (400mW)=35mV typ. CA3020A (800mW)=50mV typ.					

Typical Electrical Characteristics at T_A = 25°C

DC Supply Voltages		Static						Dynamic						Device Pkgs See Page 3	RCA Type	
		Input Offset Voltage mV	Input Bias Current μA	DC Input Power Drain mW	Device Gain ^e		Useful Frequency Range MHz	Noise Figure		CMR Ratio f=1kHz dB	Input and Output Impedance					
V _{EE} V	V _{CC} V				Test Freq. MHz	Gain dB		Test Freq. MHz	NF dB		Test Freq. MHz	Input Ω	Output Ω			
Differential Amplifiers																
-6	+6	1.4	23	30	1kHz	32 ^a 37 ^b	DC to 30	—	—	98	1kHz	195k	8k	TO-5	CA3000	
											Total Harmonic Distortion=0.2% typ. at f=1kHz					
-6	+6	1.5	16	78	1.75 20	19 14	DC to 100	1.75 11.7	5 7.7	88	1.75	140k ^f 3.4pF ^f	45	TO-5	CA3001	
-6	+6	2.2 unbal.	20	55	1.75	24 diff.	DC to 15	1.75	4	—	1.75	100k ^f 4pF ^f	70	TO-5	CA3002	
-6	+6	1.7	21	26	100	12 ^e	DC to 120	100	6.3	98	100	1.2k	2.2k	TO-5	CA3004	
-6	+6	2.6	19	26	100	20 ^{c,e} 16 ^{d,e}	DC to 120	100	7.8 ^c 7.8 ^d	101	100	1.4k	2k	TO-5	CA3005	
-6	+6	0.8	19	26	100	20 ^{c,e} 16 ^{d,e}	DC to 120	100	7.8 ^c 7.8 ^d	101	100	1.4k	2k	TO-5	CA3006	
-6	+6	0.57 unbal.	11	30	1kHz	22 ^e	DC to 20kHz	—	—	77	1kHz	4k	60	TO-5	CA3007	
											Total Harmonic Distortion=0.28% typ. at f=1kHz					
Ratings and Characteristics are shown under High-Gain Wide-Band Amplifiers														TO-5	CA3020	
														TO-5	CA3020A	
Ratings and Characteristics are shown under Transistor Arrays														TO-5	CA3026	
0	+6	—	16.6 ^d	36	100	20 ^{c,e}	DC to 120	—	—	—	—	—	—	TO-5	CA3028A	
0	+6	—	—	—	10.7	17 ^{d,e}		—	—	—	—	—	—			
0	+9	—	—	—	10.7	40 ^c		100	7.2 ^c	—	10.7	590 ^c	12.5k ^c			
0	+9	—	—	—	10.7	30 ^d		100	6.7 ^d	—	10.7	1400 ^d	2950 ^d			
-6	+6	0.98	16.6 ^d	36	1kHz	38 at R=2kΩ	DC to 120	BW at -3dB = 7.3MHz		110	1kHz	5.5k	—	TO-5	CA3028B	
											Max Output Voltage Swing = 11.5V _{p-p} at f=1kHz					
-12	+12	0.89	36 ^d	175	1kHz	42.5 at R=1.6kΩ	DC to 120	BW at -3dB = 8MHz		90	1kHz	3k	—			
											Max Output Voltage Swing = 23V _{p-p} at f=1kHz					
High-Gain Wide-Band Amplifiers																
0	+7.5	—	—	120	1 4.5 10.7	70 67 61	100kHz to >20MHz	4.5	8.7	—	4.5	3k ^f 7pF ^f	31.5k ^f 4.2pF ^f	TO-5	CA3011	
0	+7.5	—	—	120	1 4.5 10.7	70 67 61	100kHz to >20MHz	4.5	8.7	—	4.5	3k ^f 7pF ^f	31.5k ^f 4.2pF ^f	TO-5	CA3012	
Ratings and Characteristics are shown under Special-Function Subsystems														TO-5	CA3013	
														TO-5	CA3014	
3	+9	P _{OUT} (max.) = 550mW at THD=10%			1kHz	75	Up to 8	Signal-to-Noise Ratio, 70dB		1kHz	55k	130		TO-5	CA3020	
0	+9	P _{OUT} (max.) = 1W at THD=10%			1kHz	75	Up to 8	Signal-to-Noise Ratio, 66dB		1kHz	55k	200		TO-5	CA3020A	
0	+12				1kHz	75				1kHz	55k	200				

^e Voltage gain unless specified

a single-ended output
b double-ended output

c cascode circuit
d differential circuit

e G_p = Power Gain
f Parallel resistance and capacitance

g V_{CC} = +9V

RCA Type Applications and Features

Ambient Temperature Range		Input Signal Voltage		Maximum DC Input Power P_T mW
Operating °C	Storage °C	Single Ended V	Common Mode V	

High-Gain Wide-Band Amplifiers (cont'd)

CA3021	Video and Wide-Band Amplifiers •Wide AGC Range: 33db typ •Gain-Controlled Linear Amplifiers •AM-FM IF Amplifiers •Video Amplifiers •Limiters •Only One Power Supply (4.5-C to 12-V) required Types differ in bandwidth capability and power drain •-3dB Bandwidth up to 16MHz (resistive load) •Power Drain: as low as 4 mW	-55 to +125	-65 to +200	±3	—	120
CA3022				±3	—	120
CA3023				±3	—	120
CA3035	Multipurpose Wide-Band Amplifiers •Three Individual General-Purpose Amplifiers •Ideal for Service in Remote-Control Amplifiers, e.g. TV Receivers •All Amplifiers Single-Ended; Only One Power Supply Required					•Exceptionally High Cascade Voltage Gain: 129dB typ at 40kHz •Low-Noise Performance •Wide-Band Response •Built-In Temperature Compensation
CA3035V1	Identical to CA3035 but has formed leads					
CA3041	High Gain FM IF Amplifier/Limiter/FM Detector/Driver Amplifier •For Sound Systems of TV Receivers using Tube-Type AF Output Amplifiers					
CA3042	Unless indicated otherwise this type is like the CA3041 but is intended for Sound Systems of TV Receivers Using Transistor-Type AF Output Amplifiers.					
CA3043	High Gain FM IF Amplifier/Limiter/FM Detector/AF Preamp •For FM IF Amplifier Applications in FM Communications and					

Special-Function Subsystems

CA3013	FM IF Amplifier/AM and Noise Limiter/FM Detector/Audio Preamp Comprehensive circuit functions in a single package •Excellent AM Rejection: >50dB at 4.5MHz •High Amplifier Gain: 75dB typ. at 4.5 MHz •Recovered AF Voltage: 220mV typ. at 4.5MHz, 25kHz deviation CA3013 is like CA3014 except for max. recommended dc supply voltage: CA3013, 7.5V; CA3014 10V •Input Limiting Voltage (at knee) = 300µV at f=4.5MHz	-55 to +125	-65 to +200	±3	—	300
CA3014				±3	—	300
CA3034	Dual Phase Detector with Differential Output Amplifier •Primarily Intended for AFC Applications •Differential Input Amplifier •Compensated Reference-Voltage Supply	-55 to +125	-65 to +200	12 p to p	—	300
CA3034V1	Identical to CA3034 but has formed leads					
CA3035	Three Individual Multi-Purpose Wide-Band Amplifiers •Ideal for Service in Remote-Control Amplifiers, e.g. TV Receivers •All Amplifiers Single-Ended; Only One Power Supply Required •Exceptionally High Cascade Voltage Gain: 129dB typ. at 40kHz •Low-Noise Performance •Wide-Band Response •Built-In Temperature Compensation	-55 to +125	-65 to +200	1 p to p	—	300
CA3035V1	Identical to CA3035 but has formed leads					
CA3041	High Gain FM IF Amplifier/Limiter/FM Detector/Driver Amplifier •For Sound Systems of TV Receivers using Tube-Type AF Output Amplifiers •For FM IF Amplifier Applications in FM Communications and High-Fidelity Receivers to 20 MHz. •High Sensitivity: Input Limiting Voltage (knee) 150µV typ. at 4.5MHz •Excellent AM Rejection: 58dB typ. at 4.5 MHz •Large Audio Drive Voltage Capability •Low Harmonic Distortion •Internal Zener-Diode Regulated Voltage Supply •Inherent High Stability: Internally Shielded •Low Harmonic Radiation	0 to +85	-25 to +85	±3		For $T_A \leq 25^\circ\text{C}$ $P_T = 950\text{mW}$ For $T_A > 25^\circ\text{C}$ derate 10.8mW/°C
CA3042	Unless indicated otherwise this type is like the CA3041 but is intended for Sound Systems of TV Receivers Using Transistor-Type AF Output Amplifiers					
CA3043	High Gain FM IF Amplifier/Limiter/FM Detector/AF Preamp •For FM IF Amplifier Applications in FM Communications and High-Fidelity Receivers to 20MHz •High Sensitivity: Input Limiting Voltage 50µV at 10.7MHz •Recovered AF Voltage: 100mV at 75KHz deviation •Low Harmonic Distortion	-55 to +125	-65 to +200	—	—	300
CA3044	Dual Phase Detector with Differential Output Amplifier •For AFC Applications •Internal Zener Regulated Power Supply •Differential Input Amplifier/Limiter •Full-Wave Diode Bridge Detector	-55 to +125	-65 to +200	—		For $T_A \leq 25^\circ\text{C}$ $P_T = 830\text{mW}$ For $T_A > 25^\circ\text{C}$ derate 5.6mW/°C
CA3044V1	Identical to CA3044 but has formed leads					

For information on RCA Application Notes for Linear Circuits, see Pages 12 and 13.

DC Supply Voltages		Static							Dynamic					Device Pkgs See Page 3	RCA Type
		Input Offset Voltage mV	Input Bias Current μA	DC Input Power Drain mW	Device Gain Voltage gain unless specified		Useful Frequency Range MHz	Noise Figure		Common Mode Rejection Ratio f=1kHz dB	Input and Output Impedance				
V _{EE} V	V _{CC} V				Test Freq. MHz	Gain dB		Test Freq. MHz	NF dB		Test Freq. MHz	Input Ω	Output Ω		

High-Gain Wide-Band Amplifiers

0	+6	—	—	4	0.5	56	DC to 6	1	4.2	—	1	4k _f 11pF _f	300 Resistive	TO-5	CA3021
0	+6	—	—	12.5	2.5	57	DC to 20	1	4.4	—	5	1.3k _f 18pF _f	120 Resistive	TO-5	CA3022
0	+6	—	—	35	5 10	53 44	DC to 40	1	6.5	—	10	300 _f 13pF _f	100 Resistive	TO-5	CA3023
Ratings and Characteristics are shown under Special-Function Subsystems														TO-5	CA3035
Ratings and Characteristics identical to CA3035V1														TO-5	CA3035V
Ratings and Characteristics are shown under Special-Function Subsystems														DIP	CA3041
Ratings and Characteristics are shown under Special-Function Subsystems														DIP	CA3042
Ratings and Characteristics are shown under Special-Function Subsystems														TO-5	CA3043

Special-Function Subsystems

0	+7.5	—	—	120	1 4.5 10.7	70 67 60	100kHz to >20MHz	4.5	8.7	—	4.5	3k _f 7pF _f	31.5k _f 4.2pF _f	TO-5	CA3013			
0	+7.5	—	—	120	1 4.5 10.7	70 67 60	100kHz to >20MHz	4.5	8.7	—	4.5	3k _f 7pF _f	31.5k _f 4.2pF _f	TO-5	CA3014			
—	+10	Total Current Drain: 9mA typ. Quiescent Operating Current into Terminal No. 2: 1.9mA typ. Reference Voltage at Terminal No. 9: 5.5V typ. Quiescent Operating Voltage at Terminal No. 4 and No. 5: 5.5V typ.							Output Offset Voltage Between Terminals No. 4 and 5: 0V typ.			2k	—	TO-5	CA3034			
Ratings and Characteristics identical to CA3034 but has formed leads.														TO-5	CA3034V1			
—	+9	Total Drain: 5mA typ. Sens. 100μV at V _{CC} = +13V Relay mA = 7.5		Ampl. #1	40kHz	44	—3db B-W 500kHz	1kHz	6	—	40kHz	50k	270	TO-5	CA3035			
				Ampl. #2	40kHz	46	2.5	—	—	—	40kHz	2k	170	Typ. Out. Volt. Swing = 2V _{p-p}				
				Ampl. #3	40kHz	42	2.5	—	—	—	40kHz	670	100k	Typ. Out. Volt. Swing = 8V _{p-p}				
Ratings and Characteristics identical to CA3035 but has formed leads.														TO-5	CA3035V1			
V _{CC} = +140V to Terminal 14 thru series res. R = 6.2kΩ	—	—	—	250	IF Amplifier 4.5 67		0.1 to 20	AF Amplifier Resistance at f = 1kHz: Input—R _{IN} = 100kΩ Output—R _{OUT} = 30kΩ			4.5	11k _f 5pF _f	100k _f 4pF _f	14-lead DIP	CA3041			
Total Harmonic Distortion = 1.5% at f(IF) = 4.5MHz; V _{OUT} (AF) = 8V(rms); Deviation = ± 25kHz																		
—	—	—	—	240	AF Driver 1kHz 30		AF Driver Resistance at f = 1kHz: Input—R _{IN} = 100kΩ Output—R _{OUT} = 250Ω						14-lead DIP	CA3042				
V _{CC} = +30V thru series resistor R _L = 750Ω	Current at 6V into Pin No. 11, I ₁₁ = 16mA			225	10.7	80	100kHz to >20MHz	Total Harmonic Distortion = 1% at f = 10.7MHz, V _{IN} = 1mV Recovered AF Voltage = 100mV			10.7	7k _f 5pF _f	Input Limiting Voltage at —3dB = 50μV	TO-5	CA3043			
V _{CC} = +30V thru series resistor R = 1.5kΩ	Current at 9V into Pin No. 10, I ₁₀ = 4mA			140	Input Limiting Voltage (knee) = 75mV Input Admittance = 0.5 + j1.1mmho Forward Transfer Admittance = —11.7 + j10.1mmho Output Admittance = 0.077 + j0.9mmho										} typ values at f = 45.75MHz		TO-5	CA3044
Ratings and Characteristics identical to CA3044 but has formed leads.														TO-5	CA3044V1			

f Parallel resistance and capacitance

DIP = 14-lead dual in-line plastic

Absolute Max. Ratings

RCA Type	Applications and Features	For Circuits, See Page 25	Device Dissipation		Ambient Temp. Range		Max. Ratings Each Transistor		
			Any Transistor or Diode P mW	Total Package P mW	Operating °C	Storage °C	Collector to Emitter Voltage	Collector to Base Voltage	Emitter to Base Voltage
							V_{CE0}	V_{CB0}	V_{EB0}
Diode Arrays									
CA3019	Six Diodes on a Single Silicon Chip. Four in "Quad" or Bridge Configuration, and Two Isolated Diodes. •Matched Diodes •Low Leakage		20	120	-55 to +125	-65 to +200	—	—	—
CA3039	Six Independent Diodes on a Single Silicon Chip Connected as Two Differential Amplifiers with Constant Current Sinks		20	450	-55 to +125	-65 to +200	—	—	—
Transistor Arrays									
CA3018	Four NPN Transistors on Single Silicon Chip. Two are Isolated with no Interconnections. Other Two Have Emitter-to-Base Interconnection for	Use as a Darlington Pair, a Common-Emitter Amplifier with a Decoupled Common-Base Amplifier, an Amplifier with Protective Diode at Input, or Two Diodes in Series Back-to-Back.	300	300	-55 to +125	-65 to +200	15	20	4
CA3018A	The CA3018A is similar to the CA3018 but features tighter control of current gain, leakage and offset	parameters, making it suitable for applications requiring premium performance.	300	300	-55 to +125	-65 to +200	15	20	5
CA3026	Six Transistors on a Single Silicon Chip Connected as Two Differential Amplifiers with Constant Current Sinks		300	450	-55 to +125	-65 to +200	15	20	5
CA3036	•Two Independent Low-Noise Wide-Band Amplifier Channels •Particularly Useful for Preamplifier and Low-Level Amplifier Applications in Single-Channel and Stereo Systems	•Wide Application in Low-Noise Instrumentation Amplifiers •Matched Transistors With Emitter-Follower Outputs •200-MHz Gain-Bandwidth Product	300	300	-55 to +125	-65 to +200	—	—	—
CA3045	Three Isolated Transistors and One Differentially-Connected Transistor Pair	•For all Types of Signal-Processing Systems operating from DC to VHF •Temperature Compensated Amplifiers	300	750	-55 to +125	-65 to +200	15	20	5
CA3046	The CA3046 is electrically like the CA3045 but is in a dual in-line plastic package for use in applications requiring a limited temperature range.		300	750	0 to +85	-25 to +85	15	20	5

Amplifier Arrays

CA3035	Ratings and Characteristics are shown under Special-Function Subsystems								
CA3035V1	Identical to CA3035 but has formed leads.								

Technical Data Booklets, Associated Application Notes

A Sample copy of a Technical Data Booklet and its Associated Application Note, shown below, is available on request from Commercial Engineering, RCA Electronic Components, Bldg. GM-1, Harrison, N. J. 07029.

RCA Type	Associated Application Note No.	File No.	Description	RCA Type	Associated Application Note No.	File No.	Description	
Linear Integrated Circuits								
CA3000	ICAN-5030	121	DC Amplifier	CA3021	ICAN-5338	243	Video and Wide-Band Amplifier	
CA3001	ICAN-5038	122	Video and Wide-Band Amplifier	CA3022		243	Video and Wide-Band Amplifier	
CA3002	ICAN-5036	123	IF Amplifier	CA3023		243	Video and Wide-Band Amplifier	
CA3004	ICAN-5022	124	RF Amplifier	CA3026	ICAN-5337	327	Differential/Cascode Amplifier	
CA3005	{ICAN-5022}	125	RF Amplifier	CA3028A		327	Differential/Cascode Amplifier	
CA3006	{ICAN-5269}	125	RF Amplifier	CA3028B		316	Operational Amplifier	
CA3007	ICAN-5037	126	AF Amplifier	CA3029	{ICAN-5015}	310	Operational Amplifier	
CA3008	{ICAN-5015}	316	Operational Amplifier	CA3029A		{ICAN-5213}	310	Operational Amplifier
CA3008A		310	Operational Amplifier	CA3030			{ICAN-5290}	310
CA3010		{ICAN-5290}	316	Operational Amplifier	CA3030A			310
CA3010A	{ICAN-5269}	310	Operational Amplifier	CA3031/702A	ICAN-5290	241		Operational Amplifier
CA3011		128	FM IF Amplifier	CA3032/702C		241	Operational Amplifier	
CA3012		128	FM IF Amplifier	CA3033		ICAN-5641	317	Operational Amplifier
CA3013	{ICAN-5380}	129	FM IF Amplifier/Discriminator/AF Amplifier	CA3033A	317		Operational Amplifier	
CA3014	129	FM IF Amplifier/Discriminator/AF Amplifier	CA3034	273	High-Freq. Wide-Band Amp/Phase Detector			
CA3015	{ICAN-5015}	316	Operational Amplifier	CA3034V1	{ST-3470}	273	High-Freq. Wide-Band Amp/Phase Detector	
CA3015A		{ICAN-5213}	310	Operational Amplifier		CA3035	274	Ultra-High-Gain Wide-Band Amp. Array
CA3016		{ICAN-5290}	316	Operational Amplifier		CA3035V1	274	Ultra-High-Gain Wide-Band Amp. Array
CA3016A	{ICAN-5296}	310	Operational Amplifier	CA3036	275	Dual Darlington Array		
CA3018		{ICAN-5296}	338	Transistor Array	CA3037	316	Operational Amplifier	
CA3018A		{ICAN-5290}	338	Transistor Array	CA3037A	{ICAN-5015}	310	Operational Amplifier
CA3019	ICAN-5299	236	Diode Array	CA3038	{ICAN-5213}		316	Operational Amplifier
CA3020	ICAN-5766	339	Multipurpose Wide-Band Amplifier	CA3038A			{ICAN-5290}	310
CA3020A				310		Diode Array		

Electrical Characteristics at T_A = 25 °C

Static			Dynamic				Device Package See Page 3	RCA Type		
Typical Static Forward-Current Transfer Ratio h _{FE}	Min. Collector-Substrate Breakdown Voltage V	Max. Collector Cutoff Current I _{CBO} μA	Typical h _{fe}	Typical Gain Bandwidth Product f _T MHz	Typical Open Circuit Output Cap. C _{obo} pF	Typical Open Circuit Input Cap. C _{ibo} pF				
Typ. DC Forward Voltage Drop, 0.73V Min. DC Reverse Breakdown Voltage: any Diode, 4V; any Diode & Substrate, 25V			Max. DC Reverse Leakage Current: any Diode, 10 μA; any Diode & Substrate, 10 μA Typ. Single Diode Capacitance: 1.8 pF				TO-5	CA3019		
Typ. DC Forward Voltage Drop, 0.73V Min. DC Reverse Breakdown Voltage: any Diode, 5V; any Diode & Substrate, 20V			Max. DC Reverse Leakage Current: any Diode, 0.1 μA; any Diode & Substrate, 1 μA Typ. Single Diode Capacitance, 0.6 pF				TO-5	CA3039		
100(Q ₁ or Q ₂) 5400(Ttl. Q ₃ &Q ₄)			20	0.1	110 f=1kHz	500	0.58	0.6	TO-5	CA3018
100(Q ₁ or Q ₂) 5400(Ttl. Q ₃ &Q ₄)			40	0.04	110 f=1kHz	500	0.58	0.6	TO-5	CA3018A
100 (Each Transistor)			20	0.1	110 f=1kHz	550	—	—	TO-5	CA3026
The following ratings apply for each transistor in the device: Collector-to-Emitter Voltage, V _{CEO} 15 max. V Collector-to-Base Voltage, V _{CBO} 30 max. V Emitter-to-Base Voltage, V _{EBO} 5 max. V Collector Current, I _C 50 max. mA			For Either Darlington Pair: Power Gain = 47dB at 1kHz Noise Voltage = $\frac{0.05\mu V(\text{rms})}{\sqrt{f(\text{Hz})}}$				TO-5	CA3036		
100(Q ₁ or Q ₂)			20	0.04	110 f=1kHz	550	0.58	0.6	DIC	CA3045
100(Q ₁ or Q ₂)			20	0.04	110 f=1kHz	550	0.58	0.6	DIP	CA3046

Diode Arrays

Transistor Arrays

Amplifier Arrays

Ratings and Characteristics are shown under Special-Function Subsystems	CA3035
Ratings and Characteristics Identical to CA3035	CA3035V1
DIC = Dual in-line ceramic package DIP = Dual in-line plastic package	

1CE-338 Mounting and Connection Techniques for RCA Integrated Circuits
Discusses various methods for mounting and connecting RCA Integrated Circuits and the principal considerations involved in each method.

RCA Type	Associated Application Note No.	File No.	Description	RCA Type	Associated Application Note No.	File No.	Description	
Linear Integrated Circuits (Continued)								
CA3041	ICAN-5765	318	Wide-Band Amp, FM Detector, AF Preamp/Driver	CD2203	ICAN-5271	133	Low-Power DTL Clocked Set-Reset Flip-Flop with J-K Capability	
CA3042		319	Wide-Band Amp, FM Detector, AF Preamp/Driver	CD2203D		307	Ceramic Dual In-Line Package	
CA3043		331	High-Gain IF Amplifier, Limiter, FM Detector, AM Preamp/Driver	CD2204		226	Low-Power DTL Dual 4-Input NAND Gate Expander	
CA3044	340	340	High-Freq. Wide-Band Amplifier/Phase Detector	CD2204D		307	Ceramic Dual In-Line Package	
CA3044V1		340	High-Freq. Wide-Band Amplifier/Phase Detector	CD2205		233	Low-Power DTL Dual 3-Input Gate (with "wired" OR)	
CA3045	341	341	Transistor Array	CD2205D		307	Ceramic Dual In-Line Package	
CA3046				CD2300 Series		332	Medium-Power DTL Circuits in ceramic 14-Lead Flat Pack	
				CD2300D Series			332	Medium-Power DTL Circuits in ceramic dual in-line package
				CD2300E Series			332	Medium-Power DTL Circuits in silicone dual in-line package
Digital Integrated Circuits								
CD2100	ICAN-5025	130	High-Speed ECCSL Dual 4-Input OR/NOR Gate	Complementary "N" and "P" Channel MOS				
CD2101		130	High-Speed ECCSL Quadruple 2-Input NOR Gate	TA5361	—	—	Dual NOR Gate Plus Inverter	
CD2150		308	Ultra-High-Speed ECCSL Dual 4-Input OR/NOR Gate	TA5362	—	—	Dual D-Type Flip-Flop	
CD2151	308	308	Ultra-High-Speed ECCSL Dual 4-Input OR/NOR Gate (with "wired" OR)	TA5385	ICAN-5593	—	Seven-Stage Ripple Counter	
CD2152				308		Ultra-High-Speed ECCSL 8-Input OR/NOR Gate (with "wired" OR)	TA5388	—
CD2153	308	Ultra-High-Speed ECCSL Quadruple Two-Input NOR Gate (with "wired" OR)	TA5406	—		16-Bit Non-Destructive Readout Memory		
CD2200	ICAN-5271	132	Low-Power DTL Dual 4-Input NAND Gate	TA5455		—	Quad 2-Input NOR Gate	
CD2200D		307	Ceramic Dual In-Line Package	TA5456		—	Dual 4-Input NOR Gate	
CD2201		132	Low-Power DTL Quadruple 2-Input NAND Gate	TA5459		—	18-Bit Shift Register	
CD2201D	307	Ceramic Dual In-Line Package	Flat-Pack Carriers					
CD2202	227	227	Low-Power DTL Dual 4-Input NAND Buffer Gate	CX3300	134	134	RCA Integrated Circuit Carriers for 14-Terminal "Flat-Packaged" Integrated Circuits	
CD2202D				307				Ceramic Dual In-Line Package

Quick-Selection Chart

Logic Function	Description: Medium-Power DTL			Low-Power DTL		Ultra-High-Speed ECCSL [▲]	High-Speed ECCSL [▲]	COS/MOS*
	Operating Temp.: —55 to +125°C		0 to +75°C	—55 to +125°C		+10 to +60°C	—55 to +125°C	—55 to +125°C
	Package:	14-lead ceramic flat pack	14-lead ceramic dual in-line	14-lead plastic dual in-line	14-lead ceramic flat pack	14-lead ceramic dual in-line	14-lead ceramic flat pack	14-lead ceramic dual in-line

Gates

Single 8-Input OR/NOR Complementary Outputs	—	—	—	—	—	CD2152	—	—
Dual 3-Input Expandable AND/OR/NOT Transistor Output Pull-up NOR and Inverter	—	—	—	CD2205	CD2205D	—	—	— TA5361 [◆]
Dual 4-Input OR/NOR Complementary Outputs } Expandable NAND Transistor Output Pull-up 6kΩ Output Pull-up 2kΩ Output Pull-up High Fanout Transistor Output Pull-up "Wired OR" Output Capability NOR	— — CD2300/ 930 CD2301/ 961 CD2306/ 932 CD2307/ 944	— — CD2300D/ 930 CD2301D/ 961 CD2306D/ 932 CD2307D/ 944	— — CD2300E/ 830 CD2301E/ 861 CD2306E/ 832 CD2307E/ 844	— CD2200 — CD2202	— CD2200D — CD2202D	{ CD2150, CD2151 • CD2100	— — — — — —	— — — — — TA5456 [◆]
Triple 3-Input NAND 6kΩ Output Pull-up 2kΩ Output Pull-up	CD2308/ 962 CD2309/ 963	CD2308D/ 962 CD2309D/ 963	CD2308E/ 862 CD2309E/ 863	— —	— —	— —	— —	— —
Quadruple 2-Input NAND Transistor Output Pull-up 6kΩ Output Pull-up 2kΩ Output Pull-up NOR	— CD2302/ 946 CD2303/ 949	— CD2302D/ 946 CD2303D/ 949	— CD2302E/ 846 CD2303E/ 849	— CD2201 —	— CD2201D —	— — — CD2153 •	— — — CD2101	— — — TA5455 [◆]

[▲]ECCSL—Emitter-coupled current-steered logic, pronounced "EXCEL"

● "WIRED-OR" output capability

*Complementary-Symmetry MOS

[◆] Anticipated Commercial Announcement, August 1968.

■ Anticipated Commercial Announcement, late in 1968.

Logic Function	Description: Medium-Power DTL			Low-Power DTL		Ultra-High-Speed ECCSL [▲]	High-Speed ECCSL [▲]	COS/MOS*
	Operating Temp.: —55 to +125°C		0 to +75°C	—55 to +125°C		+10 to +60°C	—55 to +125°C	—55 to +125°C
	Package: 14-lead ceramic flat pack	14-lead ceramic dual in-line	14-lead plastic dual in-line	14-lead ceramic flat pack	14-lead ceramic dual in-line	14-lead ceramic flat pack	14-lead ceramic flat pack	14-lead ceramic dual in-line

Hex Inverters

Diode Input	CD2310/936		CD2310D/936	CD2310E/836	—	—	—	—
6k Ω Output Pull-up	CD2311/937	CD2311D/937	CD2311E/837	—	—	—	—	—
2k Ω Output Pull-up	—	—	—	—	—	—	—	—
Expandable Input	CD2312	CD2312D	CD2312E	—	—	—	—	—
6k Ω Output Pull-up	CD2313	CD2313D	CD2313E	—	—	—	—	—
2k Ω Output Pull-up	—	—	—	—	—	—	—	—

Gate Expanders

Dual 4-Diode Input	CD2314/933	CD2314D/933	CD2314E/833	CD2204	CD2204D	—	—	—
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Flip-Flops

J-K 2 Set, 2 Reset, 2J, 2K, Split Clock Inputs	—	—	—	CD2203	CD2203D	—	—	—
Clocked R-S J-K Capability	CD2304/945	CD2304D/945	CD2304E/845	—	—	—	—	—
6k Ω Output Pull-up	CD2305/948	CD2305D/948	CD2305E/848	—	—	—	—	—
2k Ω Output Pull-up	—	—	—	—	—	—	—	—
Dual D	—	—	—	—	—	—	—	TA5362 [◆]

MSI (Medium-Scale Integration)

7-Stage Ripple Counter	—	—	—	—	—	—	—	TA5385 [◆] (TO-5 pkg.)
16-Bit NDRO Memory Cell	—	—	—	—	—	—	—	TA5406 [◆]
18-Bit Static Shift Register	—	—	—	—	—	—	—	TA5459 [■]

General Purpose

Dual Complementary Pair Plus Inverter	—	—	—	—	—	—	—	TA5388 [◆]
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Electrical Characteristics at T_A = 25°C

Output Voltage		Input Current		Output Current			Max. Power Supply Current Drain mA	Propagation Delay				Device Package See Page 3	RCA Type
"Low" V	"High" V	Re-verse μA	For-ward mA	Leak-age μA	Short Circuit mA			(t _{pd-})ns		(t _{pd+})ns			
max	min	max	max	max	min	max		min	max	min	max		
Dual Four-Input Gates													
0.4	2.6	2	-1.6	50	-0.61	-1.34	6.5	10	30	25	80	CFP	CD2300/930
												CDL	CD2300D/930
0.45	2.6	5	-1.4	100	-0.61	-1.3	8	10	30	25	80	PDL	CD2300E/830
0.4	3.8	2	-1.6	50	-2.1	-3.7	10.9	10	30	15	50	CFP	CD2301/961
												CDL	CD2301D/961
0.45	4.3	5	-1.4	100	-1.85	-3.68	11.8	10	30	15	50	PDL	CD2301E/861
0.4	2.6	2	-1.6	50	-18	—	26.6	15	40	25	80	CFP	CD2306/932
												CDL	CD2306D/932
0.45	2.6	5	-1.4	100	-16	—	30	15	40	25	80	PDL	CD2306E/832
0.4	6 ^b	2	-1.6	100	—	—	20	10	35	15	50	CFP	CD2307/944
												CDL	CD2307D/944
0.45	6 ^b	5	-1.4	100	—	—	22.5	10	35	15	50	PDL	CD2307E/844
Triple Three-Input Gates													
0.4	2.6	2	-1.6	50	-0.61	-1.34	9.75	10	30	25	80	CFP	CD2308/962
												CDL	CD2308D/962
0.45	2.6	5	-1.4	100	-0.61	-1.3	12	10	30	25	80	PDL	CD2308E/862
0.4	3.8	2	-1.6	50	-2.1	-3.7	16.35	10	30	15	50	CFP	CD2309/963
												CDL	CD2309D/963
0.45	4.3	5	-1.4	100	-1.85	-3.68	17.7	10	30	15	50	PDL	CD2309E/863
Quadruple Two-Input Gates													
0.4	2.6	2	-1.6	50	-0.61	-1.34	13	10	30	25	80	CFP	CD2302/946
												CDL	CD2302D/946
0.45	2.6	5	-1.4	100	-0.61	-1.3	16	10	30	25	80	PDL	CD2302E/846
0.4	3.8	2	-1.6	50	-2.1	-3.7	4.8	10	30	15	50	CFP	CD2303/949
												CDL	CD2303D/949
0.45	4.3	5	-1.4	100	-1.85	-3.68	23.6	10	30	15	50	PDL	CD2303E/849
Hex Inverters													
0.4	2.6	2	-1.6	50	-0.61	-1.34	19.5	10	30	25	80	CFP	CD2310/936
												CDL	CD2310D/936
0.45	2.6	5	-1.4	100	-0.61	-1.3	24	10	30	25	80	PDL	CD2310E/836
0.4	3.8	2	-1.6	50	-2.1	-3.7	32.7	10	30	15	50	CFP	CD2311/937
												CDL	CD2311D/937
0.5	4.3	5	-1.4	100	-1.85	-3.68	35.4	10	30	15	50	PDL	CD2311E/837
0.4	2.6	—	-1.6	50	-0.61	-1.34	19.5	10	30	25	80	CFP	CD2312
												CDL	CD2312D
0.45	2.6	—	-1.4	100	-0.61	-1.3	24	10	30	25	80	PDL	CD2312E
0.4	3.8	—	-1.6	50	-2.1	-3.7	32.7	10	30	15	50	CFP	CD2313
												CDL	CD2313D
0.5	4.3	—	-1.4	100	-1.85	-3.68	35.4	10	30	15	50	PDL	CD2313E
Dual Four-Diode Input Expander													
Input For. Volt. per Diode				Current per Diode		Current per Expander				CFP	CD2314/933		
0.7V min		0.82V max		2μA max		10μA max				CDL	CD2314D/933		
0.68V min		0.84V max		5μA max		25μA max				PDL	CD2314E/833		

^b Output Breakdown Voltage

CFP—14-lead ceramic flat pack

CDL—14-lead ceramic dual-in-line package

PDL—14-lead plastic dual-in-line package

Electrical Characteristics at T_A = 25°C

Output Voltage		Input Current		Output Current			Max. Power Supply Current Drain mA	Propagation Delay				Device Package See Page 3	RCA Type
"Low" V	"High" V	Re-verse μA	For-ward mA	Leak-age μA	Short Circuit mA			(t _{pd-})ns		(t _{pd+})ns			
max	min	max	max	max	min	max		min	max	min	max		

Dual Four-Input Gates

0.4	2.6	2	-1.6	50	-0.61	-1.34	6.5	10	30	25	80	CFP	CD2300/930
												CDL	CD2300D/930
0.45	2.6	5	-1.4	100	-0.61	-1.3	8	10	30	25	80	PDL	CD2300E/830
0.4	3.8	2	-1.6	50	-2.1	-3.7	10.9	10	30	15	50	CFP	CD2301/961
												CDL	CD2301D/961
0.45	4.3	5	-1.4	100	-1.85	-3.68	11.8	10	30	15	50	PDL	CD2301E/861
0.4	2.6	2	-1.6	50	-18	—	26.6	15	40	25	80	CFP	CD2306/932
												CDL	CD2306D/932
0.45	2.6	5	-1.4	100	-16	—	30	15	40	25	80	PDL	CD2306E/832
0.4	6 ^b	2	-1.6	100	—	—	20	10	35	15	50	CFP	CD2307/944
												CDL	CD2307D/944
0.45	6 ^b	5	-1.4	100	—	—	22.5	10	35	15	50	PDL	CD2307E/844

Triple Three-Input Gates

0.4	2.6	2	-1.6	50	-0.61	-1.34	9.75	10	30	25	80	CFP	CD2308/962
												CDL	CD2308D/962
0.45	2.6	5	-1.4	100	-0.61	-1.3	12	10	30	25	80	PDL	CD2308E/862
0.4	3.8	2	-1.6	50	-2.1	-3.7	16.35	10	30	15	50	CFP	CD2309/963
												CDL	CD2309D/963
0.45	4.3	5	-1.4	100	-1.85	-3.68	17.7	10	30	15	50	PDL	CD2309E/863

Quadruple Two-Input Gates

0.4	2.6	2	-1.6	50	-0.61	-1.34	13	10	30	25	80	CFP	CD2302/946
												CDL	CD2302D/946
0.45	2.6	5	-1.4	100	-0.61	-1.3	16	10	30	25	80	PDL	CD2302E/846
0.4	3.8	2	-1.6	50	-2.1	-3.7	4.8	10	30	15	50	CFP	CD2303/949
												CDL	CD2303D/949
0.45	4.3	5	-1.4	100	-1.85	-3.68	23.6	10	30	15	50	PDL	CD2303E/849

Hex Inverters

0.4	2.6	2	-1.6	50	-0.61	-1.34	19.5	10	30	25	80	CFP	CD2310/936
												CDL	CD2310D/936
0.45	2.6	5	-1.4	100	-0.61	-1.3	24	10	30	25	80	PDL	CD2310E/836
0.4	3.8	2	-1.6	50	-2.1	-3.7	32.7	10	30	15	50	CFP	CD2311/937
												CDL	CD2311D/937
0.5	4.3	5	-1.4	100	-1.85	-3.68	35.4	10	30	15	50	PDL	CD2311E/837
0.4	2.6	—	-1.6	50	-0.61	-1.34	19.5	10	30	25	80	CFP	CD2312
												CDL	CD2312D
0.45	2.6	—	-1.4	100	-0.61	-1.3	24	10	30	25	80	PDL	CD2312E
0.4	3.8	—	-1.6	50	-2.1	-3.7	32.7	10	30	15	50	CFP	CD2313
												CDL	CD2313D
0.5	4.3	—	-1.4	100	-1.85	-3.68	35.4	10	30	15	50	PDL	CD2313E

Dual Four-Diode Input Expander

Input For. Volt. per Diode		Current per Diode		Current per Expander		CFP	CD2314/933
0.7V min	0.82V max	2μA max		10μA max		CDL	CD2314D/933
0.68V min	0.84V max	5μA max		25μA max		PDL	CD2314E/833

^b Output Breakdown Voltage

CFP—14-lead ceramic flat pack

CDL—14-lead ceramic dual-in-line package

PDL—14-lead plastic dual-in-line package

Medium-Power DTL (Continued)

RCA Type	Description For Circuits, See Page 26	Features	Power Supply Voltage V	Input Current		Output Current (into output) mA	Ambient Temperature Range	
				Forward mA	Reverse mA		Operating $^\circ\text{C}$	Storage $^\circ\text{C}$
CD2304/945 CD2304D/945 CD2304E/845	J-K Capability with $6k\Omega$ output pull-up	<ul style="list-style-type: none"> Average power dissipation (per gate): 8mW typical Average gate propagation delay: 25ns typical (fan-out = 7+35pF) Gate fan-out capability—"pull-up" resistor = $6k\Omega$ 8 = $2k\Omega$ 7 	8 12 ^a	-10	1	30	-55 to +125 0 to +75	-65 to +150 -25 to +85
CD2305/948 CD2305D/948 CD2305E/848	J-K Capability with $2k\Omega$ output pull-up	<ul style="list-style-type: none"> High Fan-out Gate drive capability: 25 Noise immunity: 1V typical at 25°C "Wired-OR" output logic capability Single 4.5V to 5.5V power supply 	8 12 ^a	-10	1	30	-55 to +125 0 to +75	-65 to +150 -25 to +85

^a Pulsed; duration less than one second

RCA Type	Description For Circuits, See Page 28	Features	Maximum Ratings		
			Operating $^\circ\text{C}$	Storage $^\circ\text{C}$	DC Supply Voltage Range V

Low-Power DTL

CD2200 CD2200D	Dual Four-Input Expandable NAND Gate	<ul style="list-style-type: none"> Very low dissipation: 2.3mW/gate, 7mW/flip-flop Military full-temperature range: -55°C to $+125^\circ\text{C}$ High noise immunity: 1.2V typ. at 25°C 	-55 to +125	-65 to +150	+3.8 to +6.3
CD2201 CD2201D	Quadruple Two-Input NAND Gate	<ul style="list-style-type: none"> Active pull-up outputs—afford low impedance for driving high capacitive loads High breakdown voltage input "Diodes" 	-55 to +125	-65 to +150	+3.8 to +6.3
CD2202 CD2202D	Dual Four-Input Expandable NAND Buffer Gate	<ul style="list-style-type: none"> Popular pin configuration: 14 = V_{CC}, 7 = Ground Monolithic silicon epitaxial construction Aluminum-to-aluminum ultrasonic bonding 	-55 to +125	-65 to +150	+3.8 to +6.3
CD2203 CD2203D	J-K Flip-Flop	<ul style="list-style-type: none"> CD2202: Buffer Gate. Capable of Fan-Out of 25 + 250 pF CD2203: Split Clock Lines. Dual "J" Clock Steering Inputs. Dual "K" Clock Steering Inputs. Dual DC Set and Reset Inputs. 3MHz Complementing Rate 	-55 to +125	-65 to +150	+3.8 to +6.3
CD2204 CD2204D	Dual Four-Input Gate Expander	<ul style="list-style-type: none"> CD2204: Capable of expanding fan-in to more than 20* Compatible in all respects with inputs of CD2200-Series gates CD2205: Performs AND/OR/NOT function. Expandable "AND" Sections 	-55 to +125	-65 to +150	0 to +6.3
CD2205 CD2205D	Dual Three-Input Expandable AND/OR/NOT Gate	<ul style="list-style-type: none"> "D" Suffix: "D" Series are electrically identical with flat-pack versions, but utilize a 14-lead dual in-line ceramic package 	-55 to +125	-65 to +150	+3.8 to +6.3

Ultra-High-Speed ECCSL*

CD2150	Dual Four-Input OR/NOR Gate	<ul style="list-style-type: none"> Exceptionally high speed—Non-saturated operation 	+10 to +60	-55 to +150	-4.5 to -5.5
CD2151	Dual Four-Input OR/NOR Gate with "Wired-OR"	<ul style="list-style-type: none"> High system noise immunity—40% of logic swing Integral reference voltage supply Constant power supply current 	+10 to +60	-55 to +150	-4.5 to -5.5
CD2152	Eight-Input OR/NOR Gate with "Wired-OR"	<ul style="list-style-type: none"> Drives 100Ω terminated lines Complementary OR/NOR outputs 	+10 to +60	-55 to +150	-4.5 to -5.5
CD2153	Quadruple Two-Input NOR Gate with "Wired-OR"	<ul style="list-style-type: none"> "Wired-OR" output capability 	+10 to +60	-55 to +150	-4.5 to -5.5

High-Speed ECCSL*

CD2100	Dual Four-Input OR/NOR Gate	<ul style="list-style-type: none"> High speed—Non-saturated operation Military full-temperature range: -55°C to $+125^\circ\text{C}$ 	-55 to +125	-65 to +150	-4.68 to -5.72
CD2101	Quadruple Two-Input NOR Gate	<ul style="list-style-type: none"> High system noise immunity—40% of logic swing Integral reference voltage supply Constant power supply current 	-55 to +125	-65 to +150	-4.68 to -5.72

* Emitter-coupled, current-steered logic (ECCSL), pronounced "EXCEL."

Electrical Characteristics at T_A = 25°C

Output Voltage		Input Current		Output Current			Max. Power Supply Current Drain mA	Propagation Delay				Device Package See Page 3	RCA Type
"Low" V	"High" V	Re-verse μA	For-ward mA	Leak-age μA	Short Circuit mA			(t _{pd-}) ns		(t _{pd+}) ns			
max	min	max	max	max	min	max		min	max	min	max		
0.4	2.6	2	-1.07	50	-0.61	-1.34	14	30	75	35	75	CFP	CD2304/945
		2	-2.4										
		10	-3.2										
0.45	2.6	5	-0.95	100	-0.61	-1.3	15	30	75	35	75	PDL	CD2304E/845
		5	-2.1										
		20	-2.8										
0.4	3.8	2	-1.07	50	-2.1	-3.7	16.2	30	75	30	65	CFP	CD2305/948
		2	-2.4										
		10	-2.56										
0.45	4.3	5	-0.95	100	-1.85	-3.68	17.5	30	75	30	65	PDL	CD2305E/848
		5	-2.1										
		20	-2.24										

Clocked R-S Flip-Flops

CFP—14-lead ceramic flat pack CDL—14-lead ceramic dual-in-line package PDL—14-lead plastic dual-in-line package

Electrical Characteristics at T_A = 25°C

Operating Conditions	Static							Dynamic				Device Package See Page 3	RCA Type
	Maximum Fan-Out Per Gate	V _{CC} V	V _{EE} V	Typ. Logic Levels		Max. DC Input Current mA	Typ. Device Dissipation mW	Typ. Noise Immunity V	Prop. Delay Time		Appl. Note No.		
				"0" V	"1" V				Average ns	Fan-Out Loads + Cap. (N+pF)			
6	+4	0	+0.1	+3.4	-0.33	2.3 per gate	1.2	55	6+60	ICAN 5271	types with "D" suffix have 14-lead dual in-line ceramic pkg.; other types have 14-lead flat pkg.	CD2200	
6	+4	0	+0.1	+3.4	-0.33	2.3 per gate	1.2	55	6+60	ICAN 5271		CD2200D	
6	+4	0	+0.1	+3.4	-0.33	2.3 per gate	1.2	55	6+60	ICAN 5271		CD2201	
25	+4	0	+0.1	+3.4	-0.33	12 per gate	1.2	48	25+250	ICAN 5271		CD2201D	
5	+4	0	+0.1	+3.4	-0.33	7 per pkg.	1.2	130	5+50	ICAN 5271		CD2202	
5	+4	0	+0.1	+3.4	-0.33	7 per pkg.	1.2	130	5+50	ICAN 5271		CD2202D	
5	+4	0	+0.1	+3.4	-0.33	7 per pkg.	1.2	130	5+50	ICAN 5271		CD2203	
For input expansion of CD2200, CD2202, and CD2205 gates	capable of expanding fan-in to more than 20 forward voltage, 0.72V typ.			low capacitive loading on expanded gate, 4pF typ. leakage current, 5nA typ.						ICAN 5271		CD2203D	
—	+4	0	+0.1	+3.4	-0.33	5 per pkg.	1.2	71	6+60	ICAN 5271	CD2204		
—	+4	0	+0.1	+3.4	-0.33	5 per pkg.	1.2	71	6+60	ICAN 5271	CD2204D		
—	+4	0	+0.1	+3.4	-0.33	5 per pkg.	1.2	71	6+60	ICAN 5271	CD2205		
—	+4	0	+0.1	+3.4	-0.33	5 per pkg.	1.2	71	6+60	ICAN 5271	CD2205D		

Low-Power DTL

Ultra-High-Speed ECCSL*

12 (unterminated) 6 (100-Ω termination)	0	-5	-1.6	-0.76	0.186	220 per pkg.	0.35	3.6	7.3	1+10 6+60	ICAN 5025	14-lead flat pkg.	CD2150
12 (unterminated) 6 (100-Ω termination)	0	-5	-1.6	-0.76	0.186	175 per pkg.	0.35	3.6	7.3	1+10 6+60	ICAN 5025		CD2151
12 (unterminated) 6 (100-Ω termination)	0	-5	-1.6	-0.76	0.186	147 per pkg.	0.35	3.6	7.3	1+10 6+60	ICAN 5025		CD2152
12 (unterminated) 6 (100-Ω termination)	0	-5	-1.6	-0.76	0.186	175 per pkg.	0.35	3.6	7.3	1+10 6+60	ICAN 5025		CD2153
12 (unterminated) 6 (100-Ω termination)	0	-5	-1.6	-0.76	0.186	175 per pkg.	0.35	3.6	7.3	1+10 6+60	ICAN 5025		

High-Speed ECCSL*

12 (unterminated) 6 (300-Ω termination)	0	-5.2	-1.55	-0.75	0.1	88 per pkg.	0.32	6	24	1+10 6+60	ICAN 5025	14-lead flat pkg.	CD2100
12 (unterminated) 6 (300-Ω termination)	0	-5.2	-1.55	-0.75	0.1	120 per pkg.	0.32	6	24	1+10 6+60	ICAN 5025		CD2101

Typical Electrical Characteristics at $T_A = 25^\circ\text{C}$

Operating Voltage		Logic Levels		DC Input Current		Device Dissipation (quiescent)		Noise Immunity 40% of V_{DD} V	Input Capacitance		Propagation Delay Time		Device Package See Page 3	RCA Type
V_{DD} V	V_{SS} V	V_{OUT}^{0} V	V_{OUT}^{1} V	V_{IN}^{OV} pA	V_{IN}^{10V} pA	V_{IN}^{OV} nW	V_{IN}^{10V} nW		Per Gate pF	In-verter pF	t_{pd}^{0} ns	t_{pd}^{1} ns		
+10	0	0.01	9.99	10	10	10	10	4	2.5	1.5	65 at $C_L=30\text{pF}$	70	14-lead dual in-line ceramic	TA5361
+10	0	0.01	9.99	10	10	10	10	4	2.5	—	65 at $C_L=30\text{pF}$	70	14-lead dual in-line ceramic	TA5455
+10	0	0.01	9.99	10	10	10	10	4	2.5	—	65 at $C_L=30\text{pF}$	70	14-lead dual in-line ceramic	TA5456

Gates

Operating Voltage		Logic Levels		DC Input Current		Device Dissipation (quiescent)		Noise Immunity 40% of V_{DD} V	Input Capacitance		Propagation Delay Time		Device Package See Page 3	RCA Type
V_{DD} V	V_{SS} V	V_{OUT}^{0} V	V_{OUT}^{1} V	V_{IN}^{OV} pA	V_{IN}^{10V} pA	V_{IN}^{OV} nW	V_{IN}^{10V} nW		Per Gate pF	In-verter pF	t_{pd}^{0} ns	t_{pd}^{1} ns		
+10	0	0.01	9.99	10	10	10	10	4	5-Data Input Term. 8.5-Reset Term. 5-Clock Input Term.	90	90	14-lead dual in-line ceramic	TA5362	
Dynamic Device Dissipation at 100kHz=0.4mW (typ.)				"0" and "1" Clock-Pulse Duration = 125ns (min.)				Clock-Pulse Input Frequency = 4MHz (max.)						

Flip-Flop

Operating Voltage		Logic Levels		DC Input Current		Device Dissipation (quiescent)		Noise Immunity 40% of V_{DD} V	Input Capacitance		Propagation Delay Time		Device Package See Page 3	RCA Type
V_{DD} V	V_{SS} V	V_{OUT}^{0} V	V_{OUT}^{1} V	V_{IN}^{OV} pA	V_{IN}^{10V} pA	V_{IN}^{OV} nW	V_{IN}^{10V} nW		Per Gate pF	In-verter pF	t_{pd}^{0} ns	t_{pd}^{1} ns		
+10	0	0.01	9.99	10	10	100	—	4	5-Input Pulse 40-Reset Input	150	150	TO-5	TA5385	
Dynamic Device Dissipation at 100kHz=0.4mW (typ.)				"0" and "1" Clock-Pulse Duration = 125ns (min.)				Clock-Pulse Input Frequency = 4MHz (max.)						

MSI (Medium-Scale Integration)

Operating Voltage		Logic Levels		DC Input Current		Device Dissipation (quiescent)		Noise Immunity 40% of V_{DD} V	Input Capacitance		Propagation Delay Time		Device Package See Page 3	RCA Type
V_{DD} V	V_{SS} V	V_{OUT}^{0} V	V_{OUT}^{1} V	V_{IN}^{OV} pA	V_{IN}^{10V} pA	V_{IN}^{OV} nW	V_{IN}^{10V} nW		Per Gate pF	In-verter pF	t_{pd}^{0} ns	t_{pd}^{1} ns		
+10	0	DC Sense Current: "0" = 10 μA "1" = 500 μA		10	10	100	—	—	20—x, y, D, and Sense Line	"1" Sense Read Time = 15ns Write Pulse Width = 50ns		14-lead dual in-line ceramic	TA5406	
+10	0	0.01	9.99	10	10	100	—	4	5-D Line 50-Clock Line	150 at $C_L=50\text{pF}$	200 Clock Pulse Freq. (shift rate) = 2MHz (max.)	14-lead dual in-line ceramic	TA5459	

General Purpose

Typical Electrical Characteristics at $T_A = 25^\circ\text{C}$													
DC Transconductance (g_{fs})		Gate Threshold Voltage		Drain-Source Leakage Current (I_{DSS})		Drain-Source Breakdown Voltage [$V_{(BR)DSS}$]		Input Capacitance pF	Device Package See Page 3	RCA Type			
"N" Channel μmho	"P" Channel μmho	"N" Channel V	"P" Channel V	"N" Channel μA	"P" Channel μA	"N" Channel V	"P" Channel V						
200 (min)	200	+1.5	-3	1	1	15	15	5	14-lead dual in-line ceramic	TA5388			

Integrated-Circuit Sockets

The table below lists some commercially available sockets for integrated circuits by manufacturers' and/or suppliers' parts numbers. This list is based on manufacturers' and/or suppliers' published information in our files at the time this publication was printed, and is not necessarily complete. Sockets having mechanical and electrical characteristics comparable with those of the devices listed below may be available from other manufacturers and/or suppliers of electronic components.

For a discussion of various methods for mounting and connecting RCA Integrated Circuits in equipment, and the principal considerations involved in each method, refer to RCA Technical Bulletin ICE-338 "Mounting and Connection Techniques for RCA Integrated Circuits."

Integrated-Circuit Package Type	Mfr. or Supplier	Mfr's. or Supplier's Part No.	Description
14-Lead Flat Package	AMP Inc.	583109-0 thru 7 [▲]	Header (requires crimping machine)
		583110-0 thru 7 [▲]	Receptacle
	Azimuth Electronics Barnes Corporation	5100-2	For use at temperatures up to 200°C
		MD-55	For use at temperatures up to 125°C
	Jettron Products, Inc.	MD-75	For use at temperatures up to 200°C
71-062 71-005		Plug-in printed-circuit card	
14-Lead Flat Package in RCA Carrier	Barnes Corporation	029-001	For production batch testing
		029-090	For laboratory or environmental applications
14-Lead Dual In-Line (Plastic or Ceramic)	Augat, Inc.	314-AG10	For printed-circuit boards
		314-AG3A	For chassis mounting
		114-AG1B	High-temperature Teflon* for chassis mounting
		114-AG1A	High-temperature Teflon, for printed-circuit boards
	Barnes Corporation	029-275-01	For printed-circuit boards (maintains factory-lead taper)
		029-275-11 029-271-01	For chassis mounting (maintains factory-lead taper) Contactor for accepting device in 029-240 carrier for automatic testing
8-Lead TO-5 Style	Augat, Inc.	8058-1G19	Miniature type, Teflon, for chassis mounting
		8058-39G3	Miniature type, Teflon, for printed-circuit boards
	Barnes Corporation	MG-802	Miniature, Teflon, press-fit type
		MGR-81	Miniature, Teflon, for printed-circuit boards
		MF-02-8	For chassis mounting, chamfered-lead entrance
10-Lead TO-5 Style	Augat, Inc.	8058-1G22	Miniature type, Teflon, for chassis mounting
		8058-2HG1	Miniature type, Teflon, for printed-circuit boards
	Barnes Corporation	MG-1002	Miniature, Teflon, press-fit type
		MGR-102	Miniature, Teflon, for printed-circuit boards
		MF-02-10 MF-03-10	For chassis mounting, chamfered-lead entrance For printed-circuit boards, chamfered-lead entrance
Sealectro Corp.	Series 60#	Press-fit type, Teflon	
12-Lead TO-5 Style	Barnes Corporation	MG-1201	Miniature, Teflon, press-fit type
		MGR-121	Miniature, Teflon, for printed-circuit boards
		MF-02-12	For chassis mounting, chamfered-lead entrance
	Sealectro Corp.	MF-03-12	For printed-circuit boards, chamfered-lead entrance
		Series 60	Press-fit type, Teflon

Registered Trade Mark, Sealectro Corporation

*Registered Trade Mark, E. I. DuPont De Nemours & Co.

▲ AMP Crimpac, Registered Trade Mark, AMP Incorporated

Manufacturers' and/or Suppliers' Addresses

AMP Inc., Harrisburg, Pennsylvania 17105

Augat Inc., 33 Perry Avenue, Attleboro, Massachusetts 02703

Azimuth Electronics, Denville, N. J. 07834

Barnes Corporation, Lansdowne, Pennsylvania 19050

Jettron Products, Inc., 56 Route 10, Hanover, N. J. 07936

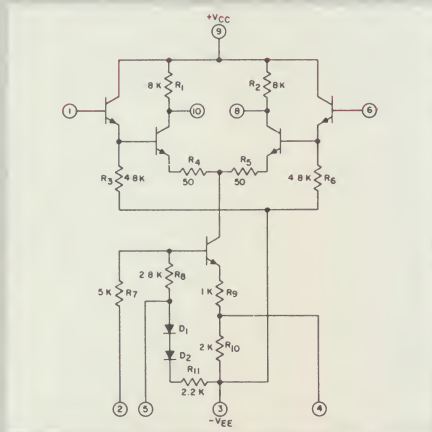
Sealectro Corp., 225 Hoyt Street, Mamaroneck, N. Y. 10543

Differential Amplifiers

DC Amplifier

CA3000

- Schmitt Trigger
- Mixer
- Modulator
- Comparator
- Crystal Oscillator
- Sense Amplifier
- Wide AGC Range: 90dB typ.

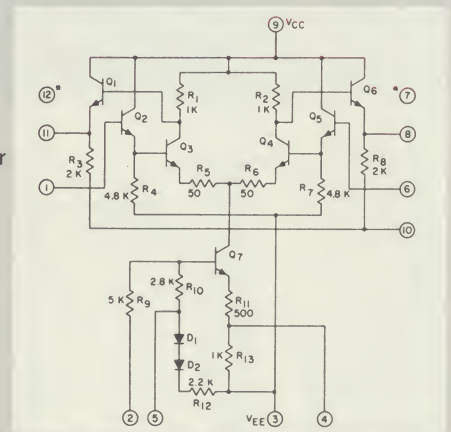


Package:
10-Lead TO-5

Video and Wide-Band Amplifier

CA3001

- Schmitt Trigger
- Mixer
- Modulator
- DC, IF, Video Amplifier
- Emitter Follower Input & Output
- -3dB Bandwidth: 29MHz



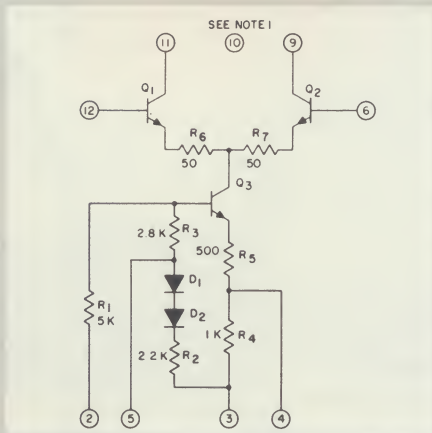
Package:
12-Lead TO-5

* Internal connection Do Not Use.

RF/IF Amplifiers

CA3004

- Push-Pull Input & Output
- AGC
- Detector
- Mixer
- Limiter
- Wide & Narrow-Band Amplifier
- Cascode Amplifier
- Modulator

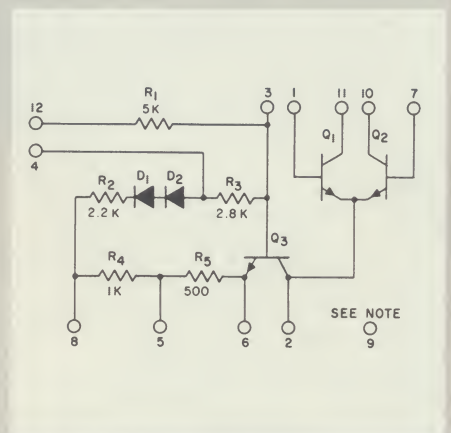


Note: Connect Terminal No. 10 to most positive dc supply voltage used for circuit.

Package:
12-Lead TO-5

CA3005 CA3006

- High Gain, Sharp Limiting Characteristics
 - Input Offset Voltage:
CA3005 — 2.6mV typ.
CA3006 — 1mV max.
- (See CA3004 for Applications)



Note: Connect Terminal No. 9 to most positive dc supply voltage used for circuit.

Package:
12-Lead TO-5

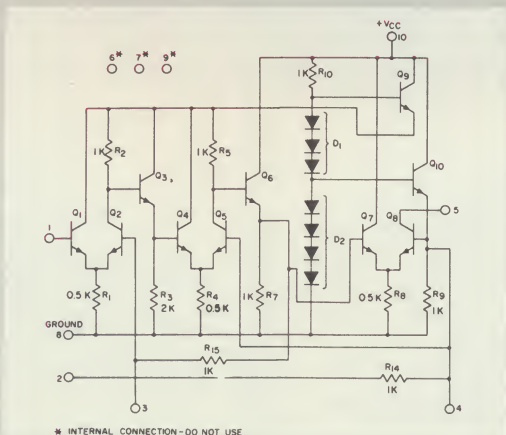
CA3020 CA3020A Schematic diagrams for these types are shown under High-Gain Wide-Band Amplifiers

High-Gain Wide-Band Amplifiers

FM/IF Amplifiers

CA3011 CA3012

- High Amplifier Gain: 75dB at 4.5 MHz
 - Limiting Sensitivity: 600μV at 10.7MHz (knee)
 - Range: f = 100kHz to >720MHz
- CA3011 is like CA3012 except for Max. DC Supply Voltage:
CA3011 — 7.5V
CA3012 — 10V



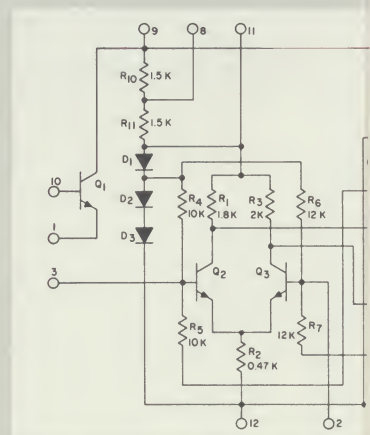
* INTERNAL CONNECTION - DO NOT USE

Package:
10-Lead TO-5

Multipurpose Wide-Band Amplifiers

CA3020 CA3020A

- In AF Applications combines functions of preamplifier, Phase-Inverter, Driver and Push-Pull Output
 - Servo Amplifier
- CA3020A is like CA3020 except for Power Output Class B Amplifier:
CA3020 — 0.55W typ.
CA3020A — 1W typ.
- Sensitivity:
CA3020 — 35mV typ.
CA3020A — 50mV typ.



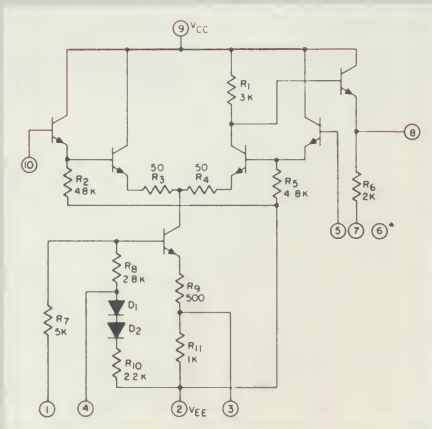
Package:
12-Lead TO-5

IF Amplifier

CA3002

- Product Detector
- IF & Video Amplifier
- AM Detector
- Schmitt Trigger
- -3dB Bandwidth: 11MHz

Package:
10-Lead TO-5

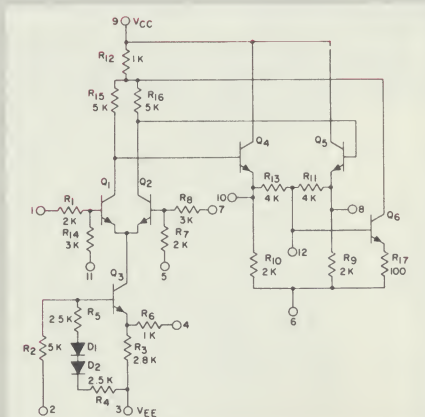


AF Amplifier

CA3007

- Audio Driver and Amplifier
- Sound Systems and Communications Equipment
- Eliminates need for Audio Driver Transformer

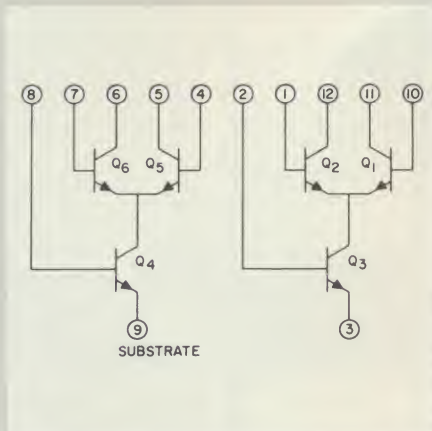
Package:
12-Lead TO-5



CA3026

- Six Transistors on a Single Silicon Chip
- Connected as Two Differential Amplifiers with Constant Current Sinks

Package:
12-lead TO-5

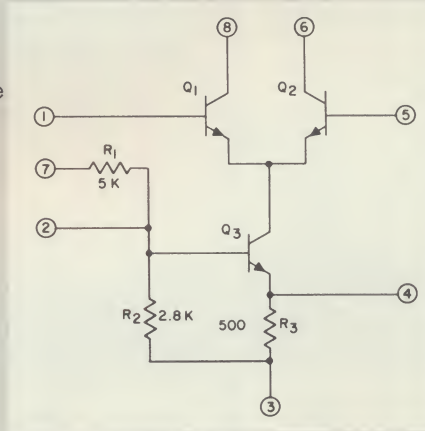


CA3028A CA3028B

- Differential or Cascode Amplifier
- Limiter
- Mixer
- Converter, FM Broadcast
- Range: f=DC to 120MHz

CA3028B especially suitable for DC and Differential Amplifier Applications in Control Circuits

Package:
8-Lead TO-5



Video and Wide-Band Amplifiers

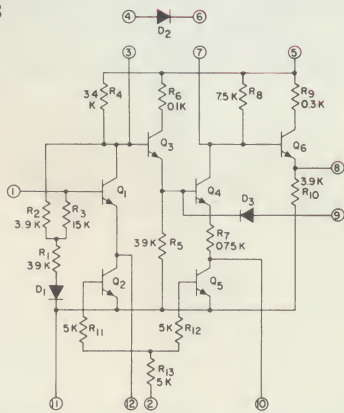
CA3021 CA3022 CA3023

- AM-FM IF Amplifier
- Limiter
- Wide AGC Range: 33dB typ.
- Power Drain: as low as 4mW
- Gain-Controlled Linear Types

Types differ in bandwidth capability, power drain, resistance values

Package:
12-Lead TO-5

CA3023



CA3013 CA3014 CA3035 CA3035V1 CA3041 CA3042 CA3043

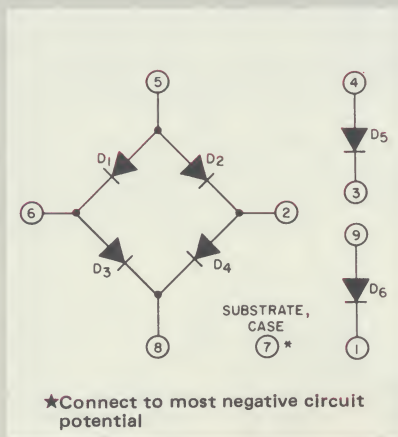
Schematic diagrams for these types are shown under Special-Function Subsystems

Arrays

Diode Arrays

CA3019

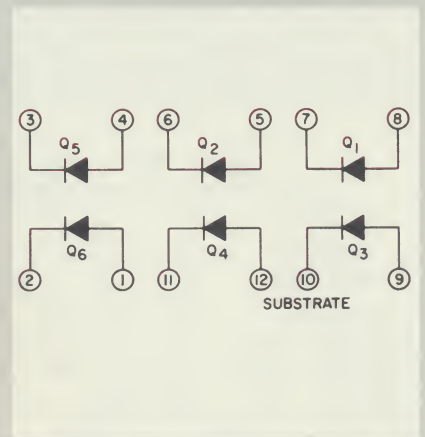
- Six Diodes on a Single Chip
- Matched Diodes
- Low Leakage
- Four in Bridge Configuration and Two Isolated Diodes



Package:
10-Lead TO-5

CA3039

- Six Independent Diodes on a Single Chip

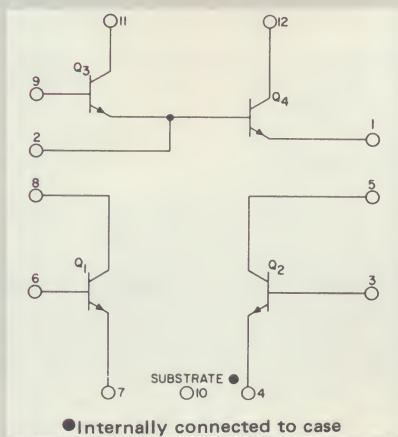


Package:
12-Lead TO-5

Transistor Arrays

CA3018 CA3018A

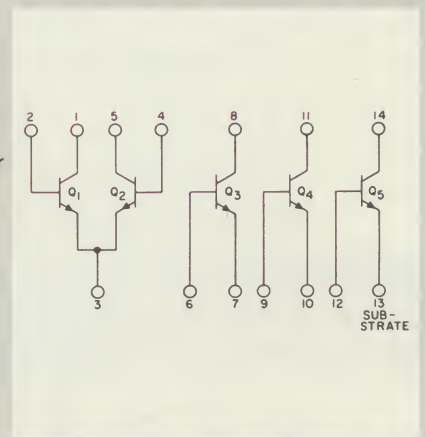
- Four General-Purpose Transistors, with Two in a Darlington Configuration
- Differential Amplifiers
- Low-Power Applications at $f=DC$ through VHF
- CA3018A is like CA3018 but features tighter controls for more critical applications requiring premium performance



Package:
12-Lead TO-5

CA3045 CA3046

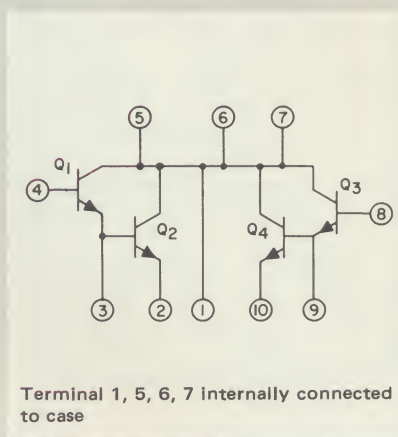
- Three Isolated Transistors and One Differentially-Connected Transistor Pair
- For all Types of Signal-Processing Systems operating from DC to VHF
- Temperature Compensated Amplifiers



Package: 14-Lead dual in-line, ceramic
* Package: 14-Lead dual in-line, plastic

CA3036

- Two Independent Low-Noise Wide-Band Amplifiers
- AF Preamplifier and Low-Level Amplifier for Single-Channel and Stereo Systems
- Matched Transistors with Emitter-Follower Outputs
- $f_T=200\text{MHz}$



Package:
10-Lead TO-5

CA3026

Schematic diagram for this type is shown under Differential Amplifiers

CA3035 CA3035V1

Schematic diagrams for these types are shown under Special-Function Subsystems

Note: All resistance values are in OHMS

For Ratings and Characteristics on Linear Integrated Circuits, see pages 6-13 in the RCA Integrated Circuits Product Guide, CDL-820B

The resistance values included on the schematic diagrams have been supplied as a convenience to assist Equipment Manufacturer's in optimizing the selection of "outboard" components of equipment designs. The values shown may vary as much as $\pm 30\%$.

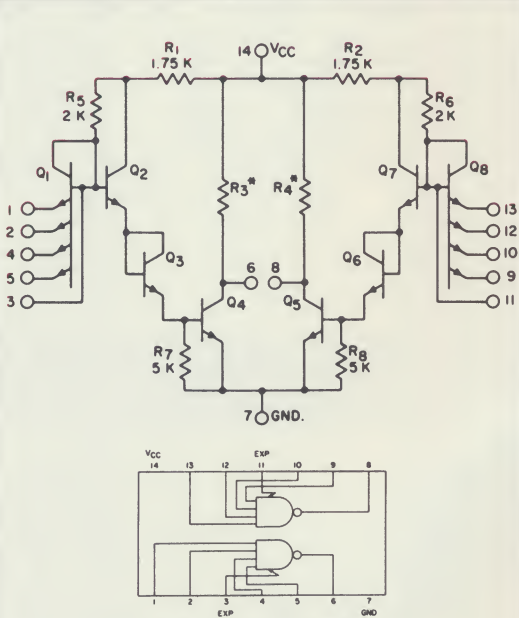
RCA reserves the right to make any changes in the Resistance values provided such changes do not adversely affect the published performance characteristics of the device.

Medium-Power DTL

CD2300/930, CD2300D/930,
CD2300/830 Series

Dual 4-Input Gates

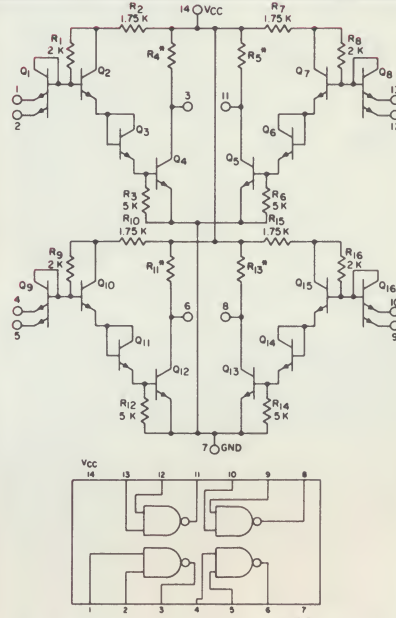
CD2300 Types
CD2301 Types



*R₃, R₄ = 6kΩ for the CD2300 Types
*R₃, R₄ = 2kΩ for the CD2301 Types

Quad 2-Input Gates

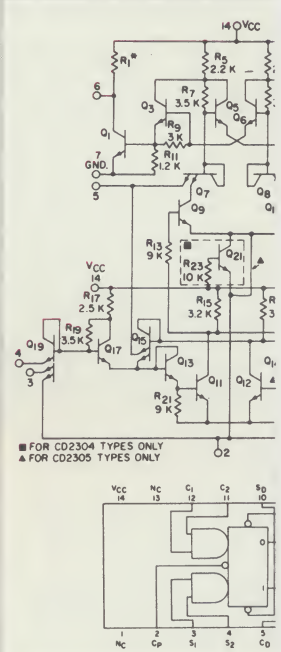
CD2302 Types
CD2303 Types



*R₄, R₅, R₁₁, R₁₃ = 6kΩ for the CD2302 Types
*R₄, R₅, R₁₁, R₁₃ = 2kΩ for the CD2303 Types

Clocked Flip-Flops

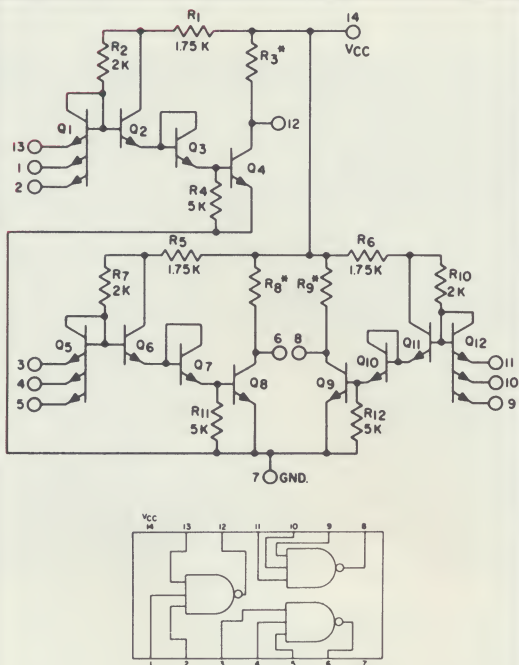
CD2304 Types
CD2305 Types



■ FOR CD2304 TYPES ONLY
▲ FOR CD2305 TYPES ONLY

Triple 3-Input Gates

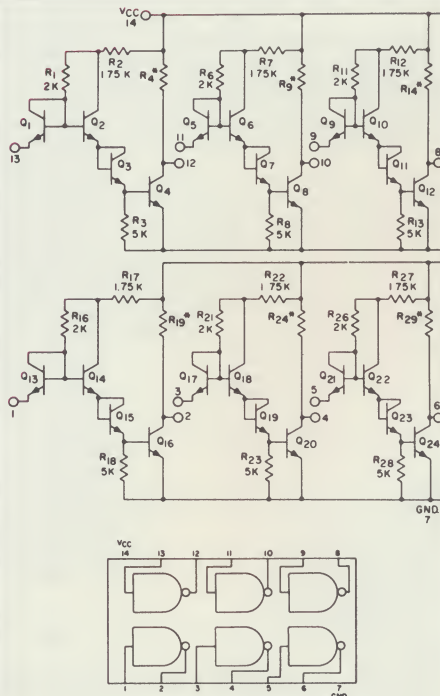
CD2308 Types
CD2309 Types



*R₃, R₈, R₉ = 6kΩ for the CD2308 Types
= 2kΩ for the CD2309 Types

Hex Inverters with input diode

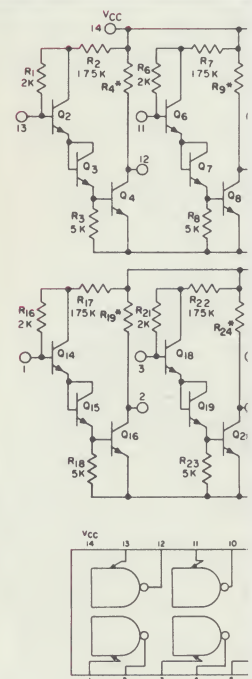
CD2310 Types
CD2311 Types



*R₄, R₉, R₁₉, R₂₄, R₂₉:
6kΩ for CD2310 types
2kΩ for CD2311 types

Hex Inverters expa

CD2312 Types
CD2313 Types



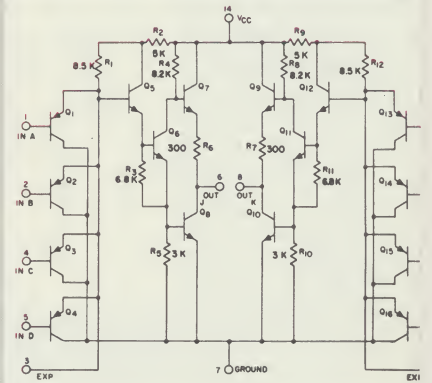
*R₄, R₉, R₁₄, R₂₄:
6kΩ for CD2312 types
2kΩ for CD2313 types

Low-Power DTL

CD2200, CD2200D Series ★

Dual 4-Input Gate

CD2200
CD2200D



Features

- Very low dissipation 2.3 mW/gate, 7 mW/flip-flop
- Military full-temperature range: -55°C to +125°C
- High noise immunity
- Active pull-up outputs — afford low impedance for driving high capacitive loads
- High breakdown voltage input "Diodes"
- Popular pin configuration; 14 = V_{CC}, 7 = Ground
- Monolithic silicon epitaxial construction
- Aluminum-to-aluminum ultrasonic bonding

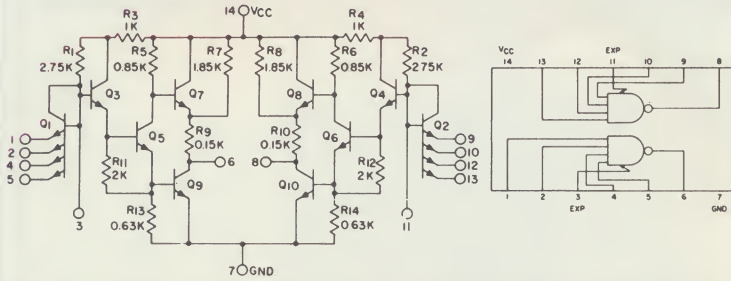
- ★ Packages:
CD2200 Series
14-lead flat pack, ceramic
CD2200D Series
14-lead dual in-line, ceramic

Features

- High Fan-out Gate drive capability, 25
- Noise immunity, 1V typical at 25°C
- "Wired OR" output logic capability
- Single 4.5V to 5.5V power supply
- Gate fan-out capability — "pull-up" resistor
= 6kΩ.....8
= 2kΩ.....7
- Average power dissipation (per gate), 8 mW typical
- Average gate propagation delay, 25 ns typical (fan-out = 7 +35 pF)
- Package:
CD2300/930 Series — 14-lead flat pack, ceramic
CD2300D/930 Series — 14-lead dual in-line, ceramic
CD2300E/830 Series — 14-lead dual in-line, plastic

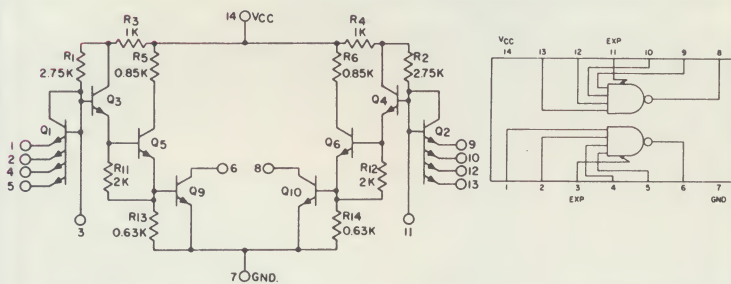
High Fan-Out Gates with transistor pull-ups

CD2306 Types



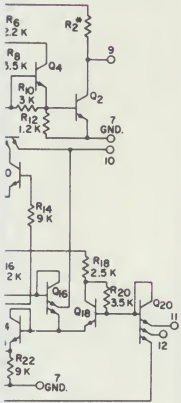
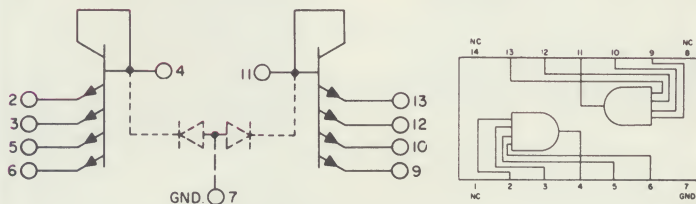
High Fan-Out Gates — without pull-ups

CD2307 Types

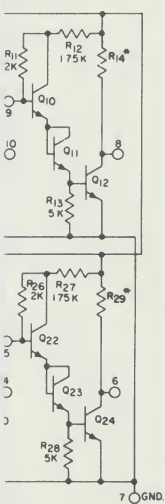


Diode Expanders

CD2314 Types



ndable

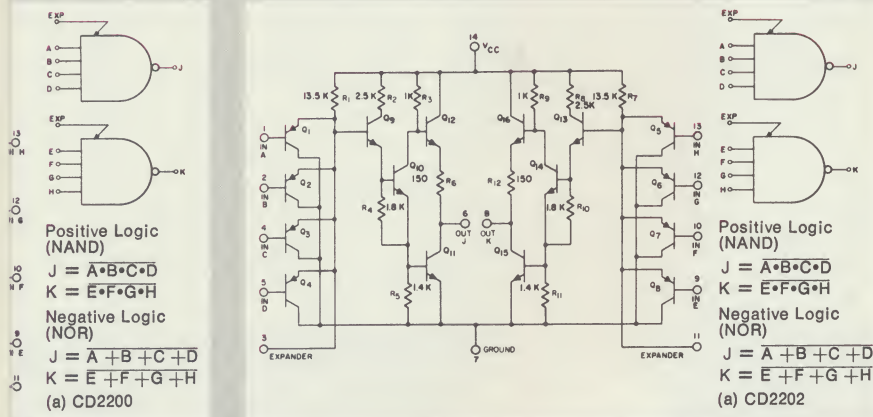


R₂₉:
/pes
/pes

Dual 4-Input Buffer Gate

CD2202, CD2202D

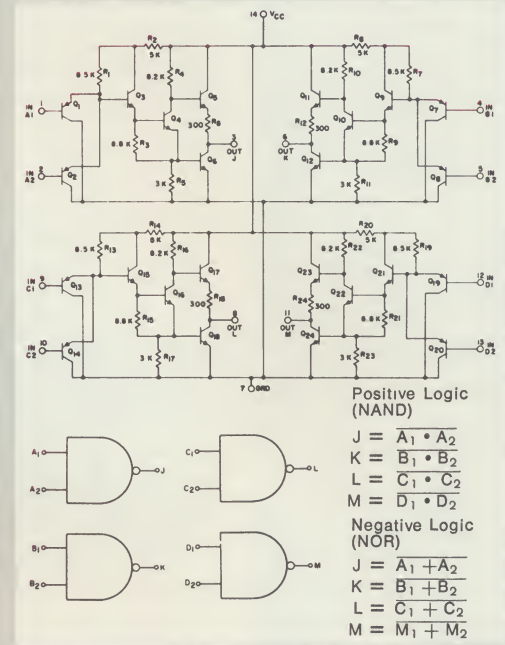
■ Buffer Gate capable of Fan-Out of 25



Quadruple 2-Input Gate

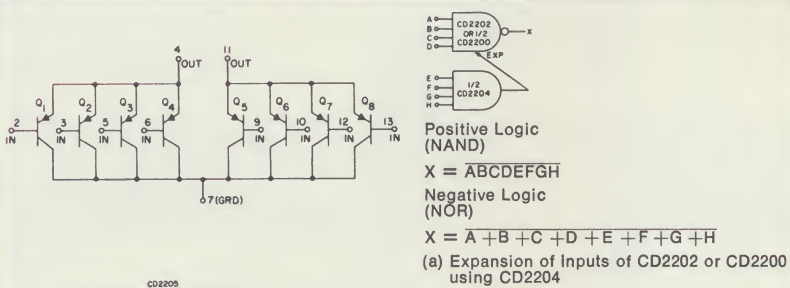
CD2201

CD2201D



Dual 4-Input Gate Expander

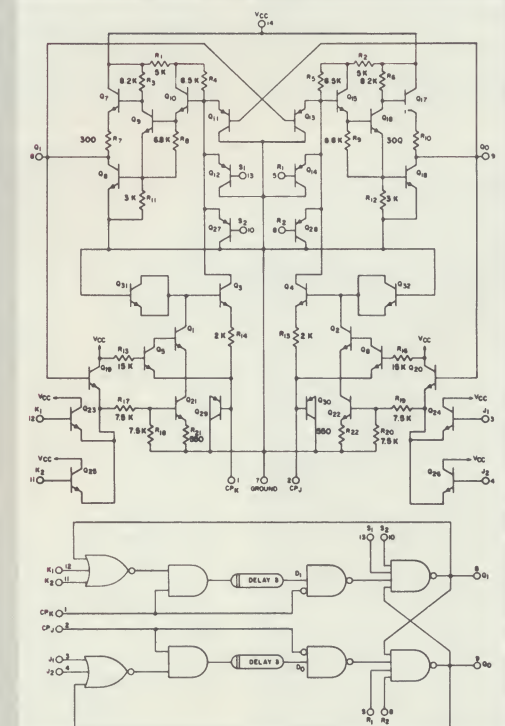
CD2204
 CD2204D



J-K Flip-Flop with set-reset capability

CD2203, CD2203D

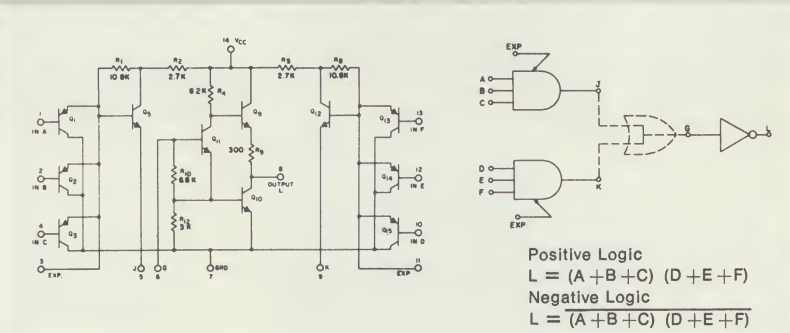
- Split Clock Lines
- Dual Inputs: "J" Clock Steering, "K" Clock Steering, DC Set & Reset
- 1.2 MHz Complementing Rate



Dual 3-Input Gate

CD2205
 CD2205D

- Performs AND/OR/NOT function
- Expandable "AND" sections
- "Wired OR" capability

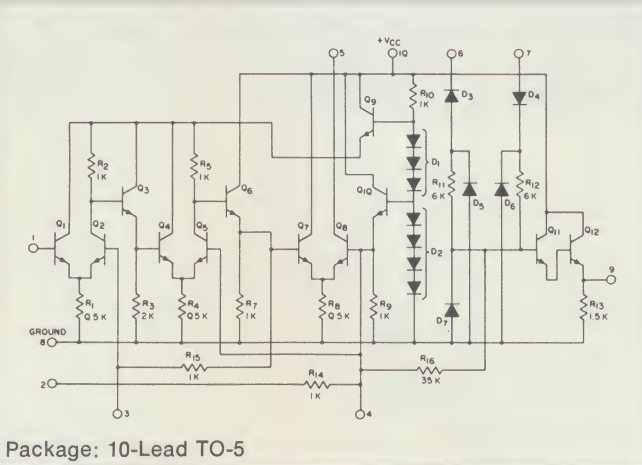


Special-Function Subsystems

Wide-Band Amplifier/Limiter/FM Detector

**CA3013
CA3014**

- Combines in one package IF Amplifier, AM and Noise Limiter, FM Detector, Audio Preamplifier
 - AM Rejection: >50dB at 4.5MHz
 - High Amplifier Gain: 75dB at 4.5MHz
- CA3013 is like CA3014 except for Max. DC Supply Voltage:
CA3013=7.5V
CA3014=10V

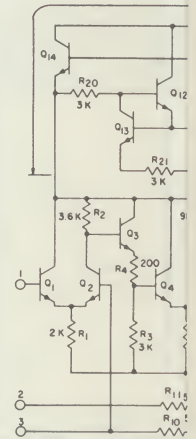


Package: 10-Lead TO-5

Wide-Band Amplifier/Limiter/FM

CA3041

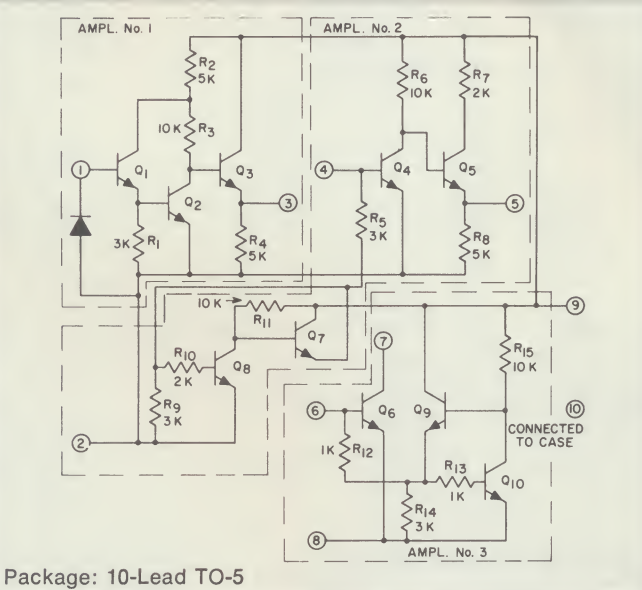
- For Sound-Systems of TV Receivers using Tube-Type AF Output Amplifiers
- For FM IF Amplifier Communications Systems and High-Fidelity Receivers to 20MHz
- Low Harmonic Distortion and Radiation
- Internal Regulated Voltage Supply
- Limiting Sensitivity: 150 μ V typ. at 4.5MHz



Ultra-High-Gain Wide-Band Amplifier Arrays

**CA3035
CA3035V1**

- Three Individual General-Purpose Amplifiers
- Ideal in Remote-Control Amplifiers, e.g. TV
- High Cascade Voltage Gain: 129dB typ. at 40kHz
- Low-Noise Wide-Band Performance
- Internal Temperature Compensation
- All Amplifiers Single Ended; requires one power supply
- CA3035V1 is like CA3035 but has formed leads

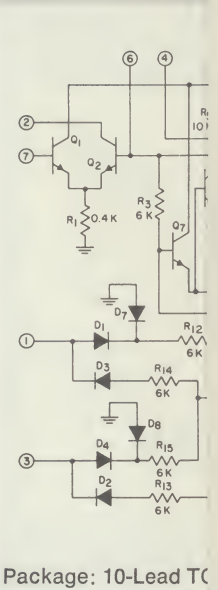


Package: 10-Lead TO-5

High-Frequency Wide-Band Amp

**CA3034
CA3034V1**

- AFC Applications
- Differential Input Amplifier
- Dual Phase Detector with Differential Output Amplifier
- Compensated Reference Voltage Supply
- CA3034V1 is like CA3034 but has formed leads

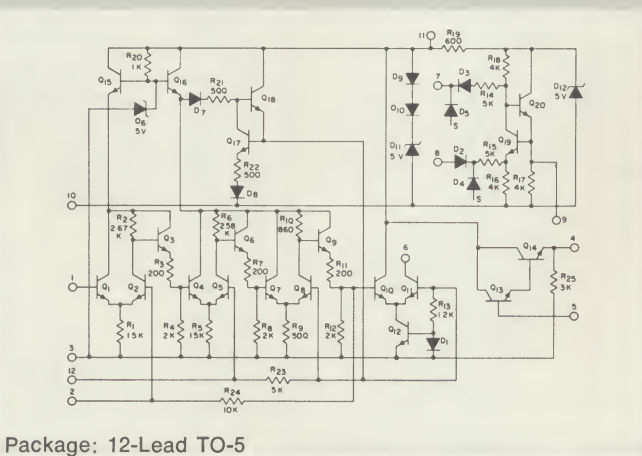


Package: 10-Lead TO-5

High-Gain Wide-Band Amplifier/Limiter/FM Detector/Audio Amplifier

CA3043

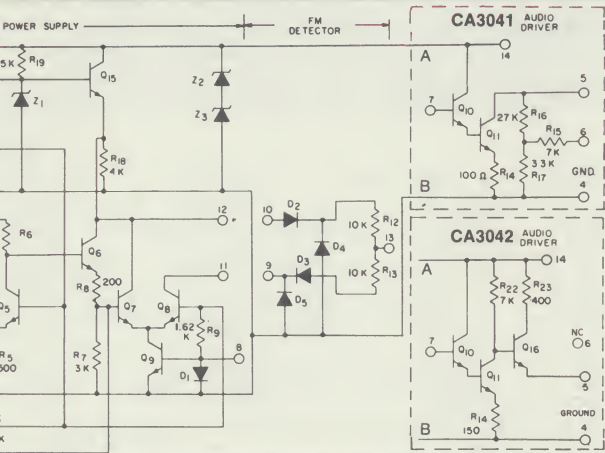
- For FM IF Amplifier Communications Systems and High-Fidelity Receivers to 20MHz
- Limiting Sensitivity: 50 μ V typ. at 10.7MHz
- Low Harmonic Distortion
- Recovered AF Voltage: 100mV at 75kHz deviation



Package: 12-Lead TO-5

Note: All resistance values are in Ω , K, or M. For Ratings and Characteristics see pages 6-13 in the Guide, CDL-820B. The resistance values have been supplied by the Manufacturer's in optional components of equipment such as $\pm 30\%$. RCA reserves the right to change values provided such changes do not affect performance.

Detector / Audio Driver

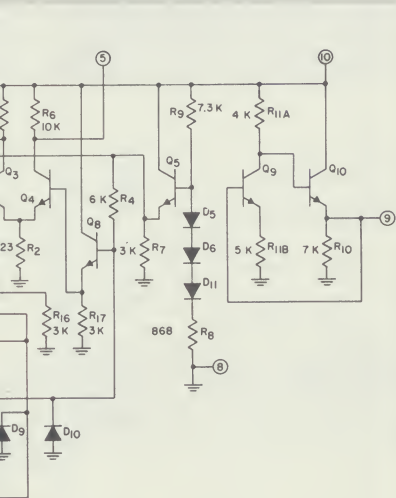


CA3042

- This type is like the CA3041 but is intended for sound systems of TV Receivers using Transistor-Type AF Output Amplifiers

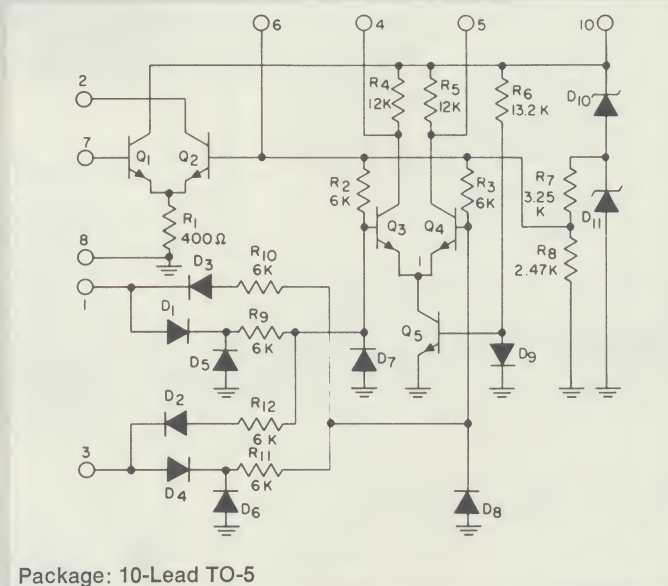
Package: 14-Lead dual in-line, plastic

Amplifier/Phase Detectors



CA 3044 CA 3044VI

- AFC Applications
- Internal Regulated Voltage Supply
- Differential Input Amplifier
- Dual Phase Detector with Differential Output Amplifier
- CA3044V1 is like CA3044 but has formed leads



Package: 10-Lead TO-5

Values are in OHMS

Characteristics on Linear Integrated Circuits,
RCA Integrated Circuits Product

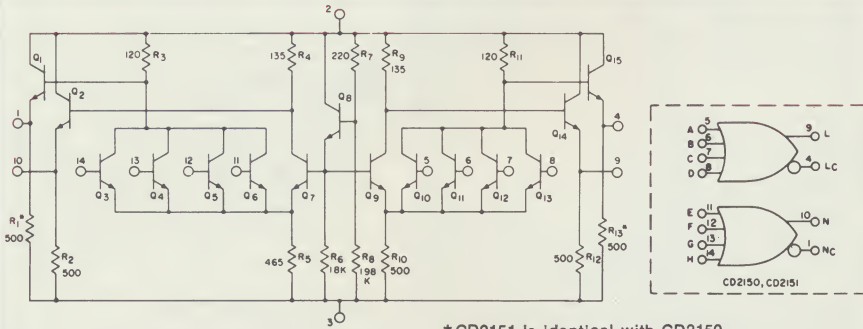
Values included on the schematic diagrams
as a convenience to assist Equipment
designers in the selection of "outboard" com-
ponents. The values shown may vary as

needed to make any changes in the Resistance
values. Changes do not adversely affect the pub-
lic characteristics of the device.

ECCSL[▲]-OR/NOR Positive Logic Ultra-High Speed

Dual 4-Input Gate CD2150

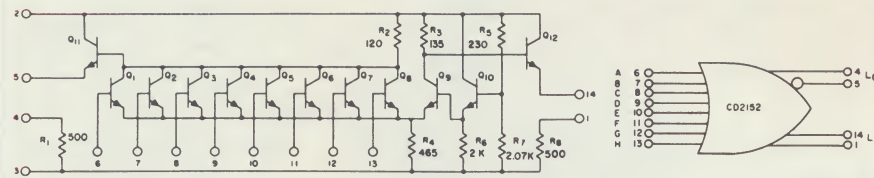
Dual 4-Input Gate with "Wired OR" CD2151*



*CD2151 is identical with CD2150 except that R₁ and R₁₃ are eliminated. "NOR" outputs are unterminated.

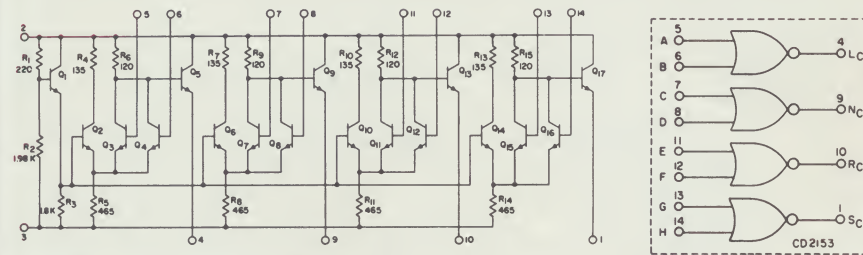
Package: 14-lead flat pack, ceramic

8-Input Gate CD2152



Package: 14-lead flat pack, ceramic

Quadruple 2-Input Gate with "Wired OR" CD2153



Package: 14-lead flat pack, ceramic

CD2150, CD2151, CD2152, CD2153

Positive Logic

Level
"1" = -0.76V
"0" = -1.60V

Equations

$L = A+B+C+D+E+F+G+H$ (OR)
 $LC = A+B+C+D+E+F+G+H$ (NOR)

Negative Logic

Level
"1" = -1.60V

Equations

$L = A \cdot B \cdot C \cdot D \cdot E \cdot F \cdot G \cdot H$ (AND)
 $LC = A \cdot B \cdot C \cdot D \cdot E \cdot F \cdot G \cdot H$ (NAND)

The resistance values included on the schematic diagrams have been supplied as a convenience to assist Equipment Manufacturer's in optimizing the selection of "outboard" components of equipment designs. The values shown may vary as much as $\pm 30\%$.

RCA reserves the right to make any changes in the Resistance values provided such changes do not adversely affect the published performance characteristics of the device.

For Ratings and Characteristics on Digital Integrated Circuits, see pages 16-21 in the RCA Integrated Circuits Product Guide, CDL-820B.

Note: All resistance Values are in OHMS

Ultra-High-Speed Features

- Exceptional High Speed — Non-saturated operation, 3.6ns t_{pd} , 1 + 10pF; 7.5ns t_{pd} , 6 + 60 pF
- High system noise immunity, 40% of logic swing
- Integral reference voltage supply
- Constant power supply current
- Drives 100 Ω terminated lines
- Complementary OR/NOR outputs
- "Wired OR" output capability
- Monolithic silicon epitaxial construction
- Aluminum-to-aluminum ultrasonic bonding
- Operating temperature range: +10 to +60°C

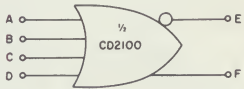
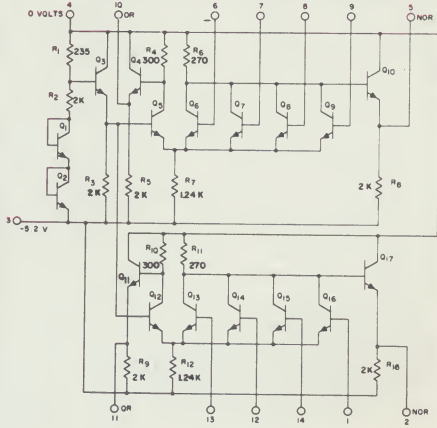
High Speed Features

- High Speed — Non-saturated operation — 6ns t_{pd} , 1 + 10pF; 24 ns t_{pd} , 6 + 60pF
- Military full-temperature range: -55°C to +125°C
- CD2100 — Complementary OR/NOR outputs
- Monolithic silicon epitaxial construction
- Aluminum-to-aluminum ultrasonic bonding
- High system noise immunity, 40% of logic swing
- Integral reference voltage supply
- Constant power supply current

▲ Emitter-Coupled Current-Steered Logic, pronounced EXCEL

High Speed

Dual 4-Input OR/NOR Gate CD2100

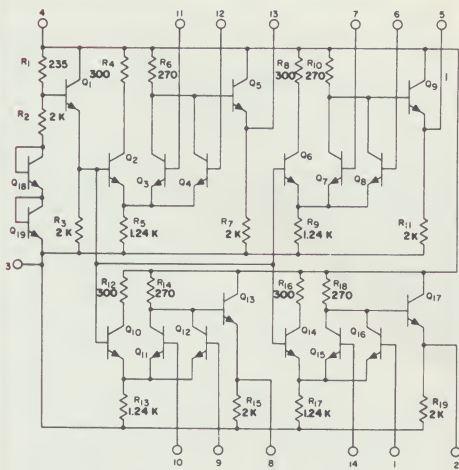


Positive Logic
 "OR" F = A + B + C + D
 "NOR" E = $\overline{A + B + C + D}$

Negative Logic
 "AND" F = A · B · C · D
 "NOR" E = $\overline{A · B · C · D}$

Package: 14-lead flat pack, ceramic

Quadruple 2-Input NOR Gate CD2101



Positive Logic "NOR" C = $\overline{A + B}$

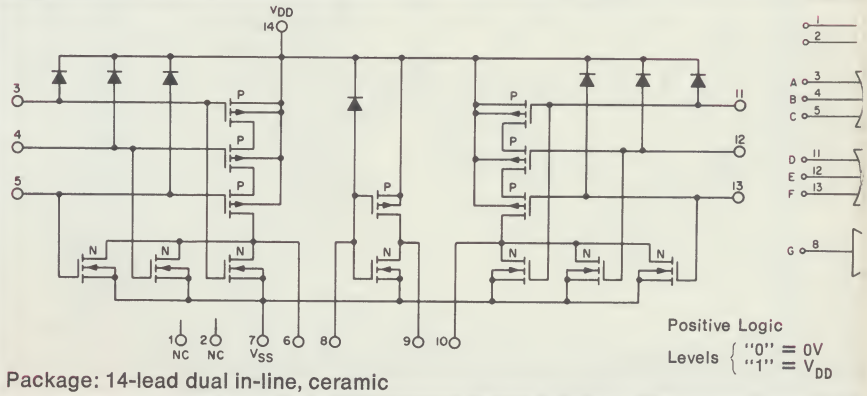
Negative Logic "NAND" C = $\overline{A · B}$

Package: 14-lead flat pack, ceramic

COS/MOS (Complementary-Symmetry MOS)

Dual 3-Input NOR Gate plus Inverter TA5361†

■ High-Speed Operation: $t_{pd} (av) = 50ns$ typ.

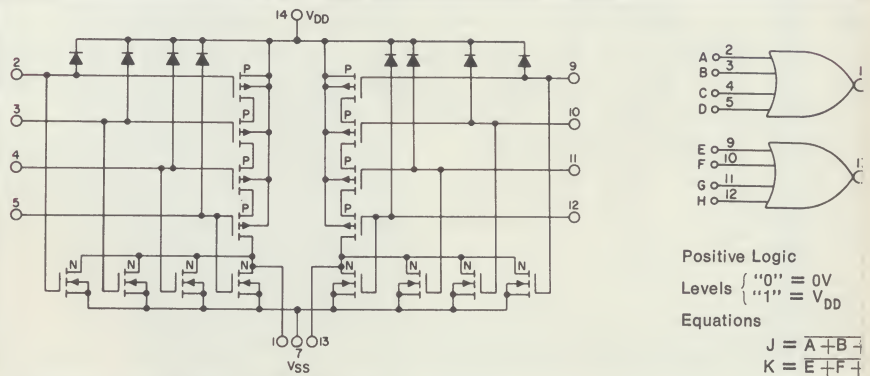


Package: 14-lead dual in-line, ceramic

Positive Logic
 Levels { "0" = 0V
 "1" = V_{DD}

Dual 4-Input NOR Gate TA5456†

■ High-Speed Operation: $t_{pd} (av) = 50ns$ typ.

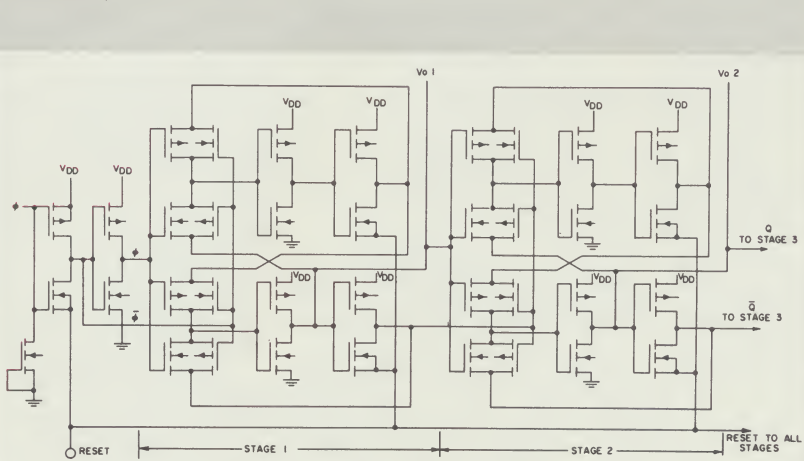


Package: 14-lead dual in-line, ceramic

Positive Logic
 Levels { "0" = 0V
 "1" = V_{DD}

Equations
 J = $\overline{A + B + C + D}$
 K = $\overline{E + F + G + H}$

MSI (Medium-Scale Integration) 7-Stage Ripple Counter TA5385†



Package: 12-lead TO-5

† Developmental Type, Anticipated Commercial Announcement, August 1968

RCA Sales Offices

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	Dayton	224 No. Wilkinson St., Dayton, Ohio 45402	(513) 461-5420
TEXAS	Dallas	210-C Court Terrace, Exchange Park N., Dallas, Tex. 75235	(214) 351-5361

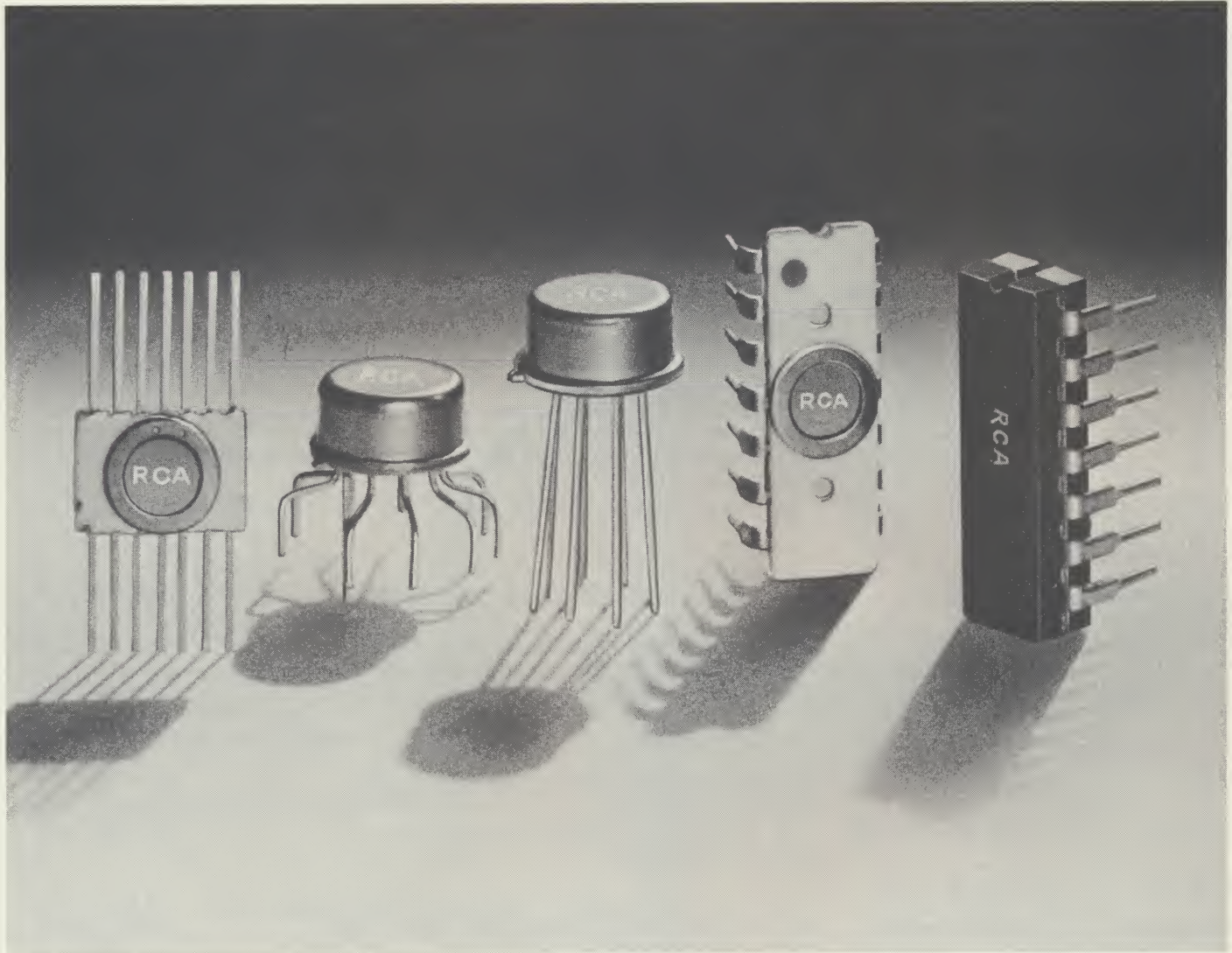
Government

CALIFORNIA	Hollywood	6363 Sunset Blvd., Hollywood, Calif. 90028	(213) 461-9171
DISTRICT OF			
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ILLINOIS	Des Plaines	446 E. Howard Ave., Des Plaines, Illinois 60018	(312) 827-0033
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