



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

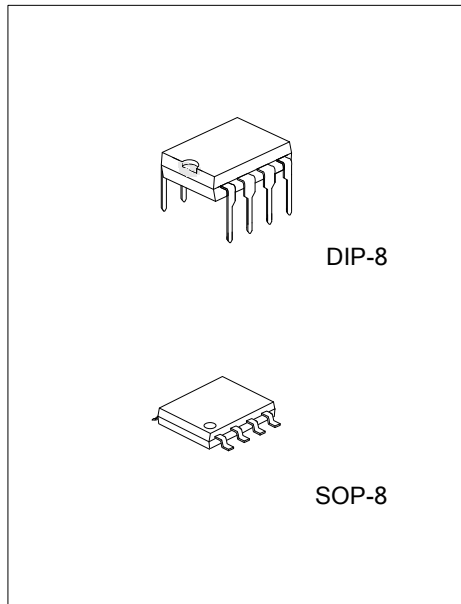
■ ORDERING INFORMATION

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

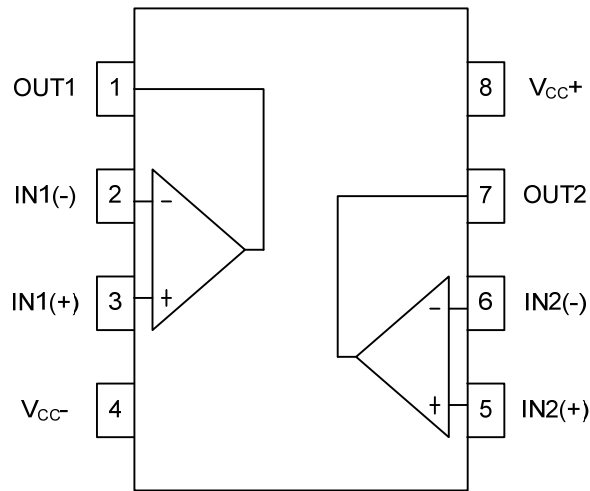
<p>MC1458G-D08-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel, T: Tube (2) D08: DIP-8, S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

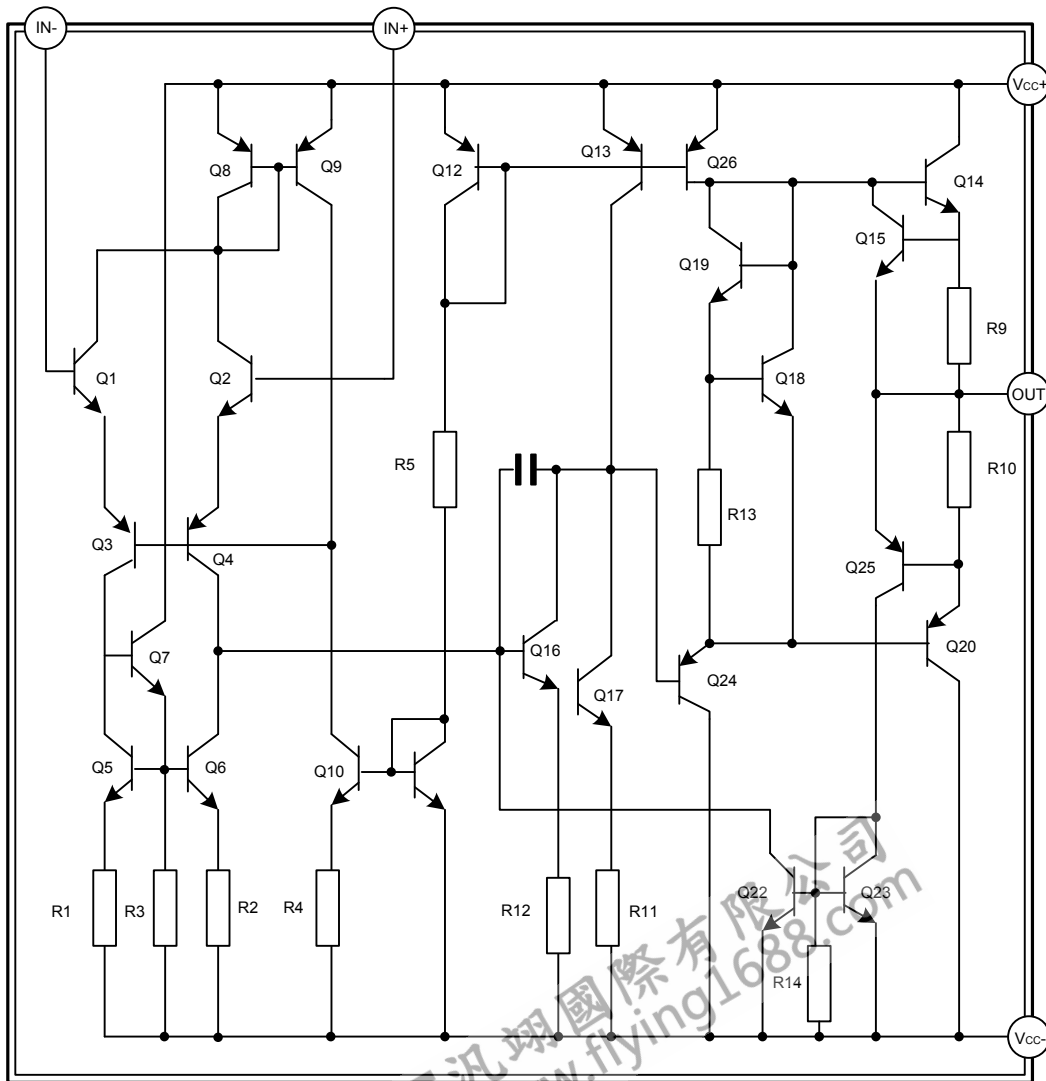
DIP-8	SOP-8



■ 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	$V_{IN(CM)}$	$T_A=+25^\circ\text{C}$	± 12			V
		$0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$	± 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/ μs
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		μs
Over-Shoot	KOS	$V_{IN} = 20\text{mV}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, T_A = +25^\circ\text{C}, \text{unity gain}$		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		Ω
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	GB_W	$V_{IN} = 10\text{mV}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, T_A = +25^\circ\text{C}$		1		MHz
Gain Bandwidth Product	GB_P	$V_{IN} = 10\text{mV}, R_L = 2\text{k}\Omega, C_L = 100\text{pF}, f = 100\text{kHz}, T_A = +25^\circ\text{C}$	0.4	1		MHz

■ ELECTRICAL CHARACTERISTICS (Cont.)

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

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