



# MC4560

## LINEAR INTEGRATED CIRCUIT

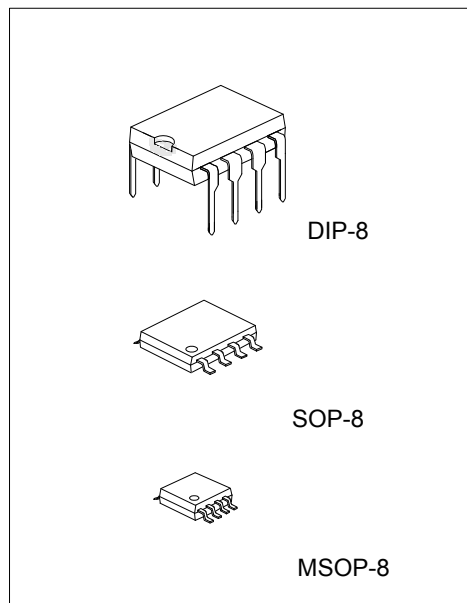
### DUAL OPERATIONAL AMPLIFIER

#### DESCRIPTION

The UTC **MC4560** is a dual operational amplifier suitable for driving 20V peak-to-peak into 400Ω loads. It offer many features which provide the capability of wider bandwidth, and higher slew rate to make it ideal for active filters, data and telecommunications, and many instrumentation applications.

#### FEATURES

- \*Operating Voltage                           (±4V~±18V)
- \*Wide Gain Bandwidth Product.   (10MHz typ.)
- \*Slew Rate                                   (4V / μs typ.)
- \*Bipolar Technology



#### ORDERING INFORMATION

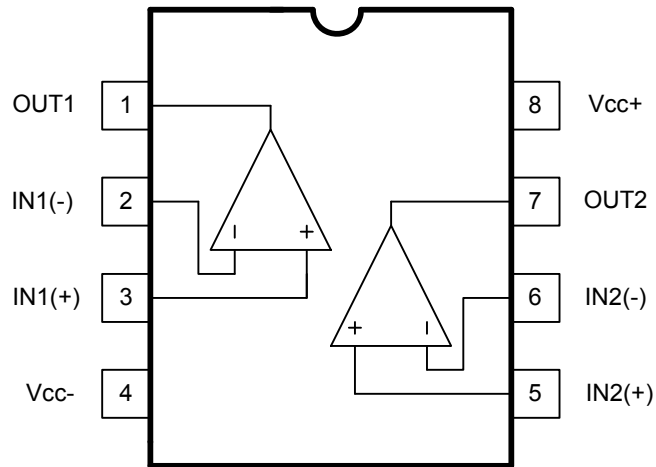
Ordering Number		Package	Packing
Lead Free	Halogen Free		
MC4560L-D08-T	MC4560G-D08-T	DIP-8	Tube
MC4560L-S08-R	MC4560G-S08-R	SOP-8	Tape Reel
MC4560L-SM1-R	MC4560G-SM1-R	MSOP-8	Tape Reel

<p>MC4560G-D08-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) D08: DIP-8, S08: SOP-8, SM1: MSOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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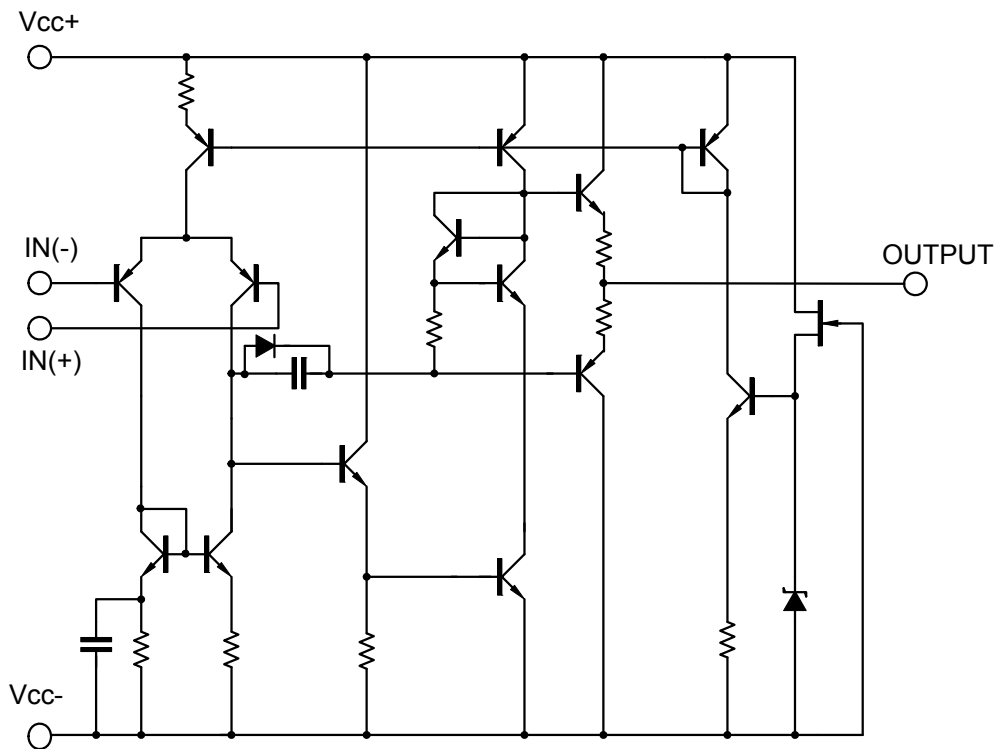
#### MARKING

DIP-8	SOP-8 / MSOP-8
<p>UTC □□□□ MC4560 □□</p> <p>→ Date Code L: Lead Free G: Halogen Free → Lot Code</p>	<p>UTC □□□□ MC4560 □□</p> <p>→ Date Code L: Lead Free G: Halogen Free → Lot Code</p>

## ■ PIN CONFIGURATION



## ■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Supply Voltage	V+/V-	±18	V	
Differential Input Voltage	V <sub>I(DIFF)</sub>	±30	V	
Input Voltage	V <sub>IN</sub>	±15(Note1)	V	
Power Dissipation	DIP-8	P <sub>D</sub>	500	mW
	SOP-8		300	mW
	MSOP-8		250	mW
Operating Temperature Range	T <sub>OPR</sub>	-20 ~ +75	°C	
Storage Temperature Range	T <sub>STG</sub>	-40 ~ +125	°C	

Note: 1. The absolute maximum input voltage is equal to the supply voltage in case supply voltage less than ±15V.

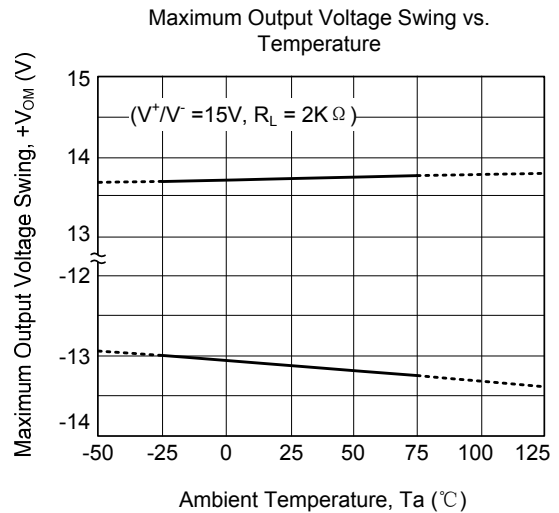
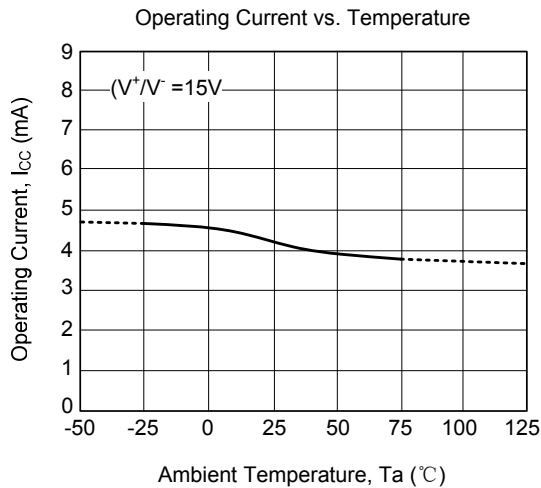
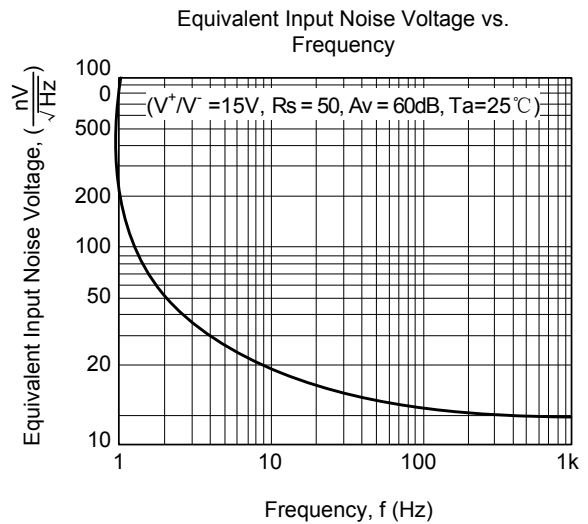
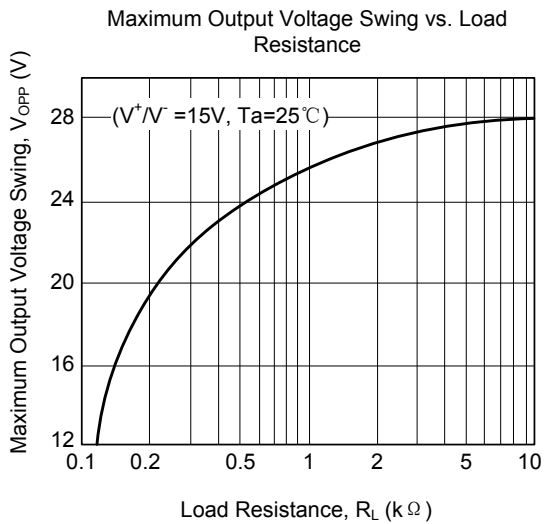
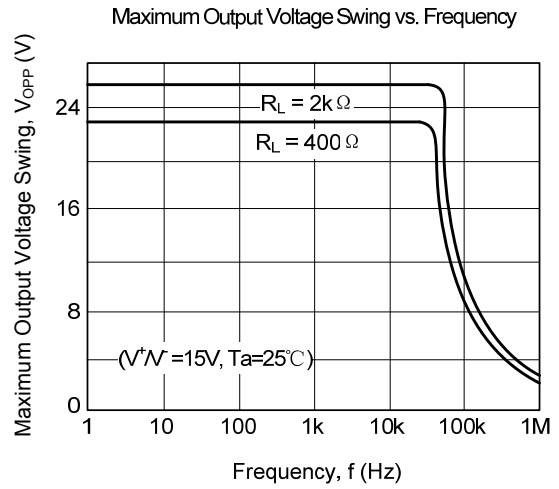
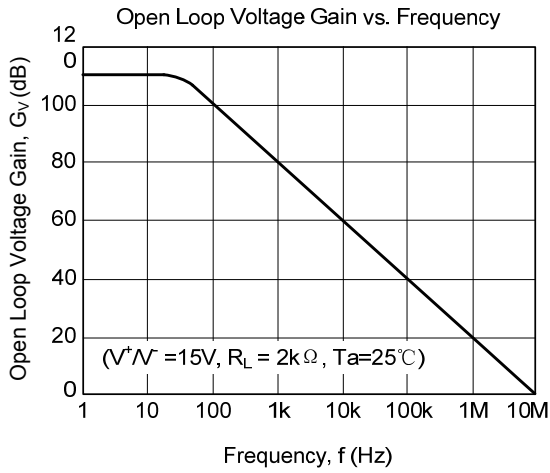
2. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

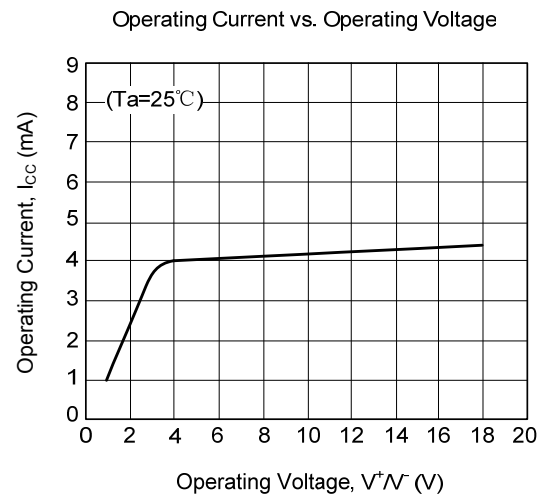
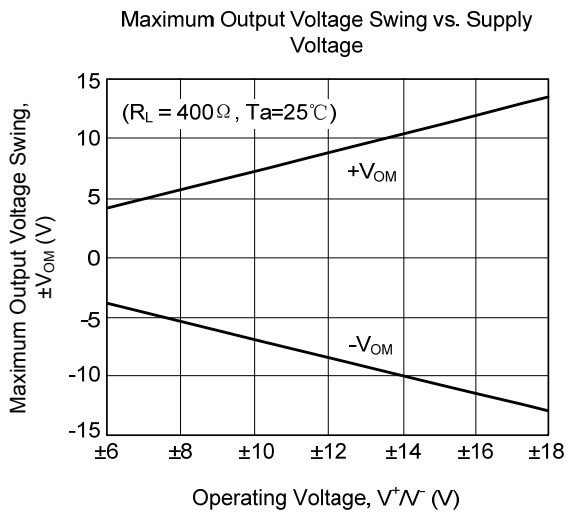
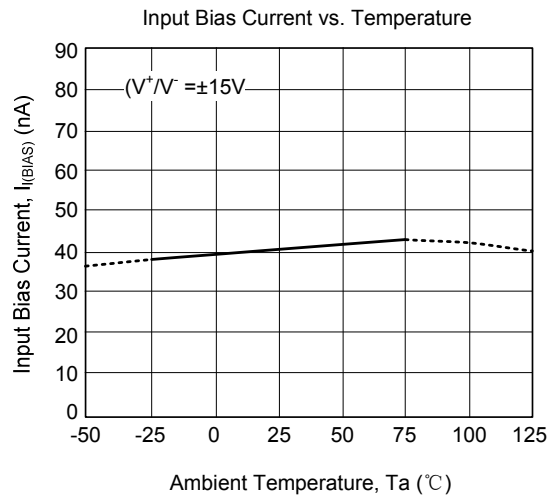
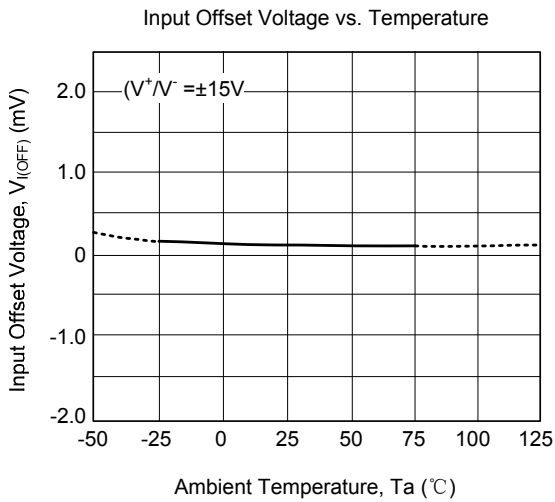
### ■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, V<sup>+</sup>/V<sup>-</sup> = ±15V, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input offset voltage	V <sub>I(OFF)</sub>	R <sub>S</sub> ≤ 10kΩ		0.5	6	mV
Input offset current	I <sub>I(OFF)</sub>			5	200	nA
Input bias current	I <sub>I(BIAS)</sub>			40	500	nA
Input Resistance	R <sub>IN</sub>		0.3	5		MΩ
Large Signal Voltage Gain	G <sub>V</sub>	R <sub>L</sub> ≥ 2kΩ, V <sub>OUT</sub> = ±10V	86	100		dB
Maximum Output Voltage 1	V <sub>OM1</sub>	R <sub>L</sub> ≥ 2kΩ	±12	±14		V
Maximum Output Voltage 2	V <sub>OM2</sub>	I <sub>OUT</sub> = 25mA	±10	±11.5		V
Input Common Mode Voltage Range	V <sub>ICM</sub>		±12	±14		V
Common Mode Rejection Ratio	CMR	R <sub>S</sub> ≤ 10kΩ	70	90		dB
Supply Voltage Rejection Ratio	SVR	R <sub>S</sub> ≤ 10kΩ	76.5	90		dB
Operating Current	I <sub>CC</sub>			4.3	5.7	mA
Slew Rate	SR			4		V/μs
Gain Bandwidth Product	GBP			10		MHz
Equivalent Input Noise Voltage	eN	RIAA, R <sub>S</sub> = 2kΩ, 30kHz LPF		1.2		μVrms

## TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS (Cont.)



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