Low Power Dual Operation Amplifier

SMD358

FEATURES

- Internally frequency compensated for unity gain
- Large DC voltage gain：100dB
- Wide power supply range：3V~32V (or ±1.5V~±16V)
- Input common-mode voltage range includes ground
- Large output voltage swing：0V DC to Vcc-1.5V DC
- Power drain suitable for battery operation
- Low input offset voltage and offset current
- Differential input voltage range equal to the power supply voltage

DESCRIPTION

The SMD358 contains two independent high gain operational amplifiers with internal frequency compensation. The two op-amps operate over a wide voltage range from a single power supply. Also use a split power supply. The device has low power supply current drain, regardless of the power supply voltage. The low power drain also makes the SMD358 a good choice for battery operation.

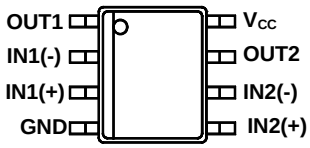
When your project calls for a traditional op-amp function, now you can streamline your design with a simple single power supply. Use ordinary +5VDC common to practically any digital system or personal computer application, without requiring an extra 15V power supply just to have the interface electronics you need.

The SMD358 is a versatile, rugged workhorse with a thousand-and-one uses, from amplifying signals from a variety of transducers to dc gain blocks, or any op-amp function. The attached pages offer some recipes that will have your project cooking in no time.

APPLICATIONS

- Battery Charger
- Cordless Telephone
- Switching Power Supply

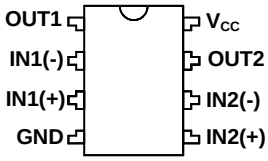
PACKAGE/ORDER INFORMATION



8-Pin Plastic S.O.I.C.
(Top View)

Order Part Number

SMD358MST



8-Pin Plastic DIP
(Top View)

SMD358M

Rev A
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PIN FUNCTIONS

Pin No.	Pin Name	Function
1	OUT1	Output1
2	IN1(-)	Inverting input1
3	IN1(+)	Non-Inverting input1
4	GND	Device ground
5	IN2(+)	Non-Inverting input2
6	IN2(-)	Inverting input2
7	OUT2	Output2
8	V_{CC}	Device input voltage

ABSOLUTE MAXIMUM RATINGS (Note 1)

Power Supply Voltages Single Supply Split Supplies	 32V ±16V
Input Differential Voltage Range (1)	±32V
Input Common Mode Voltage Range	-0.3V to 32V
Output Short Circuit Duration	Continuous
Input Current, per pin (2)	50mA
Lead Temperature, 1mm from Case for 10 Seconds	260°C
Junction Temperature (Plastic Packages)	150°C
Storage Temperature (Plastic Packages)	-55°C to +125°C

*Maximum Ratings are those values beyond which damage to the device may occur.
Functional operation should be restricted to the Recommended Operating Conditions.
+Derating - Plastic DIP: - 10 mW/°C from 65° to 125°C
SOIC Package: : - 7 mW/°C from 65° to 125°C
Notes:
1. Split Power Supplies.
2. VIN<-0.3V. This input current will only exist when voltage at any of the input leads is driven negative.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage	±2.5 or 5.0	±15 or 30	V
T_A	Operating Temperature, All Package Types	0	+70	°C

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation, VIN and VOUT should be constrained to the range GND≤(VIN or VOUT)≤VCC.

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either GND or VCC). Unused outputs must be left open.

ELECTRICAL CHARACTERISTICS Unless otherwise specified, T_A = 0 to +70°C.

Parameter	Test Conditions	Symbol	Min	Typ	Max	Units
Maximum Input Offset Voltage	V_O=1.4V V_{CC}=5.0-30V;R_S=0Ω V_{ICM}=0V to V_{CC}-1.7V	V_{IO}			9.0	mV
Input Offset Voltage Drift	R_S=0Ω, V_{CC}=30V	$\Delta V_{IO}/\Delta T$		7.0		uV/°C
Maximum Input Offset Current	V_{CC}=5.0V	I_{IO}			150	V
Input Offset Current Drift	R_S=0Ω, V_{CC}=30V	$\Delta I_{IO}/\Delta T$		10		pA/°C
Maximum Input Bias Current	V_{CC}=5.0V	I_{IB}			-500	nA
Input Common Mode Voltage Range	V_{CC}=30V	V_{ICR}	0		28	V
Maximum Power Supply Current	RL=∞,VCC=30V,V_O=0V RL=∞,VCC=5V,V_O=0V	I_{CC}			3 1.2	mA
Minimum Large Signal Open-Loop Voltage Gain	V_{CC}=15V, R_L≥2KΩ	A_{VOL}	15			V/mV
Minimum Output High-Level Voltage Swing	V_{CC}=30V,R_L=2KΩ V_{CC}=30V,R_L=10KΩ	V_{OH}	26 27			V
Maximum Output Low-Level Voltage Swing	V_{CC}=5V,R_L=10KΩ	V_{OL}			20	mV
Common Mode Rejection	V_{CC}=30V, R_S=10KΩ	CMR	65*			dB
Power Supply Rejection	V_{CC}=30V	PSR	65			dB
Channel Separation	f=1KHz to 20KHz,V_{CC}=30V	CS	-120*			dB
Maximum Output Short Circuit to GND	V_{CC}=5.0V	I_{SC}			60*	mA
Minimum Source Output Current	V_{IN+}=1V, V_{IN-}=0V, V_{CC}=15V, V_O=0V	I_{source}	10			mA
Minimum Output Sink Current	V_{IN+}=0V, V_{IN-}=1V, V_{CC}=15V, V_O=15V V_{IN+}=0V, V_{IN-}=1V, V_{CC}=15V, V_O=0.2V	I_{sink}	5 12*			mA uA
Differential Input Voltage Range	All V_{IN}≥GND or V-Supply (if used)	V_{IDR}			V_{CC}*	V

*=@25°C

TYPICAL PERFORMANCE CHARACTERISTICS

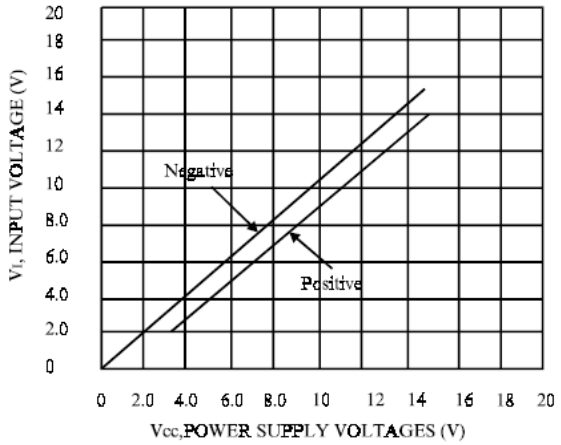


Figure 1.Input Voltage Range

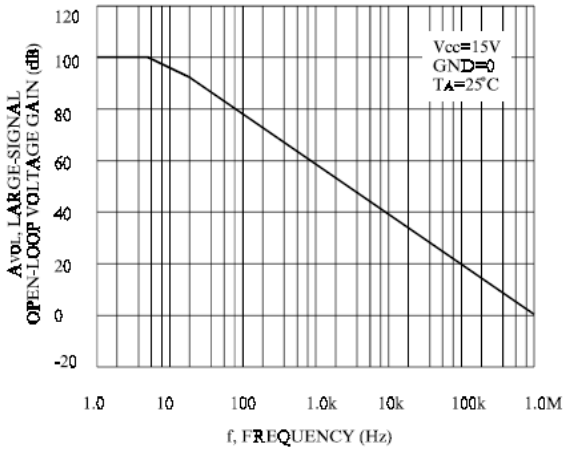


Figure 2. Open-Loop Frequency

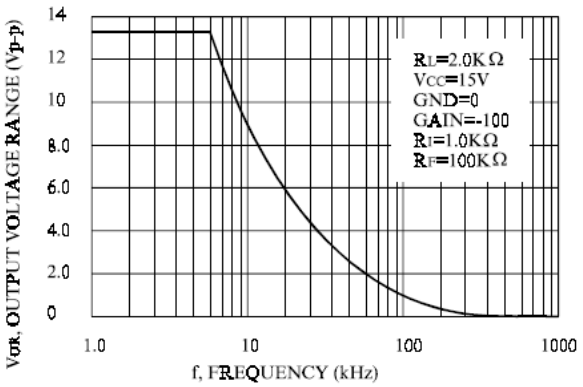


Figure 3. Large-Signal Frequency Response

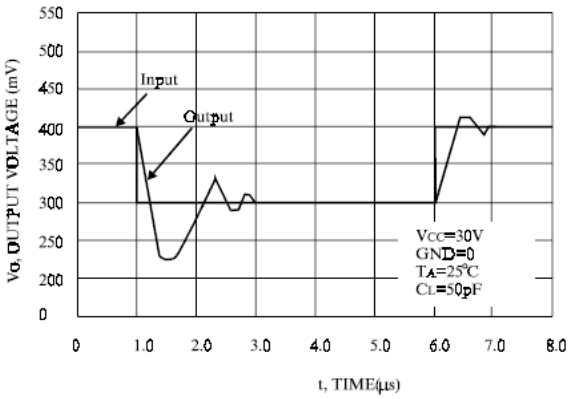


Figure 4. Small-Signal Voltage Follower Pulse Response (Noninverting)

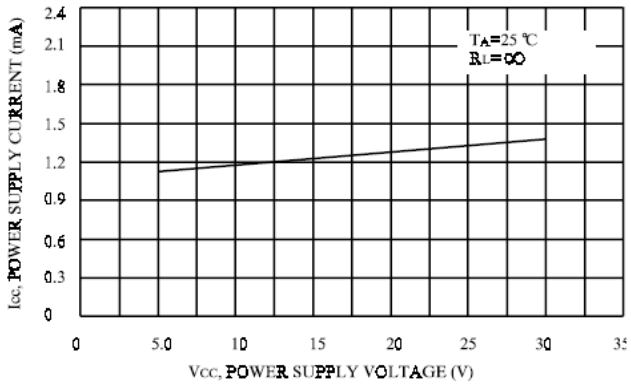


Figure 5. Power Supply Current versus Power Supply Voltage

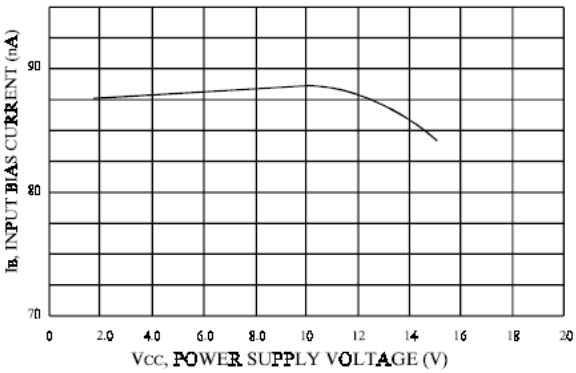
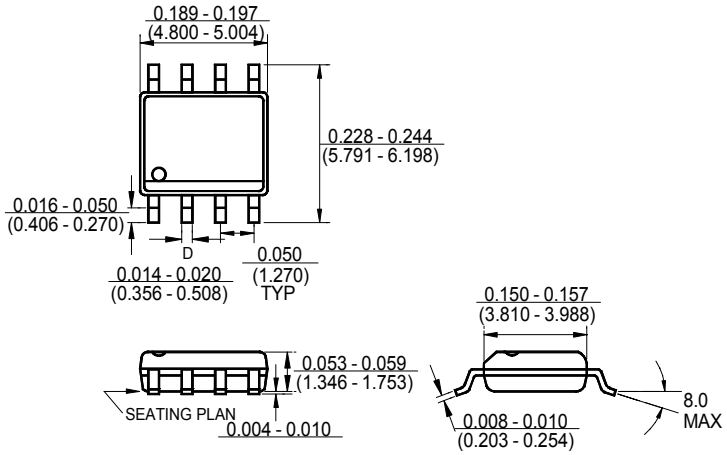


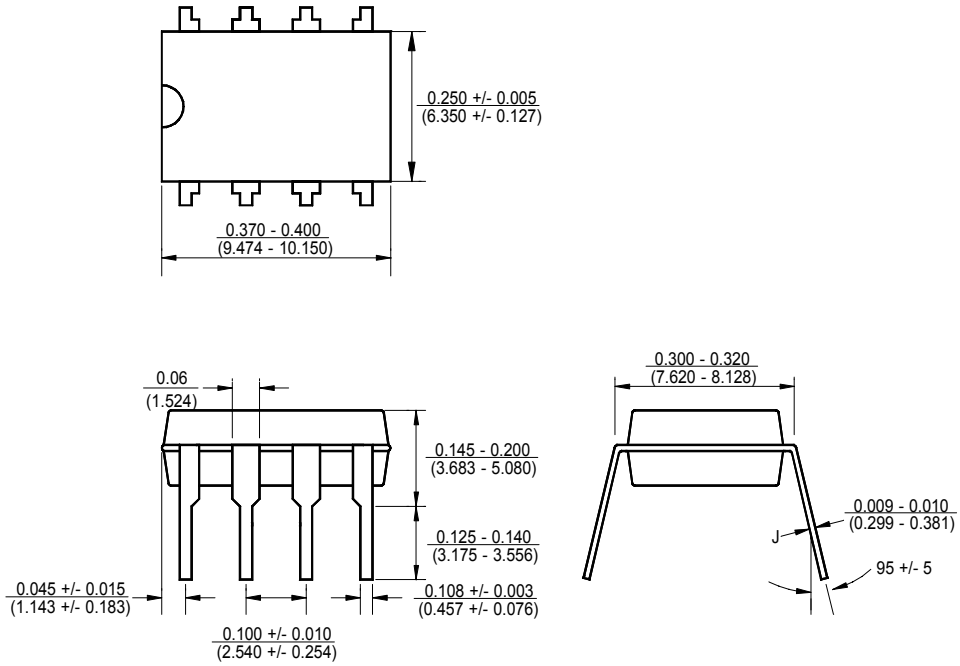
Figure 6. Input Bias Current versus Power Supply Voltage

PACKAGE DESCRIPTION Dimensions in inches (millimeters) unless otherwise specified

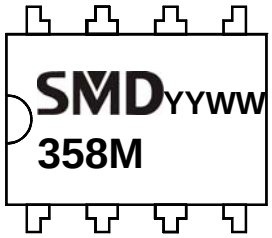
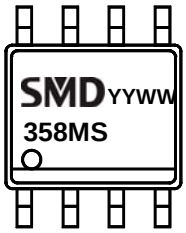
SO 8



DIP 8



MARKING DIAGRAM

DIP 8	SO 8
	

YY = Year, WW = Working Week

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IMPORTANT NOTICE

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