钍地半导体
Tudi Semiconductor

Product Specification

TUDI-CA3240

4.5MHz,BiMOS Operational Amplifier
with MOSFET Input/Bipolar Output

网址 www.sztdbdt.com

用芯智造·卓越品质

semiconductor device manufacturer

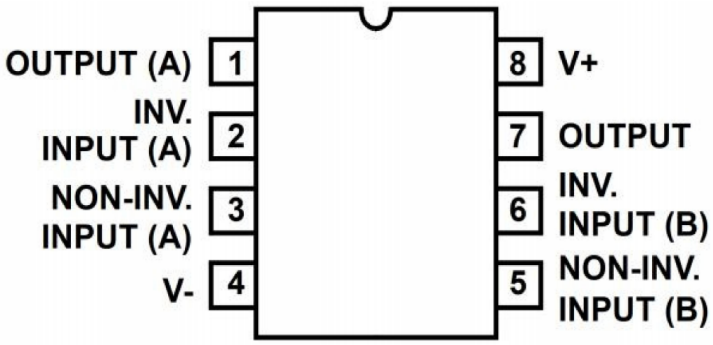
- Design
- research and development
- production
- and sales

Features

- Dual Version of CA3140
- Internally Compensated
- MOSFET Input Stage

- Very High Input Impedance (Z IN) 1.5T(Typ)
- Very Low Input Current (II) 10pA (Typ) at 15V
- Wide Common-Mode Input Voltage Range (VICR): Can Be Swung 0.5V Below Negative Supply Voltage Rail

- Directly Replaces Industry Type 741 in Most Applications
- Pb-Free Available (RoHS Compliant)



Description

The CA3240 is dual versions of the popular CA3140 series integrated circuit operational amplifiers.They combine the advantages of MOS and bipolar transistors on the same monolithic chip. The gate-protected MOSFET(PMOS) input transistors provide high input impedance and a wide common-mode input voltage range (typically to 0.5V below the negative supply rail). The bipolar output transistors allow a wide output voltage swing and provide a high output current capability.The CA3240 is compatible with the industry standard 1458 operational amplifiers in similar packages.

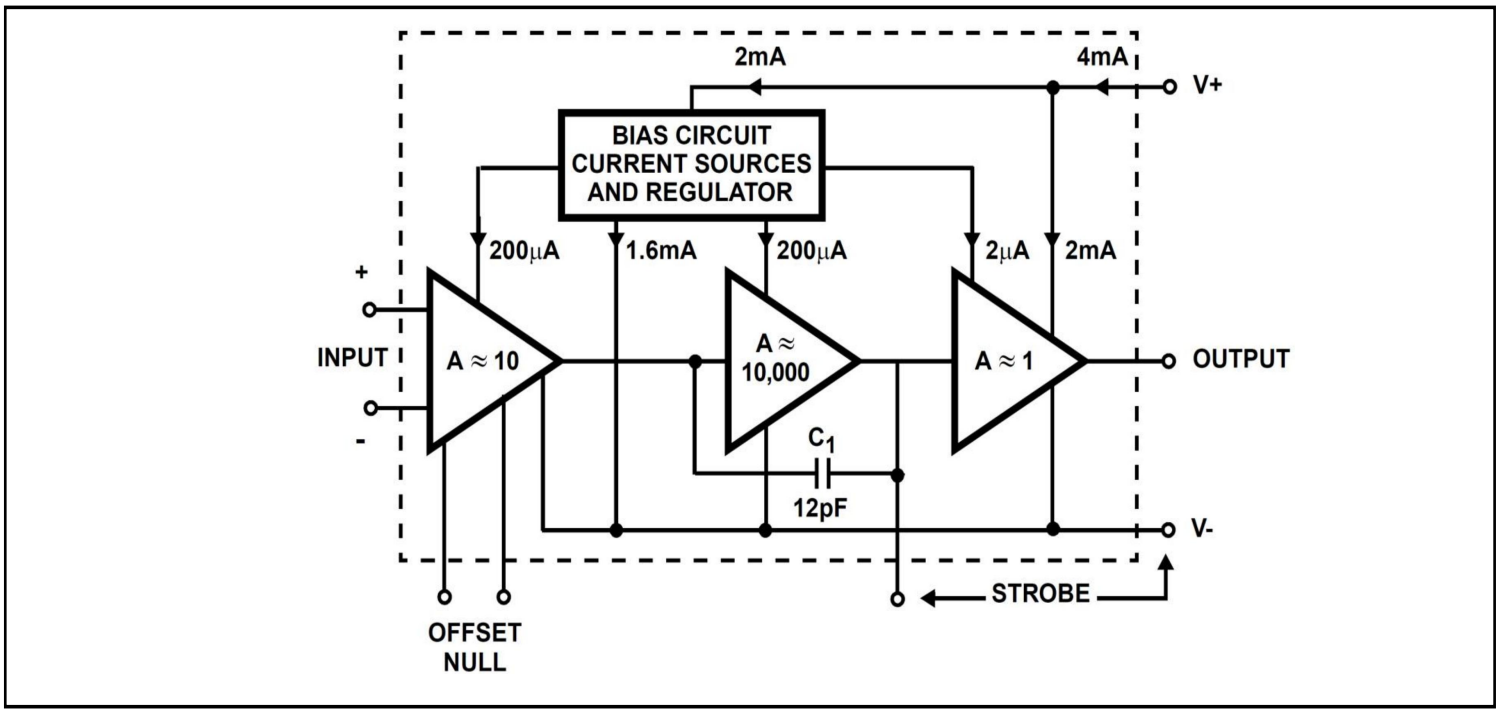
Application

- Ground Referenced Single Amplifiers in Automobile and Portable Instrumentation
- Sample and Hold Amplifiers
- Long Duration Timers/Multivibrators (MicrosecondsMinutes-Hours)
- Photocurrent Instrumentation
- Intrusion Alarm System
- Comparators
- Instrumentation Amplifiers
- Active Filters
- Function Generators
- Power Supplies

Pin Description

Pin number	Pin Name	I/O	describe
1	OUTPUT(A)	O	Output;
2	INV.INPUT(A)	I	Inverting input;
3	NON-INV.INPUT(A)	I	Non-inverting input;
4	V-	P	Negative power supply;
5	NON-INV.INPUT(B)	I	Inverting input;
6	INV.INPUT(B)	I	Non-inverting input;
7	OUTPUT(B)	O	Output;
8	V+	P	Positive supply

Functional Block Diagram



Electrical characteristics

(unless otherwise specified: V+ = 15 V, V- = -15 V, T_A = 25°C)

Parameter	Identification	Test conditions		CA3240			UNIT
				MIN	TYP	MAX	
Input offset voltage	V_{IO}			-	±3	±6	mV
Input offset voltage drift	$\triangle V_{IO}/\triangle T$			-	10	-	μV/ ℃
Input offset current	I_{IO}			-	±5	±30	pA
Input bias current	I_{IB}			-	±10	± 50	pA
Large-signal voltage gain	A_{OL}			70	100	-	dB
Common-mode rejection ratio	CMRR			70	90	-	dB
supply rejection ratio	PSRR			76	100	-	dB
Maximum output voltage	V_{OM}+			12	12.8	-	V
	V_{OM}-			-14	-14.4	-	V
Input resistance	R_I			-	1	-	TΩ
Input capacitance	C_I			-	4	-	pF
Output resistance	R_o			-	60	-	Ω
Equivalent bandwidth input noise voltage	e_N	BW=140kHz,R_s=1MΩ		-	48	-	μ V
Equivalent Input Noise Voltage	e_N	Rs=100Ω	f=1kHz	-	40	-	nV/√Hz
			f=10kHz	-	12	-	nV/√Hz
Input offset voltage adjustment resistor	/	Typical resistancevalue between pins 4&5 or 4&1 used to adjust maximum V1o (only for CA3240)		-	4.7	-	kΩ
When the output goes low, the sink current flowing into pin 4 from pin 8	I_{sink}	(Target onlyCA3240)		-	220	-	μA
Short-circuit current of the reverse power supply	I_{OM}+		Source	-	45	-	mA
	I_{OM}-		Sink	-	18	-	mA
Gain-bandwidth product;	GBWP			-	4.5	-	MHz

Extreme operating conditions (unless otherwise specified, T_A = 25°C)

Parameter	Identification	value
Power supply voltage	Vcc	±18V
Differential input voltage	ViD	± 8V
Input current	IIn	1 mA
Maximum operating junction temperature	Tj	150℃
Storage temperature	Ts	-65～+150℃
Lead temperature (soldering, 10s)	Tw	260℃

Recommended working conditions (unless otherwise specified, T = 25°C)

Parameter	Symbol	MIN	MAX	UNIT
Positive supply	V+	+5	+15	V
Negative supply	V-	-5	-15	V
Common-mode input voltage	V_{CM}	(V-)+4	(V +)-4	V
Operating temperature range	T_A	-40	+85	℃
Operating junction temperature	T_J	-40	+125	℃

Electrical characteristics (unless otherwise specified: V+ = 15 V, V- = -15 V, T_A = 25°C)

Parameter	Identification	Test conditions		CA3240			UNIT
				MIN	TYP	MAX	
conversion rate	SR			-	9	-	V/μs
Dynamic response	t_r	R_L=2kΩ,C_L= 100pF	Rise time	-	0.08	-	μs
	OS		Overshoot	-	10	-	%
The setup time at $10V_{p-p}$	t_s	R_L=2kΩ,C_L= 100pFVoltage Follower	To 1mV	-	4.5	-	μs
			To 10mV	-	1.4	-	μs
Power Current (per Channel)	I+			-	5	-	mA

Characteristic Curve

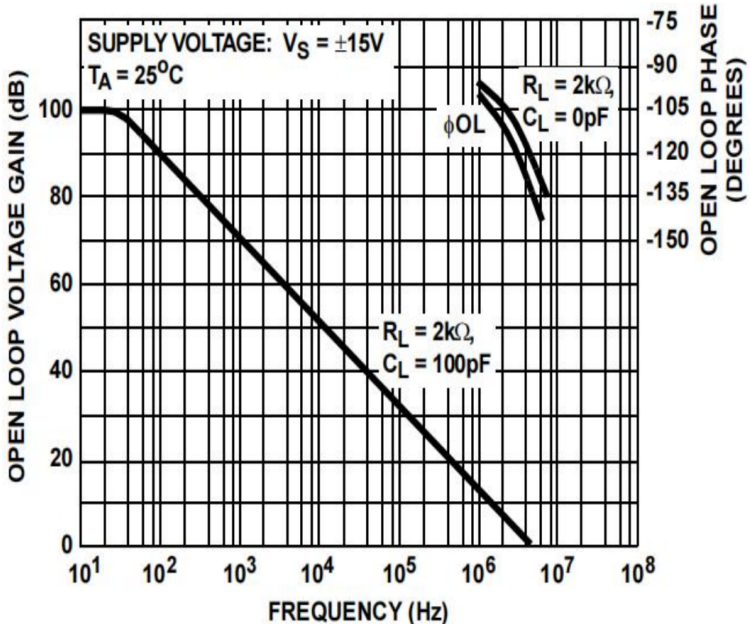


Figure 1: Relationship between open-loop voltage gain and phase versus frequency

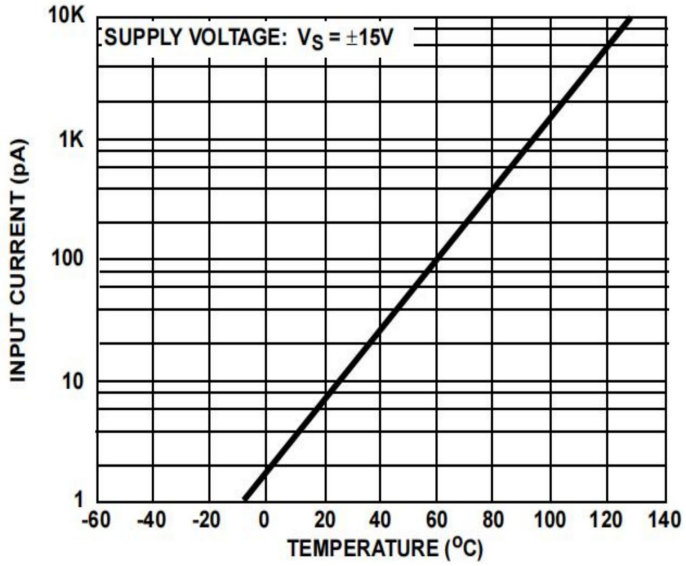


Figure 2: Relationship between input current and ambient temperature

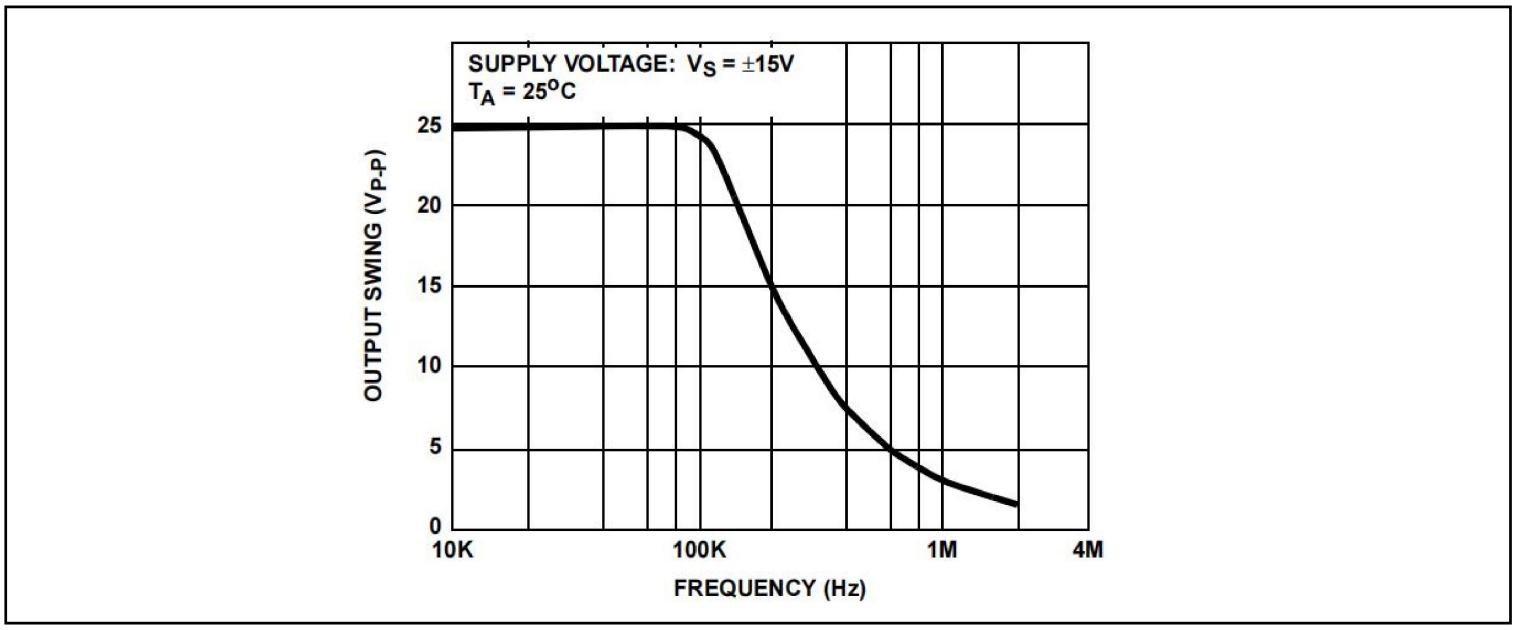


Figure 3: Relationship between maximum output voltage amplitude and frequency

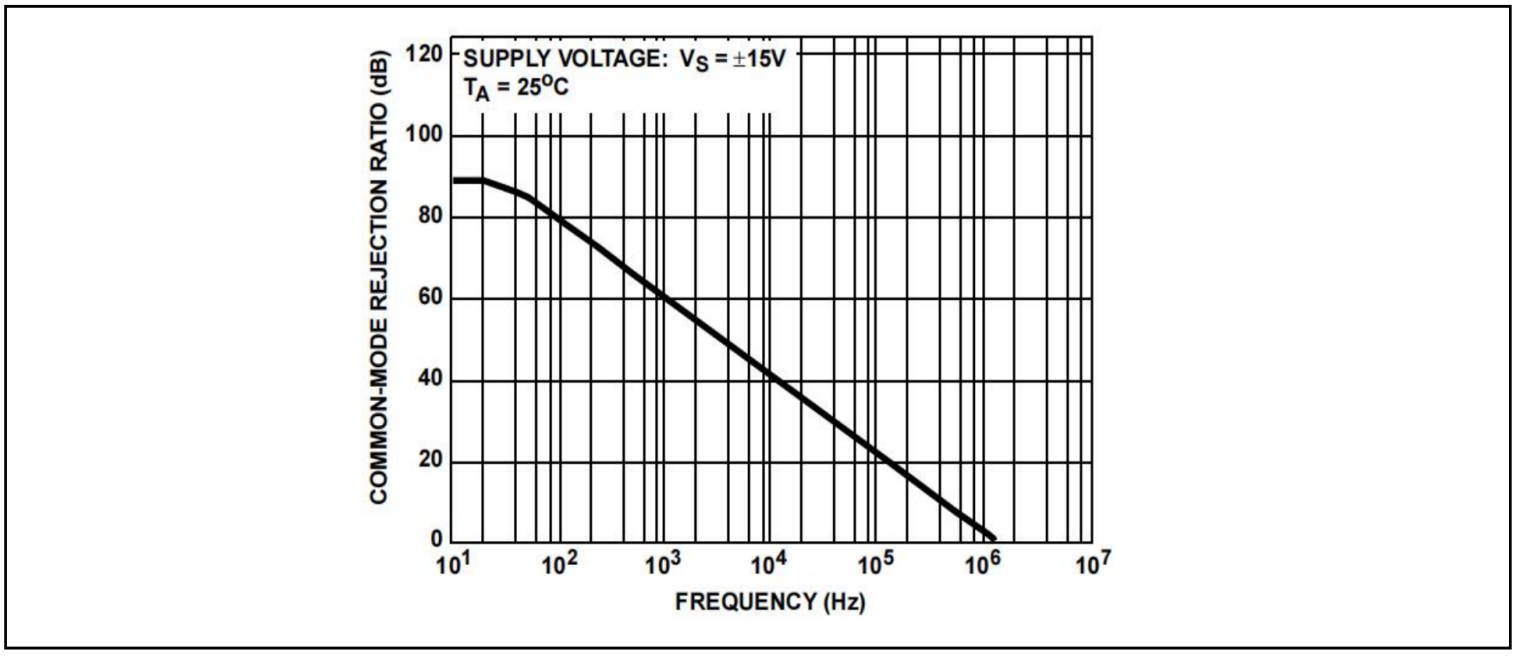


Figure 4: Relationship between common-mode rejection ratio and frequency

Typical Applications

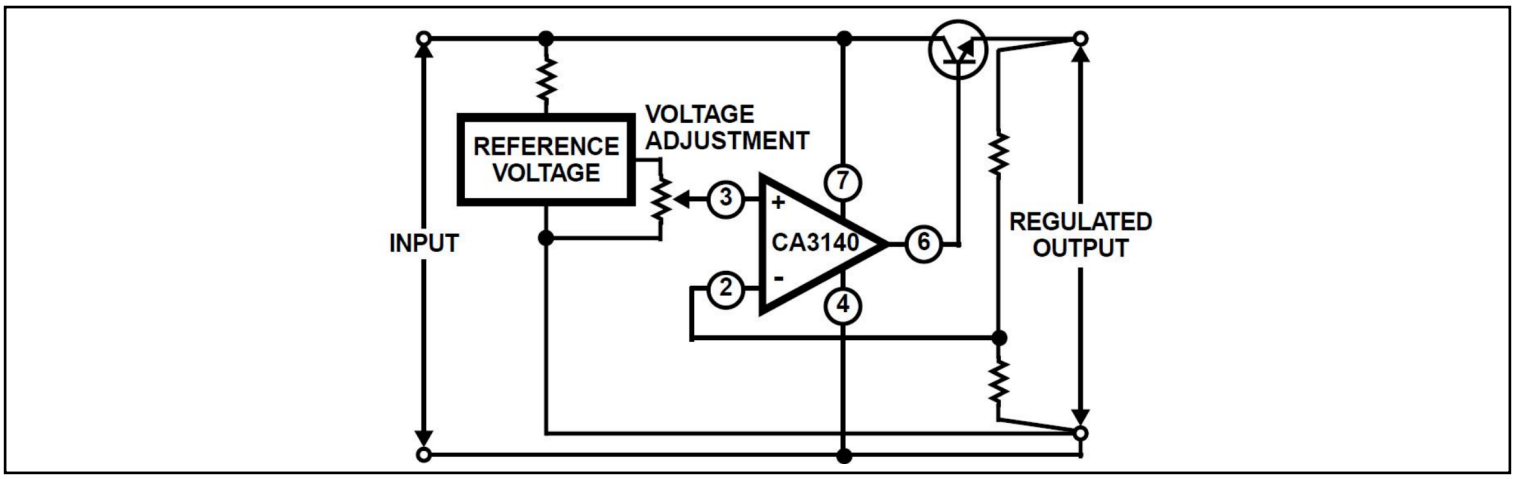


Figure 5: Basic Single-Source Voltage Regulator

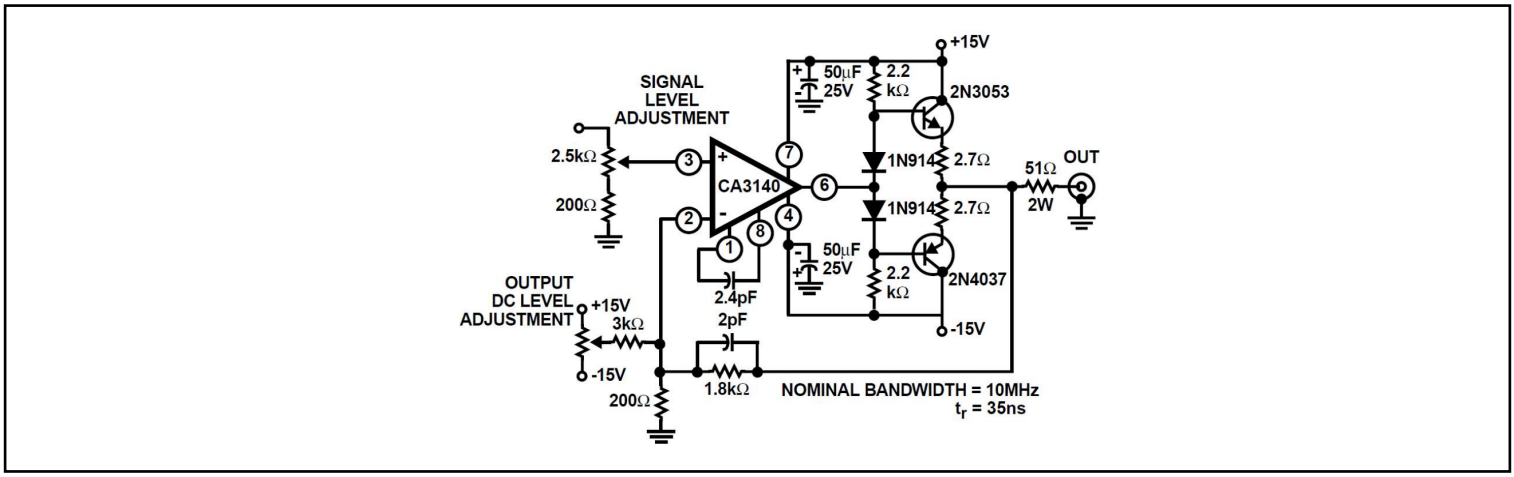


Figure 6: Broadband Output Amplifier

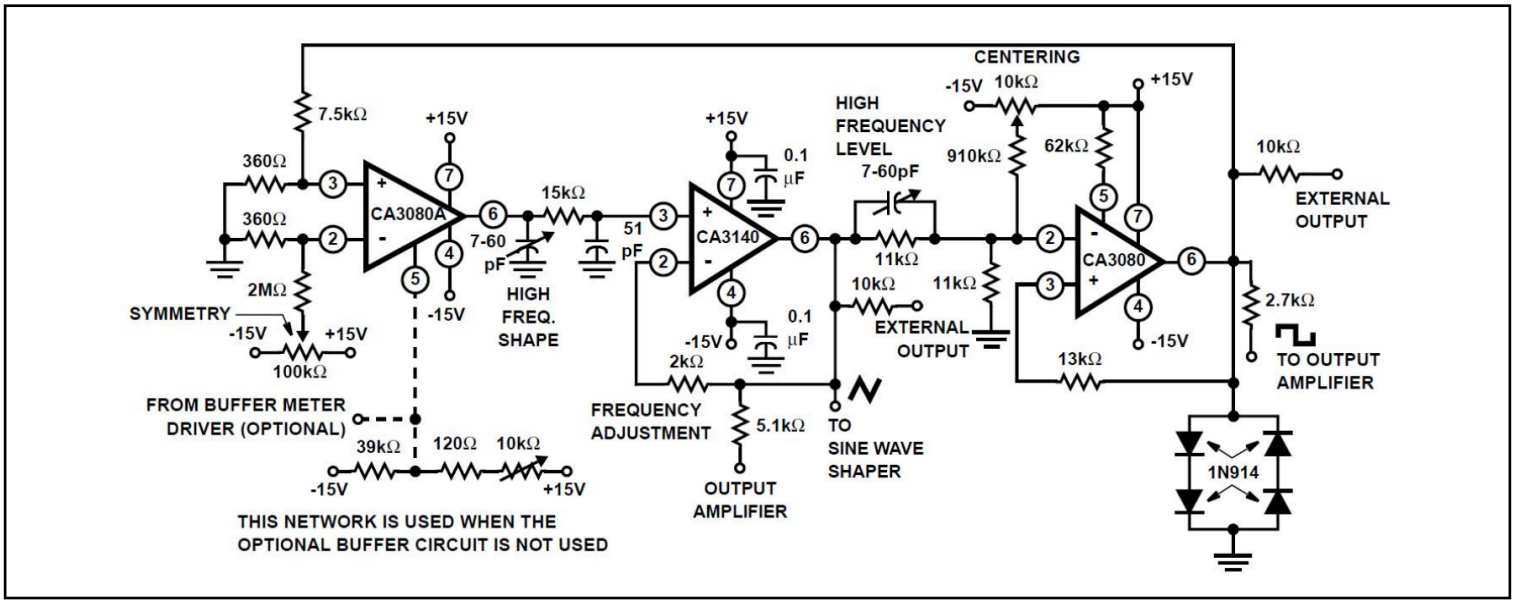


Figure 7　Super Scan Function Generator

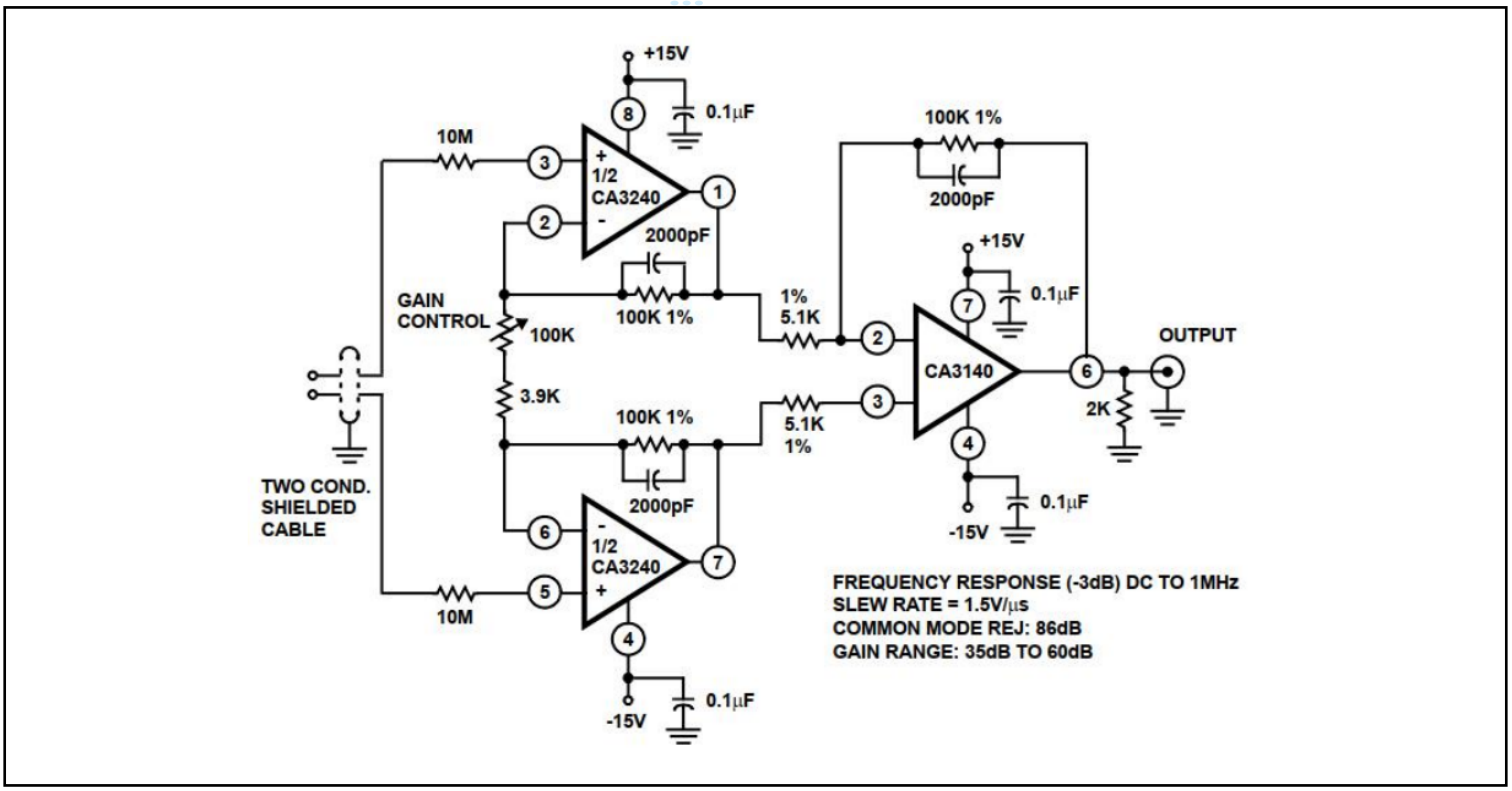


Figure 8: Precision Differential Amplifier

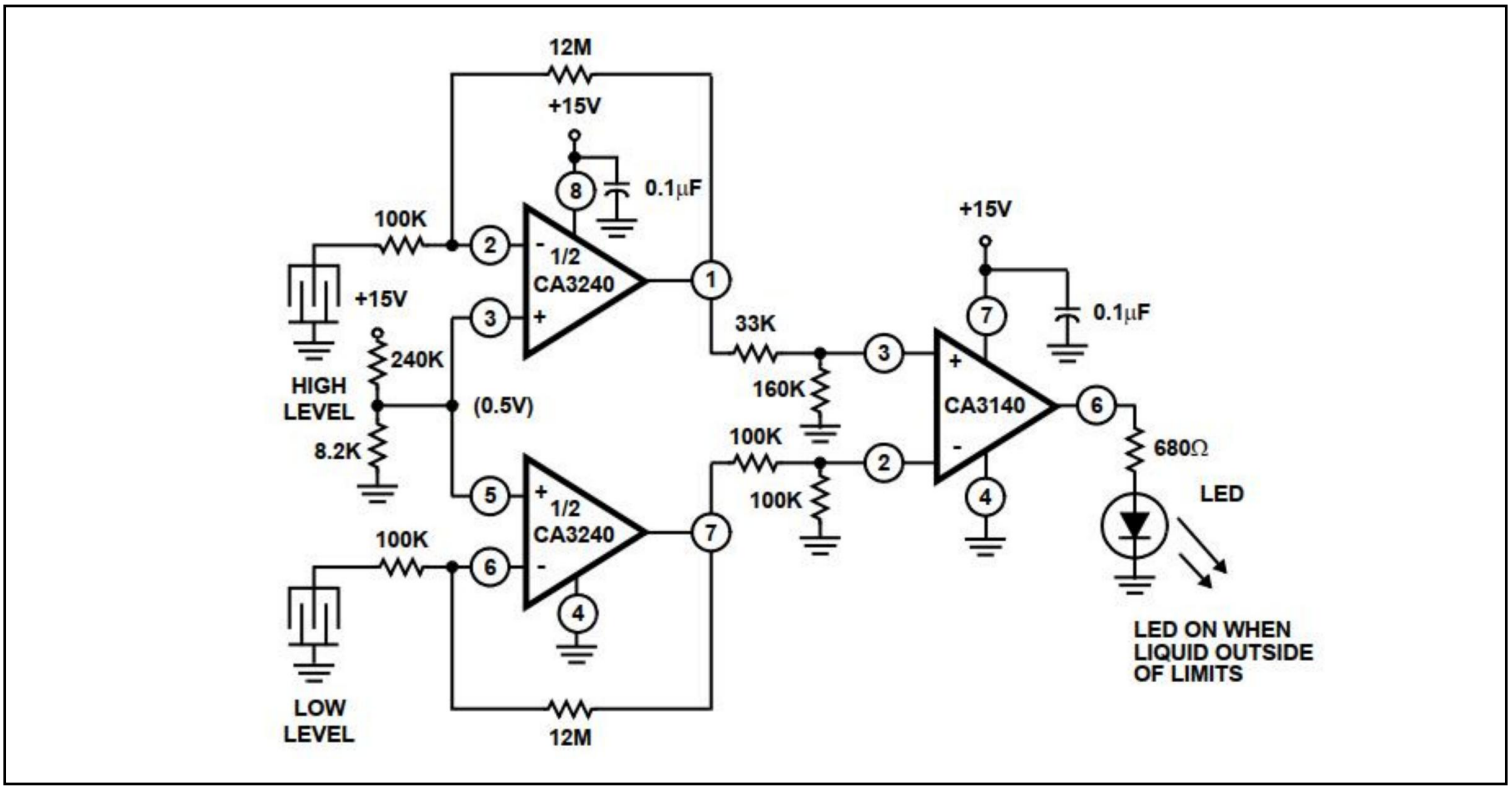
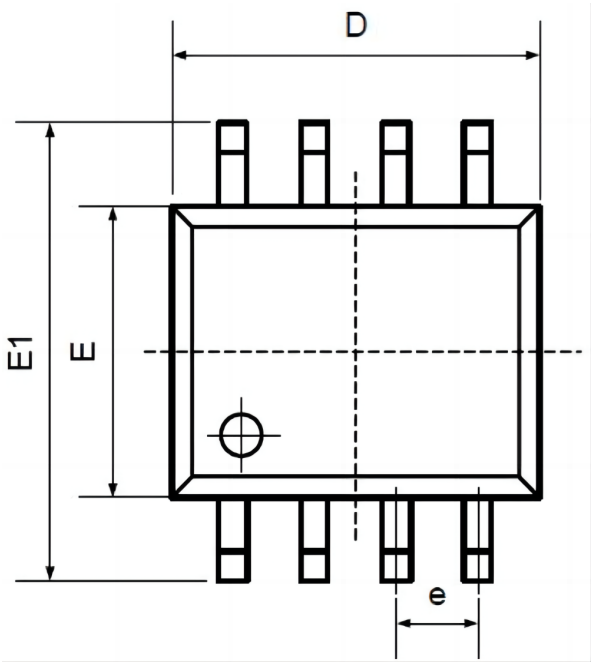
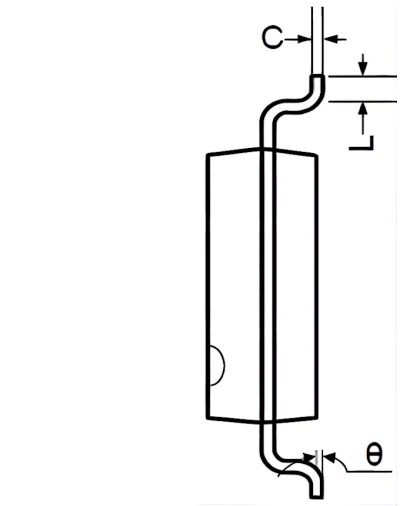
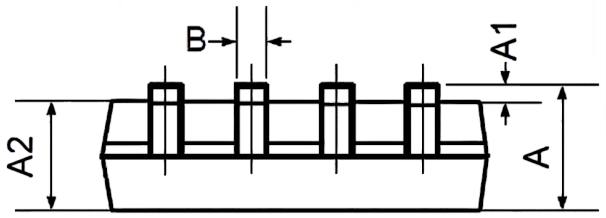


Figure 9: Dual-Level Detector

Package SOP8

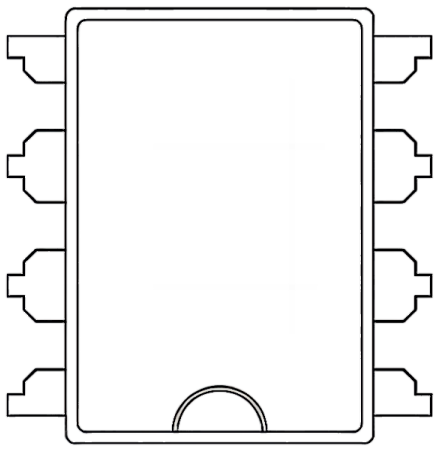


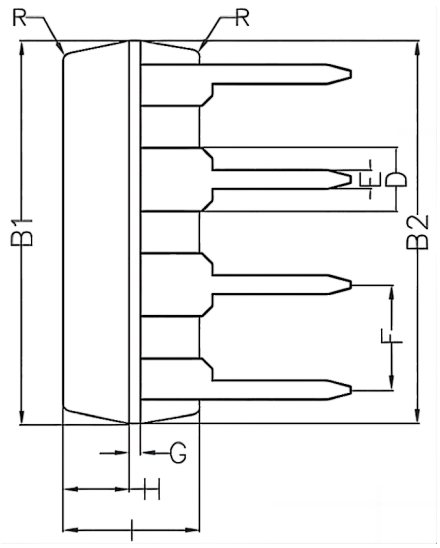


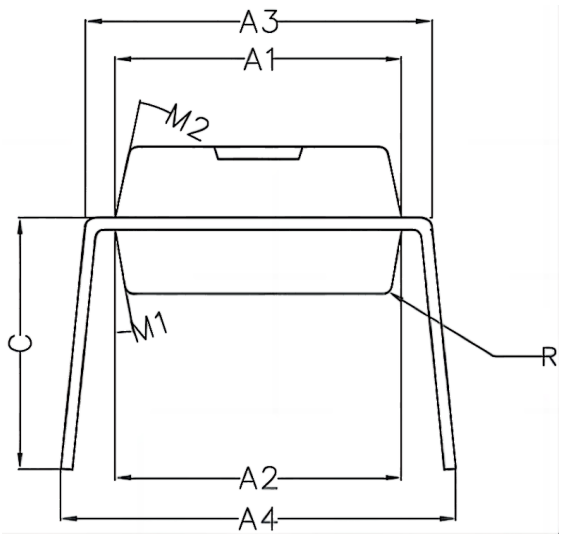


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
B	0.330	0.510	0.013	0.020
C	0.190	0.250	0.007	0.010
D	4.780	5.000	0.188	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.300	0.228	0.248
e	1.270TYP		0.050TYP	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Package DIP8







Symbol	Min	Non	Max
A1	6.28	6.33	6.38
A2	6.33	6.38	6.43
A3	7.52	7.62	7.72
A4	7.80	8.40	9.00
B1	9.15	9.20	9.25
B2	9.20	9.25	9.30
C		5.57	
D		1.52	
E	0.43	0.45	0.47
F		2.54	
G		0.25	
H	1.54	1.59	1.64
工	3.22	3.27	3.32
R		0.20	
M1	9°	10°	11°
M2	11°	12°	13°

Order information

Order Number	Package	Package Quantity	Marking On The park	Temperature
CA3240AEZ-TUDI	DIP8	Tube,50,A box of 2000	CA3240AEZ	-40℃ to +125℃

*Pb-free PDIPs can be used for through hole wave solder processing only. They are not intended for use in Reflow solder processing applications.

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