



**MC1458**

**LINEAR INTEGRATED CIRCUIT**

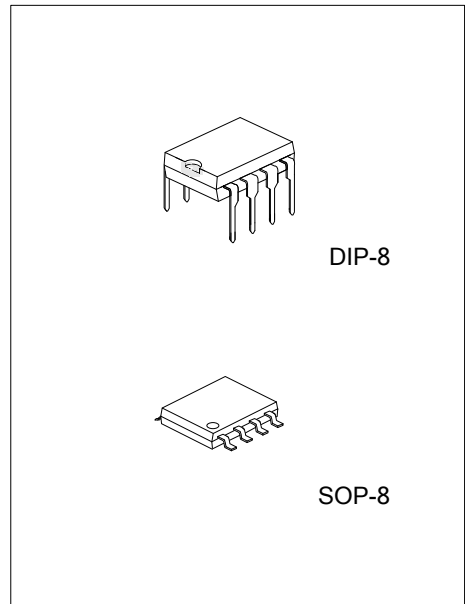
**DUAL OPERATIONAL AMPLIFIER**

■ 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

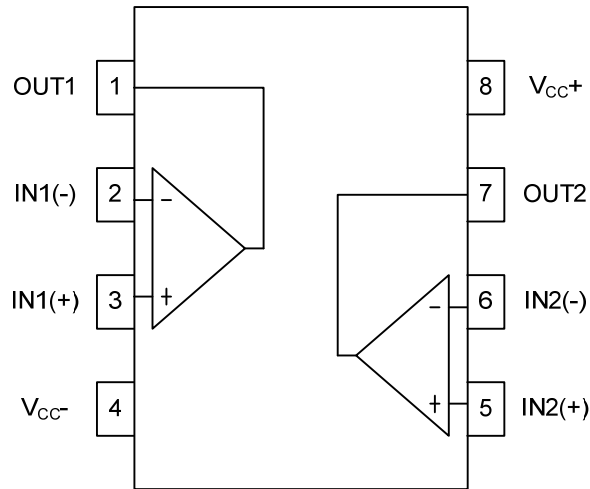
Ordering Number		Package	Packing
Lead Free	Halogen Free		
MC1458L-D08-T	MC1458G-D08-T	DIP-8	Tube
-	MC1458G-S08-R	SOP-8	Tape Reel

<p>MC1458L-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) L: Lead Free, G: Halogen Free and Lead Free</p>
---	---

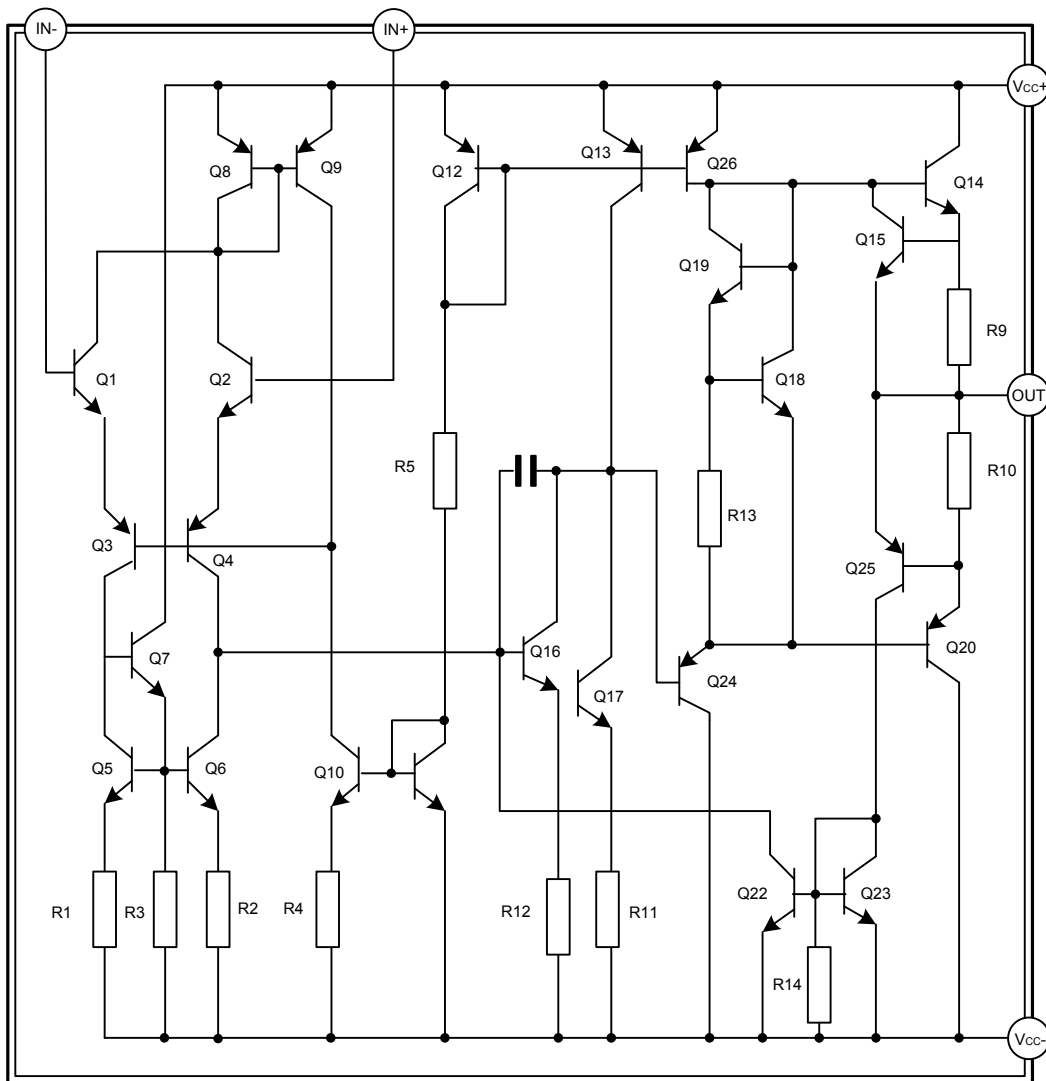
■ MARKING

DIP-8	SOP-8
<p>8 7 6 5 → Date Code UTC □ □ □ □ MC1458 □ □ □ → L: Lead Free □ □ → G: Halogen Free □ □ → Lot Code 1 2 3 4</p>	<p>8 7 6 5 → Date Code UTC □ □ □ □ MC1458G ● □ □ → Lot Code 1 2 3 4</p>

## ■ PIN CONFIGURATIONS



## ■ TEST CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	-22 ~ +22	V
Differential Input Voltage	$V_{I(DIFF)}$	-30 ~ +30	V
Input Voltage	$V_{IN}$	-15 ~ +15	V
Power Dissipation	SOP-8	$P_D$	300
	DIP-8		500
Output Short Circuit Duration		Infinite	
Operating Ambient Temperature Range	$T_{OPR}$	0 ~ 70	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

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 ( $V_{CC} = \pm 15\text{V}$ ,  $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Offset Voltage ( $R_S \leq 10\text{k}\Omega$ )	$V_{I(OFF)}$	$T_a = +25^\circ\text{C}$		1	5	mV
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$			6	mV
Input Offset Current	$I_{I(OFF)}$	$T_a = +25^\circ\text{C}$		2	200	nA
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$			300	nA
Input Bias Current	$I_{I(BIAS)}$	$T_a = +25^\circ\text{C}$		30	500	nA
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$			800	nA
Large Signal Voltage Gain ( $V_o = \pm 10\text{V}, R_L = 2\text{k}\Omega$ )	$G_V$	$T_a = +25^\circ\text{C}$	50	200		V/mV
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$	25			V/mV
Supply Voltage Rejection Ratio ( $R_S \leq 10\text{k}\Omega$ )	SVR	$T_a = +25^\circ\text{C}$	77	90		dB
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$	77			dB
Supply Current (all Amp, no Load)	$I_{CC}$	$T_a = +25^\circ\text{C}$		2.3	5	mA
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$			6	mA
Input Common Mode Voltage Range	$V_{IN(CM)}$	$T_a = +25^\circ\text{C}$	$\pm 12$			V
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$	$\pm 12$			V
Common-Mode Rejection Ratio ( $R_S \leq 10\text{k}\Omega$ )	CMR	$T_a = +25^\circ\text{C}$	70	90		dB
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$	70			dB
Output Short-Circuit Current	$I_{OS}$	$T_a = +25^\circ\text{C}$	10	20	35	mA
Output Voltage Swing	$\pm V_{opp}$	$T_a = +25^\circ\text{C}$	$R_L = 10\text{k}\Omega$	12	14	V
			$R_L = 2\text{k}\Omega$	10	13	V
		$0^\circ\text{C} \leq T_a \leq 70^\circ\text{C}$	$R_L = 10\text{k}\Omega$	12		V
			$R_L = 2\text{k}\Omega$	10		V
Slew Rate	SR	$V_{IN} = \pm 10\text{V}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, T_a = +25^\circ\text{C}, \text{unity gain}$	0.2	0.8		V/ $\mu\text{s}$
Rise Time	$t_r$	$V_{IN} = 20\text{mV}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, T_a = +25^\circ\text{C}, \text{unity gain}$		0.3		$\mu\text{s}$
Over-Shoot	$K_{OS}$	$V_{IN} = 20\text{mV}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, T_a = +25^\circ\text{C}, \text{unity gain}$		5		%
Input Resistance	$R_{IN}$		0.3	2		$\text{M}\Omega$
Common-Mode Input Impedance	$Z_{IN}$			200		$\text{M}\Omega$
Input Capacitance	$C_{IN}$			1.4		pF
Output Resistance	$R_{OUT}$			75		$\Omega$
Full Power Bandwidth	FBW	$R_L = 2\text{k}\Omega, V_{OUT} \geq \pm 10\text{V}, G_V = 1, \text{THD} \leq 5\%$		14		KHz
Unity Gain Bandwidth	GBW	$V_{IN} = 10\text{mV}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, T_a = +25^\circ\text{C}$		1		MHz
Gain Bandwidth Product	GBP	$V_{IN} = 10\text{mV}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, t = 100\text{kHz}, T_a = +25^\circ\text{C}$	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, Ta=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	Vo1/Vo2			120		dB

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.