



# MC1458

## LINEAR INTEGRATED CIRCUIT

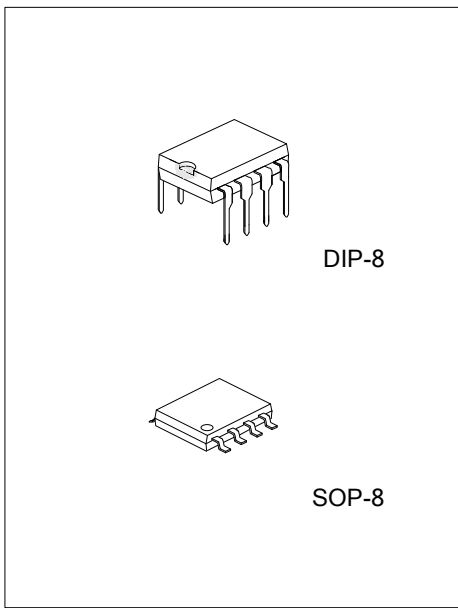
### DUAL OPERATIONAL AMPLIFIER

#### DESCRIPTION

The UTC **MC1458** is a high performance dual operational amplifier. It is designed for a wide range of analog applications. The high gain and wide range of operating voltages provide superior performance in summing amplifier, voltage follower, integrator, active filter, function generator and general feed back applications.

#### FEATURES

- \* Low power consumption
- \* Wide input voltage range
- \* No latch-up
- \* High gain
- \* Short-circuit protection
- \* Frequency compensation is unnecessary



#### ORDERING INFORMATION

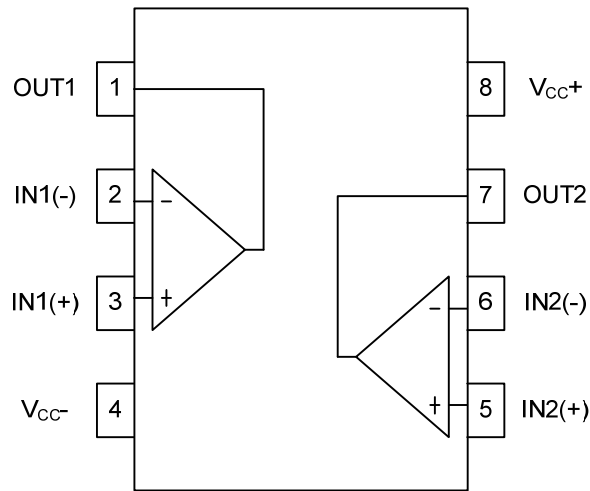
Ordering Number		Package	Packing
Lead Free	Halogen Free		
MC1458L-D08-T	MC1458G-D08-T	DIP-8	Tube
MC1458L-S08-R	MC1458G-S08-R	SOP-8	Tape Reel

<p>MC1458G-D08-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel, T: Tube (2) D08: DIP-8, S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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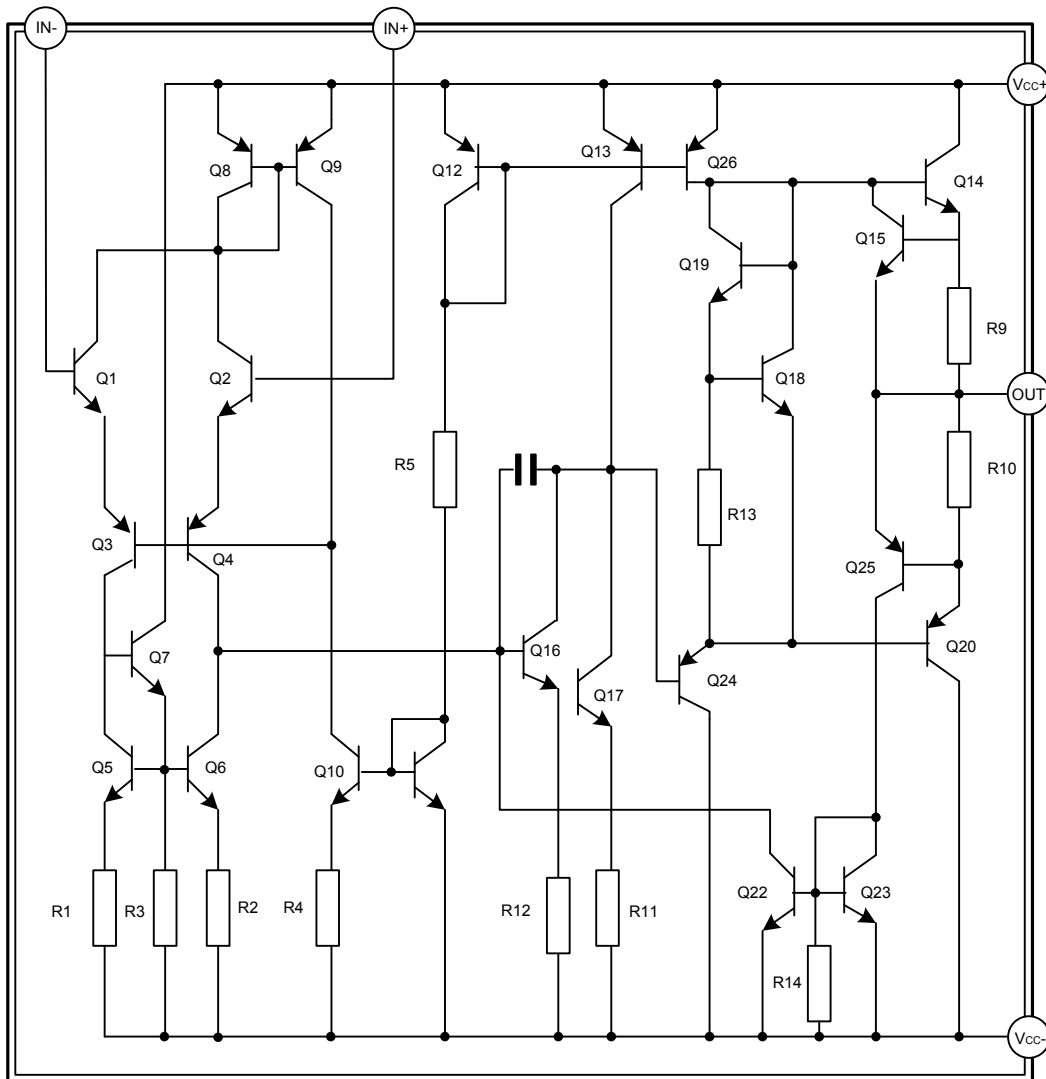
#### MARKING

DIP-8	SOP-8
<p>8 7 6 5 → Date Code UTC □□□□ MC1458 □ □□ □□ → Lot Code 1 2 3 4</p> <p>L: Lead Free G: Halogen Free</p>	<p>8 7 6 5 → Date Code UTC □□□□ MC1458 □ ● □□ □□ → Lot Code 1 2 3 4</p> <p>L: Lead Free G: Halogen Free</p>

## ■ PIN CONFIGURATIONS



## ■ TEST CIRCUIT



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

PARAMETER	SYMBOL	RATINGS	UNIT	
Supply Voltage	V <sub>CC</sub>	-22 ~ +22	V	
Differential Input Voltage	V <sub>I(DIFF)</sub>	-30 ~ +30	V	
Input Voltage	V <sub>IN</sub>	-15 ~ +15	V	
Power Dissipation	SOP-8	P <sub>D</sub>	300	mW
	DIP-8		500	mW
Output Short Circuit Duration		Infinite		
Operating Ambient Temperature Range	T <sub>OPR</sub>	0 ~ 70	°C	
Storage Temperature Range	T <sub>STG</sub>	-65 ~ +150	°C	

Note: 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 (V<sub>CC</sub>= ±15V, T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Offset Voltage (R <sub>S</sub> ≤10kΩ)	V <sub>I(OFF)</sub>	T <sub>A</sub> =+25°C		1	5	mV
		0°C≤T <sub>A</sub> ≤70°C			6	mV
Input Offset Current	I <sub>I(OFF)</sub>	T <sub>A</sub> =+25°C		2	200	nA
		0°C≤T <sub>A</sub> ≤70°C			300	nA
Input Bias Current	I <sub>I(BIAS)</sub>	T <sub>A</sub> =+25°C		30	500	nA
		0°C≤T <sub>A</sub> ≤70°C			800	nA
Large Signal Voltage Gain (V <sub>O</sub> =±10V, R <sub>L</sub> =2kΩ)	G <sub>V</sub>	T <sub>A</sub> =+25°C	50	200		V/mV
		0°C≤T <sub>A</sub> ≤70°C	25			V/mV
Supply Voltage Rejection Ratio (R <sub>S</sub> ≤10kΩ)	SVR	T <sub>A</sub> =+25°C	77	90		dB
		0°C≤T <sub>A</sub> ≤70°C	77			dB
Supply Current(all Amp, no Load)	I <sub>CC</sub>	T <sub>A</sub> =+25°C		2.3	5	mA
		0°C≤T <sub>A</sub> ≤70°C			6	mA
Input Common Mode Voltage Range	V <sub>IN(CM)</sub>	T <sub>A</sub> =+25°C	±12			V
		0°C≤T <sub>A</sub> ≤70°C	±12			V
Common-Mode Rejection Ratio (R <sub>S</sub> ≤10kΩ)	CMR	T <sub>A</sub> =+25°C	70	90		dB
		0°C≤T <sub>A</sub> ≤70°C	70			dB
Output Short-Circuit Current	I <sub>OS</sub>	T <sub>A</sub> =+25°C	10	20	35	mA
Output Voltage Swing	±V <sub>OPP</sub>	T <sub>A</sub> =+25°C	R <sub>L</sub> =10kΩ	12	14	V
			R <sub>L</sub> =2kΩ	10	13	V
		0°C≤T <sub>A</sub> ≤70°C	R <sub>L</sub> =10kΩ	12		V
			R <sub>L</sub> =2kΩ	10		V
Slew Rate	SR	V <sub>IN</sub> =±10V, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF, T <sub>A</sub> =+25°C, unity gain	0.2	0.8		V/μs
Rise Time	t <sub>r</sub>	V <sub>IN</sub> =20mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF, T <sub>A</sub> =+25°C, unity gain		0.3		μs
Over-Shoot	KOS	V <sub>IN</sub> =20mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF, T <sub>A</sub> =+25°C, unity gain		5		%
Input Resistance	R <sub>IN</sub>		0.3	2		MΩ
Common-Mode Input Impedance	Z <sub>IN</sub>			200		MΩ
Input Capacitance	C <sub>IN</sub>			1.4		pF
Output Resistance	R <sub>OUT</sub>			75		Ω
Full Power Bandwidth	FBW	R <sub>L</sub> =2kΩ, V <sub>OUT</sub> ≥±10V, G <sub>V</sub> =1, THD ≤ 5%		14		KHz
Unity Gain Bandwidth	GB <sub>W</sub>	V <sub>IN</sub> =10mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF, T <sub>A</sub> =+25°C		1		MHz
Gain Bandwidth Product	GB <sub>P</sub>	V <sub>IN</sub> =10mV, R <sub>L</sub> =2kΩ, C <sub>L</sub> =100pF, t=100kHz, T <sub>A</sub> =+25°C	0.4	1		MHz

### ■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Total Harmonic Distortion	THD	F=1kHz, Av=20dB, R <sub>L</sub> =2kΩ, V <sub>OUT</sub> =2Vpp, C <sub>L</sub> =100pF, T <sub>A</sub> =25°C		0.02		%
Equivalent Input Noise Voltage	eN	F=1kHz, R <sub>s</sub> =100Ω		45		$\frac{nV}{\sqrt{Hz}}$
Phase Margin	φ <sub>m</sub>			65		Deg.
Gain Margin	A <sub>m</sub>			11		dB
Channel Separation	V <sub>o1</sub> /V <sub>o2</sub>			120		dB

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