

MB4580

Dual Low Noise Operational Amplifiers



CBC Microelectronics
<http://www.cbcev.net>

General Description

The MB4580 consists of two low noises, high performance operational amplifiers. It is especially suitable for applications in differential-in, differential-out as well as in industrial measurement tools and applications where gain and phase matched channels is mandatory. The IC features monolithic silicon chip, internal frequency compensation, low noise, low distortion, wide operating voltage range, high gain and high bandwidth.

The MB4580 can operate under dual power supply voltage up to $\pm 18V$ or single power supply up to 36V. The MB4580 is available in DIP-8 and SOP-8 package.

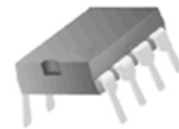
Features

- Operating Voltage: $\pm 2V$ to $\pm 18V$
- Large Signal Voltage Gain: 110 dB Typical
- Low Input Noise Voltage: $0.7 \mu V_{RMS}$ (RIAA) Typical
- Wide Gain Bandwidth Product: 15 MHz at 10KHz Typical
- Slew Rate: $7V/\mu s$ Typical

Applications

- Audio AC-3 Decoder System
- Audio Amplifier
- AC/DC Converter

Pin Configuration



DIP-8



SOP-8

Package
(DIP-8/SOP-8)

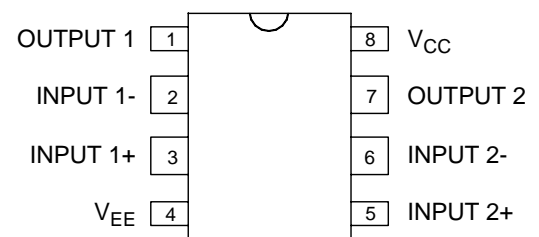
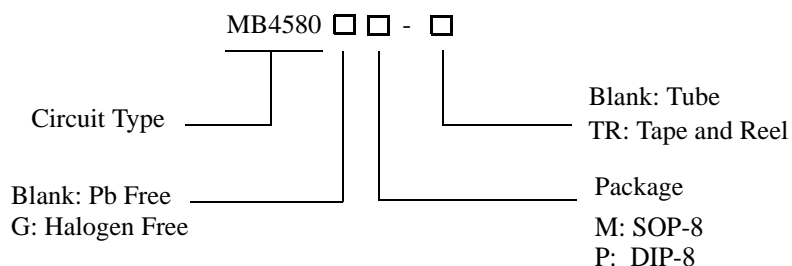


Figure1: Pin Configuration of MB4580

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Ordering Information



Package	Part Number		Marking ID		Packing Type
	Pb-free	Halogen-Free	Pb-free	Halogen-Free	
SOP-8	MB4580M	MB4580GM	MB4580M	MB4580GM	Tube
	MB4580MTR	MB4580GMTR	MB4580M	MB4580GM	Tape & Reel
DIP-8	MB4580PTR	MB4580GPTR	MB4580P	MB4580GP	Tape & Reel

Typical Application

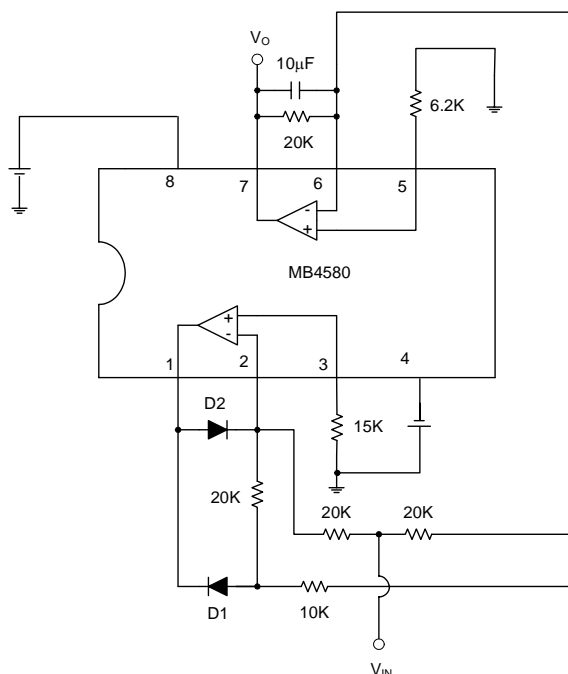


Figure 2: Typical Application of 4580 in an AC/DC Converter

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Block Diagram

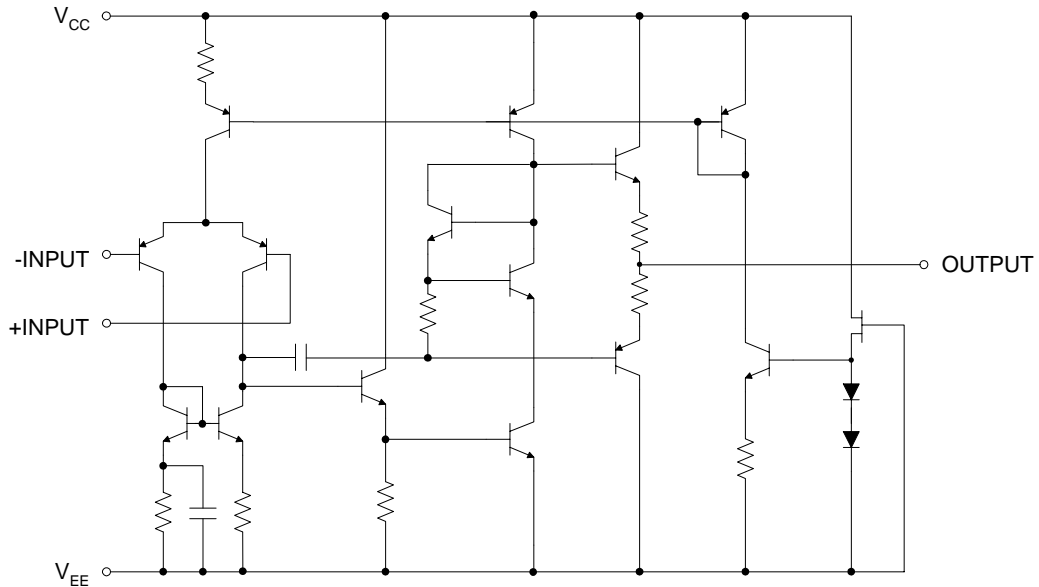


Figure 3: Representative Schematic Diagram of MB4580 (Each Amplifier)

Absolute Maximum Ratings (Note 1)

Symbol	Parameter	Rating	Units
V_{CC}	Power Supply Voltage	+20	V
V_{EE}		-20	
V_{ID}	Differential Input Voltage	+/-30	V
V_{IN}	Input Voltage	+/-15	V
P_D	Power Dissipation	SOP-8: 500	mW
		DIP-8: 800	
T_{OP}	Operating Temperature Range	-40~85	°C
T_{STG}	Storage Temperature Range	-40 to 125	°C

Note 1: Stresses greater than those listed under: “Absolute Maximum Rating” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

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Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	V_{CC}	+/-2	+/-18	V

Electrical Characteristics

($V_{CC} = +15V$, $V_{EE} = -15V$, $T_A = 25^{\circ}C$ unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min	TYP	Max	Unit
V_{IO}	Input Offset Voltage			0.5	3	mV
I_{BIAS}	Input Bias Current	$V_{CM}=0V$		150	500	nA
I_{IO}	Input Offset Current	$V_{CM}=0V$		5	100	nA
R_{IN}	Input Resistance		0.3	5		M Ω
I_{CC}	Supply Current	$R_L = \infty$, Over full temperature range		3.3	6.7	mA
G_V	Large Signal Voltage Gain	$R_L \geq 2K$, $V_O = \pm 10V$	85	100		dB
CMRR	Common Mode Rejection Ratio	$R_S \leq 10k\Omega$	80	110		dB
PSRR	Power Supply Rejection Ratio	$R_S \leq 10k\Omega$	80	110		dB
I_{SOURCE}	Output Source Current	$V_+ = 1V, V_- = 0V, V_{CC} = 15V, V_O = 2V$		50		mA
I_{SINK}	Output Sink Current	$V_+ = 0V, V_- = 1V, V_{CC} = 15V, V_O = 2V$		80		mA
V_{OH}	Output Voltage Swing	$R_L \geq 2K\Omega$	+/-10	+/-13		V
		$R_L \geq 10K\Omega$	+/-12	+/-14		
SR	Slew Rate			7		V/ μ S
	Equivalent Input Noise Voltage	RIAA $R_S = 50\Omega$, $f = 30KHz$		0.7		μ V _{RMS}
GBP	Gain Bandwidth Product	$R_L = 2K\Omega$, $f = 10KHz$		15		MHz

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Typical Characteristics

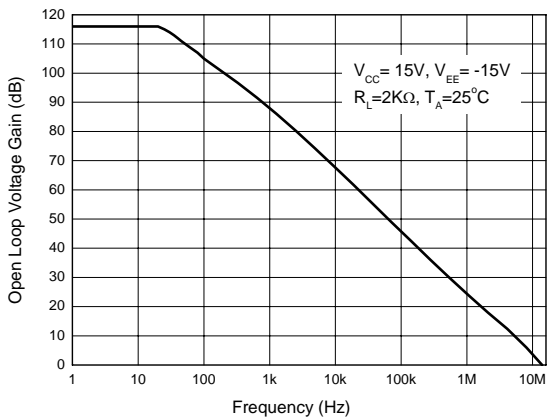


Figure 4. Open Loop Voltage Gain vs. Frequency

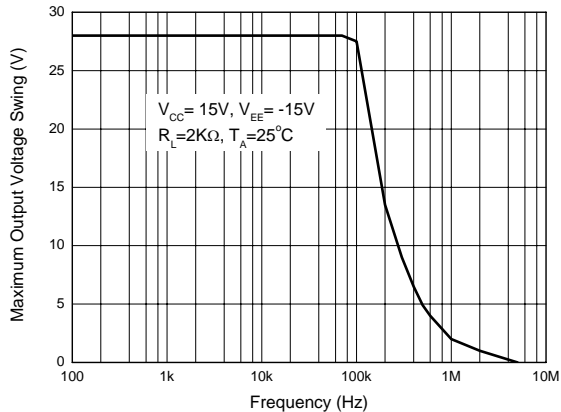


Figure 5. Maximum Output Voltage Swing vs. Frequency

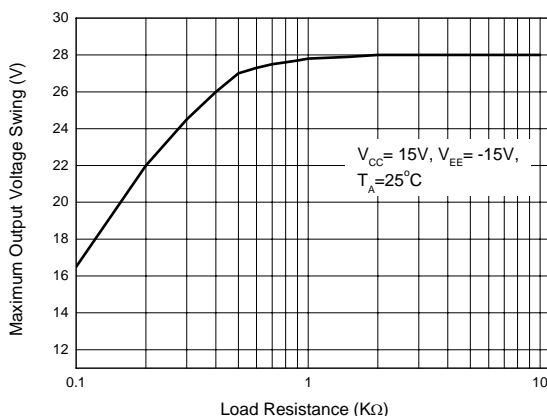


Figure 6. Maximum Output Voltage Swing vs. Load Resistance

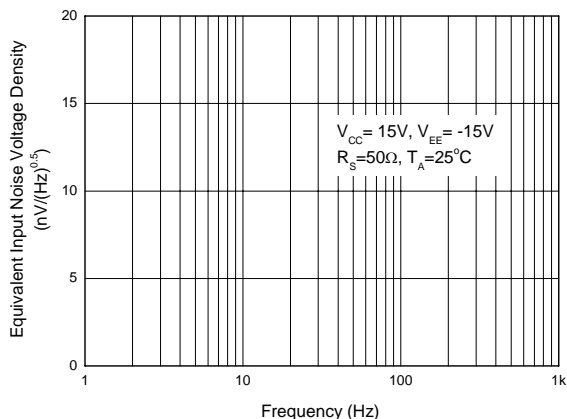


Figure 7. Equivalent Input Noise Voltage Density vs. Frequency

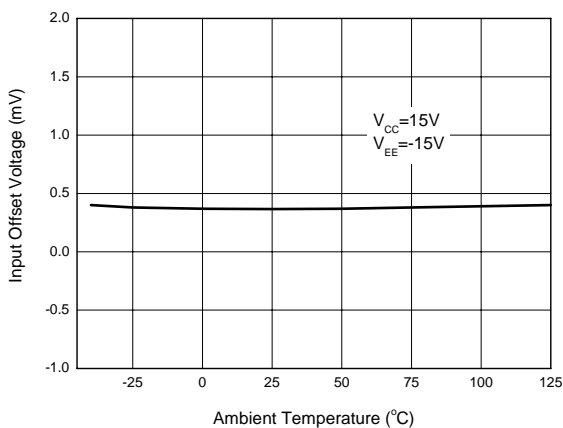


Figure 8. Input Offset Voltage vs. Temperature

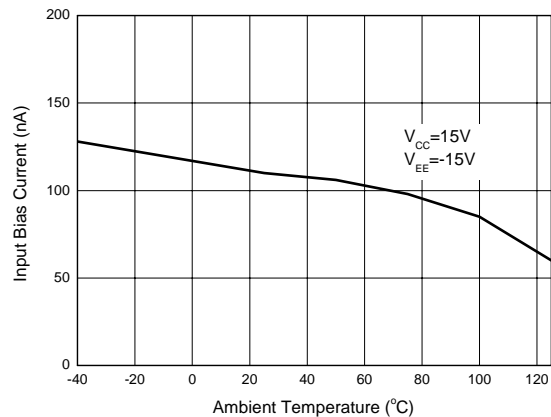
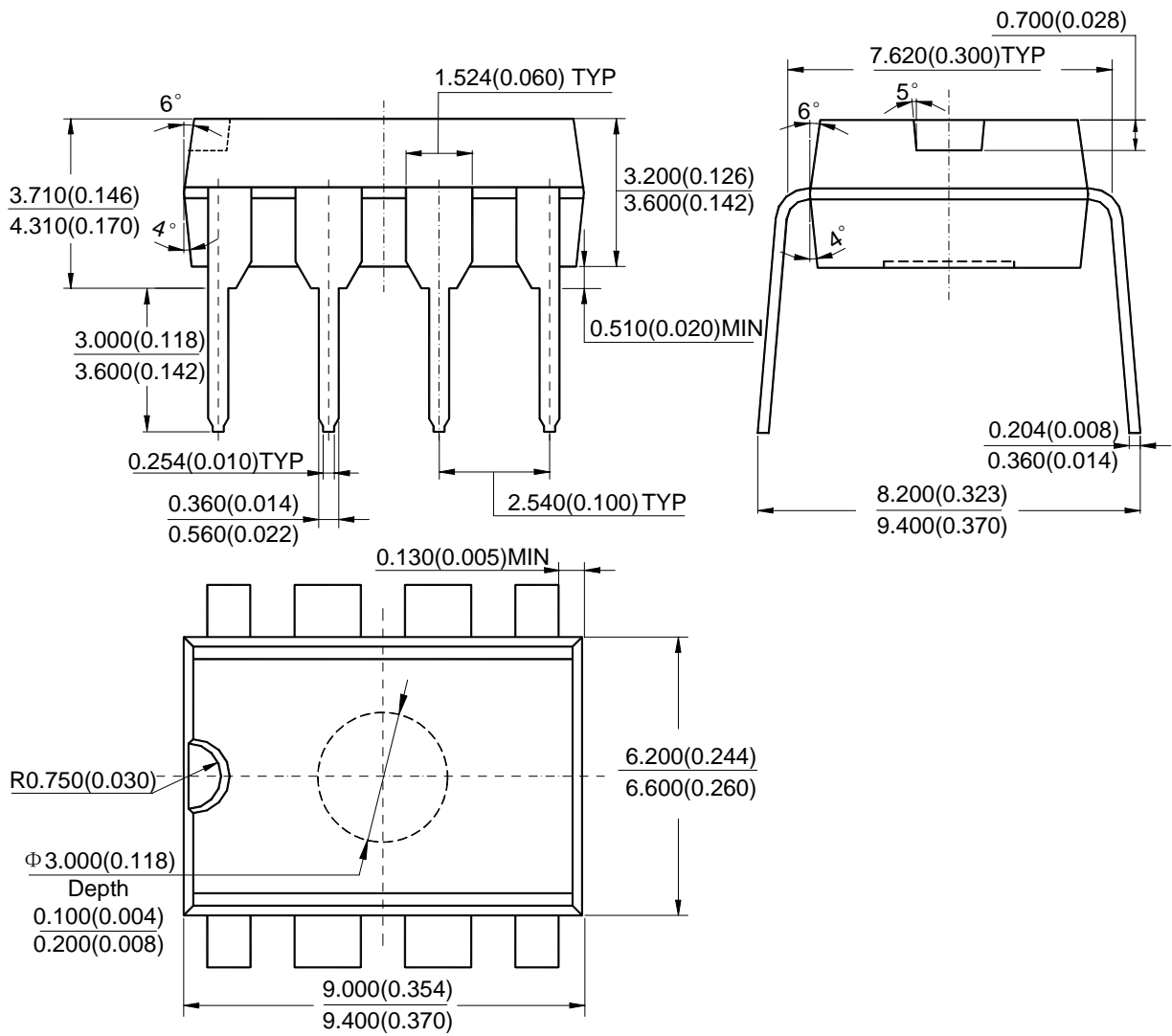


Figure 9. Input Bias Current vs. Temperature

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Mechanical Dimensions

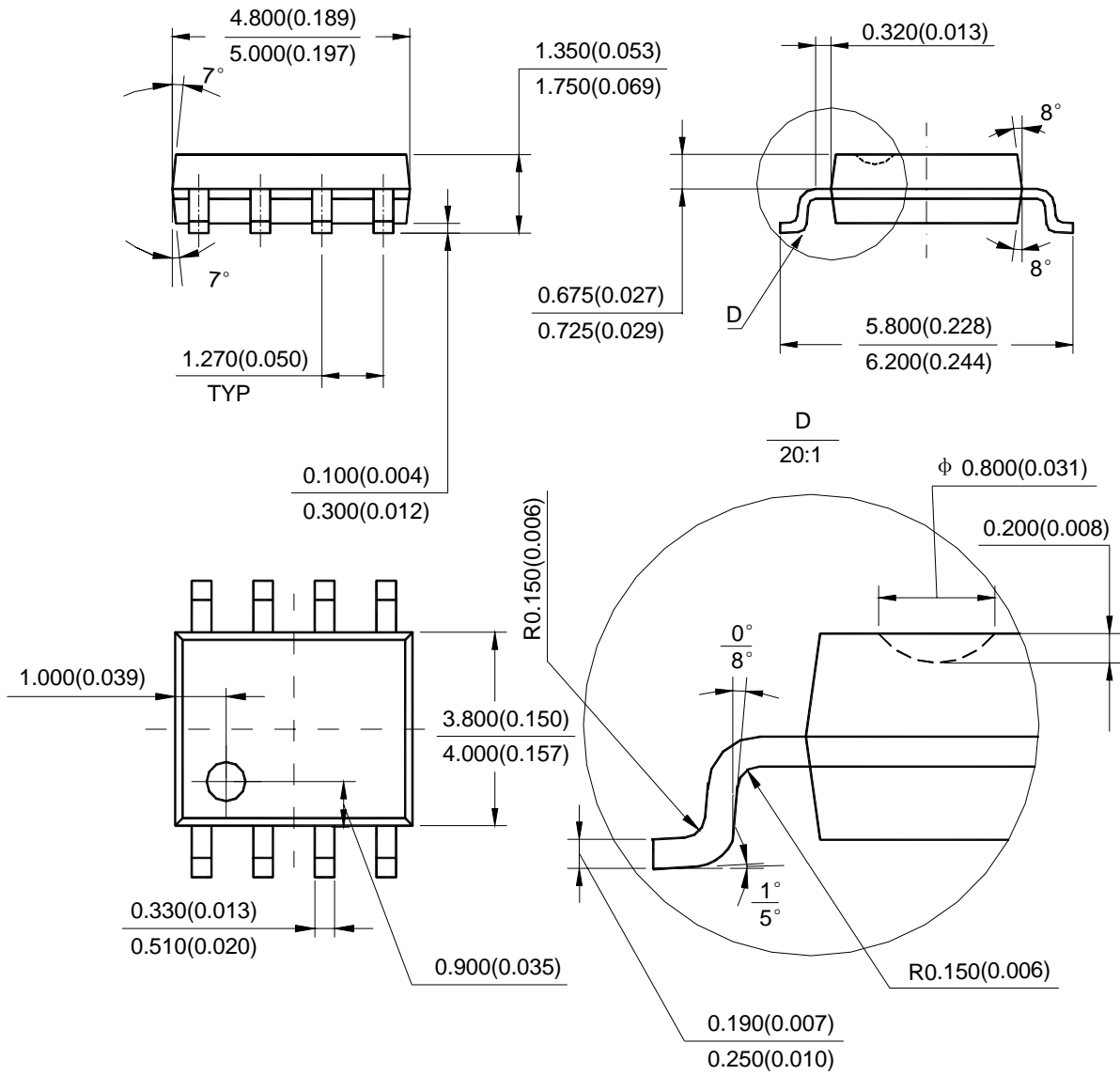
DIP-8 Unit: mm (inch)



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Mechanical Dimensions

SOP-8 Unit: mm (inch)



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