



MC1458
MC1558

DUAL OPERATIONAL AMPLIFIERS

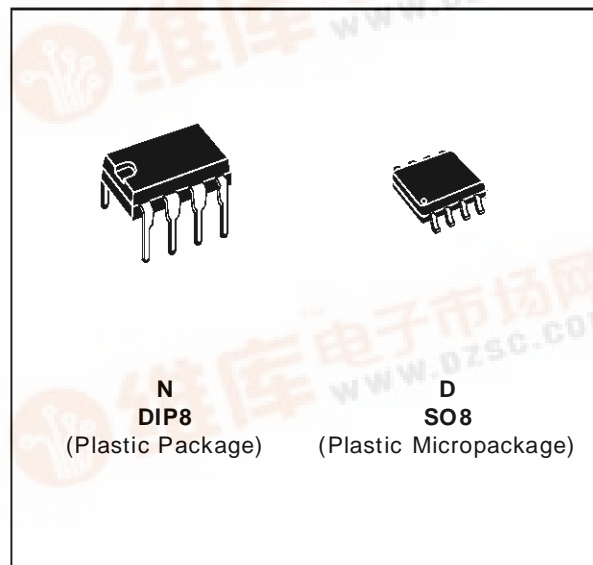
- LOW POWER CONSUMPTION
- LARGE INPUT VOLTAGE RANGE
- NO LATCH-UP
- HIGH GAIN
- SHORT-CIRCUIT PROTECTION
- NO FREQUENCY COMPENSATION REQUIRED

DESCRIPTION

The MC1458 is a high performance monolithic dual operational amplifier intended for a wide range of analog applications:

- Summing amplifier
- Voltage follower
- Integrator
- Active filter
- Function generator

The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifier, and general feed back applications.

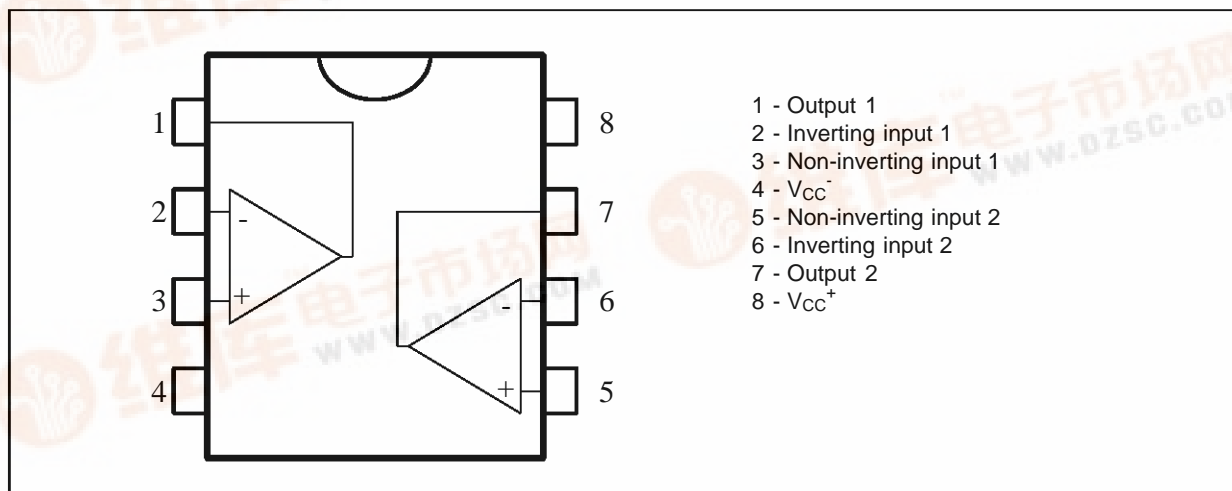


ORDER CODES

Part Number	Temperature Range	Package	
		N	D
MC1458	0, +70°C	•	•
MC1458I	-40, +105°C	•	•
MC1558	-55, +125°C	•	•

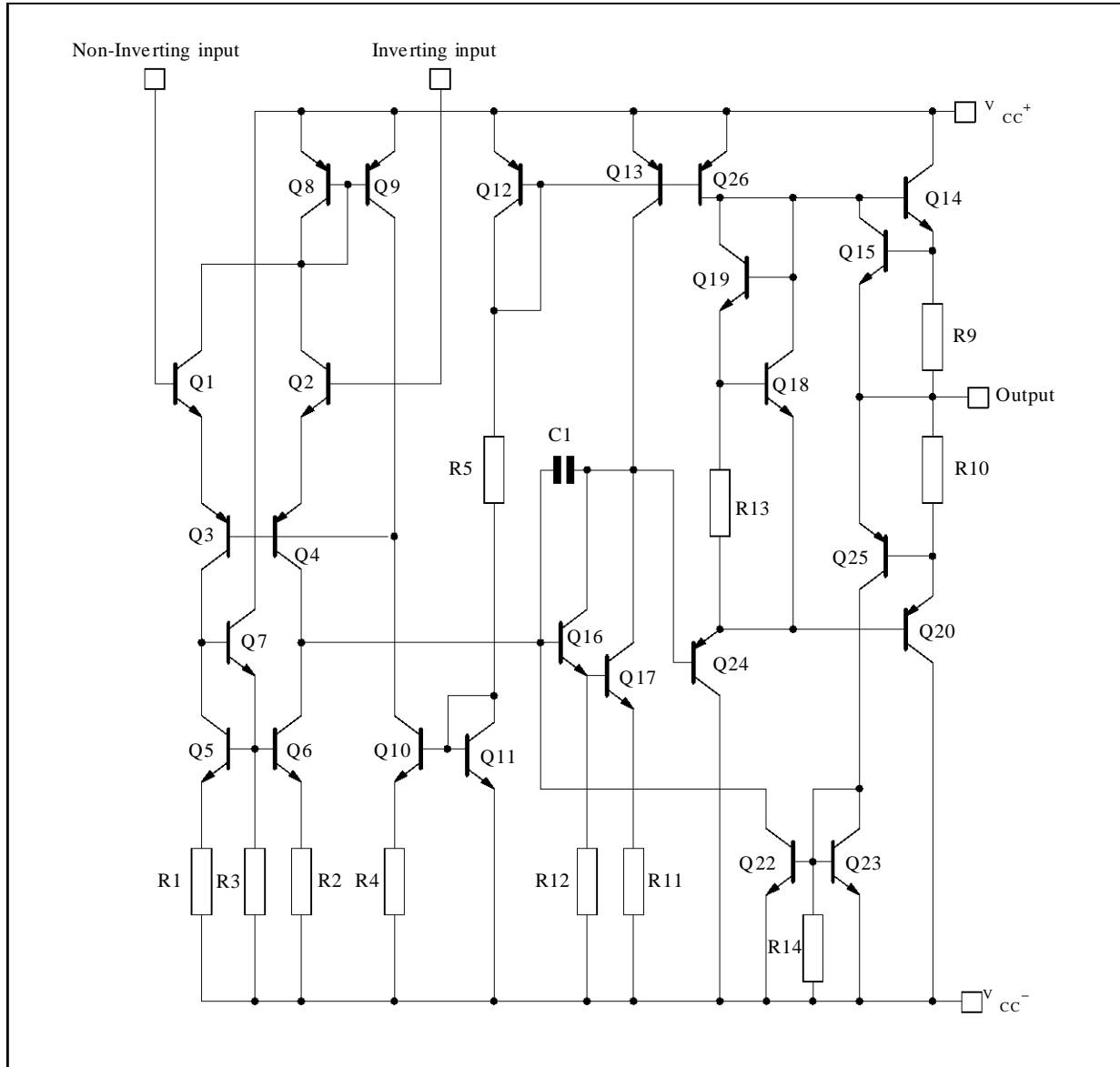
Example : MC1458N

PIN CONNECTIONS (top view)



MC1458 - MC1558

SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	MC1458	MC1458I	MC1558	Unit
V_{CC}	Supply Voltage	± 22	± 22	± 22	V
V_i	Input Voltage	± 15	± 15	± 15	V
V_{id}	Differential Input Voltage	± 30	± 30	± 30	V
P_{tot}	Power Dissipation		300 500		mW
	D Suffix N Suffix				
	Output Short-circuit Duration	Infinite			
T_{oper}	Operating Free-air Temperature Range	0 to +70	-40 to +105	-55 to +125	$^{\circ}C$
T_{stg}	Storage Temperature Range	-65 to +150	-65 to +150	-65 to +150	$^{\circ}C$

ELECTRICAL CHARACTERISTICSV_{CC} = ±15V, T_{amb} = 25°C, (unless otherwise specified)

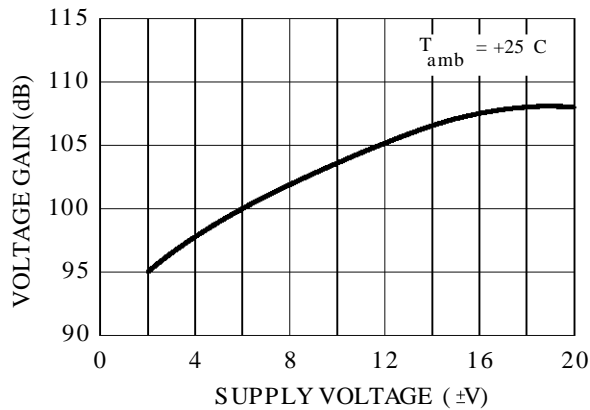
Symbol	Parameter	MC1458 - 1458I - 1558			Unit
		Min.	Typ.	Max.	
V _{io}	Input Offset Voltage (R _S ≤ 10kΩ) T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}		1	5 6	mV
I _{io}	Input Offset Current T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}		2	200 300	nA
I _{ib}	Input Bias Current T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}		30	500 800	nA
A _{vd}	Large Signal Voltage Gain (V _O = ±10V, R _L = 2kΩ) T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}	50 25	200		V/mV
SVR	Supply Voltage Rejection Ratio (R _S ≤ 10kΩ) T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}	77 77	90		dB
I _{CC}	Supply Current, all Amp, no Load T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}		2.3	5 6	mA
V _{icm}	Input Common Mode Voltage Range T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}	±12 ±12			V
CMR	Common-mode Rejection Ratio (R _S ≤ 10 kΩ) T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}	70 70	90		dB
I _{OS}	Output Short-circuit Current T _{amb} = 25°C	10	20	35	mA
±V _{OPP}	Output Voltage Swing T _{amb} = 25°C T _{min.} ≤ T _{amb} ≤ T _{max.}	R _L = 10kΩ 12 R _L = 2kΩ 10 R _L = 10kΩ 12 R _L = 2kΩ 10	14 13		V
SR	Slew Rate (V _I = ±10V, R _L = 2kΩ, C _L = 100pF, T _{amb} = 25°C, unity gain)	0.2	0.8		V/μs
t _r	Rise Time (V _I = 20mV, R _L = 2kΩ, C _L = 100pF, T _{amb} = 25°C, unity gain)		0.3		μs
K _{OV}	Overshoot (V _I = 20mV, R _L = 2kΩ, C _L = 100pF, T _{amb} = 25°C, unity gain)		5		%
R _I	Input Resistance	0.3	2		MΩ
Z _{ic}	Common-mode Input Impedance		200		MΩ
C _I	Input Capacitance		1.4		pF
R _O	Output Resistance		75		Ω
FPB	Full Power Bandwidth (R _L = 2kΩ, V _O ≥ ±10V, A _{VD} = 1, THD ≤ 5%)		14		KHz
B	Unity Gain Bandwidth (V _I = 10mV, R _L = 2kΩ, C _L = 100pF, T _{amb} = 25°C)		1		MHz

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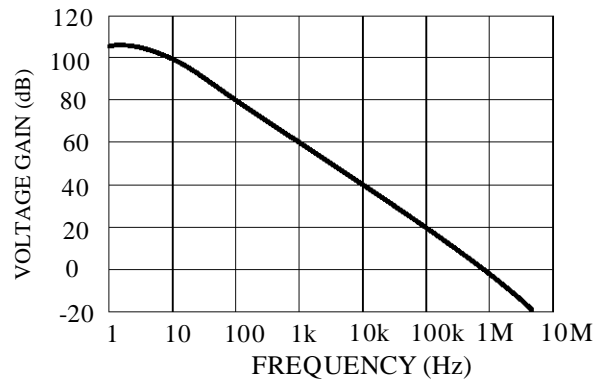
ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	MC1458 - 1458I MC1558			Unit
		Min.	Typ.	Max.	
GBP	Gain Bandwidth Product ($V_I = 10\text{mV}$, $R_L = 2\text{k}\Omega$, $C_L = 100\text{pF}$, $f = 100\text{kHz}$, $T_{\text{amb}} = 25^\circ\text{C}$)	0.4	1		MHz
THD	Total Harmonic Distortion ($f = 1\text{kHz}$, $A_V = 20\text{dB}$, $R_L = 2\text{k}\Omega$, $V_O = 2V_{\text{PP}}$, $C_L = 100\text{pF}$, $T_{\text{amb}} = 25^\circ\text{C}$)		0.02		%
e_n	Equivalent Input Noise Voltage ($f = \text{kHz}$, $R_s = 100\Omega$)		45		$\frac{\text{nV}}{\sqrt{\text{Hz}}}$
ϕ_m	Phase Margin		65		Degrees
A_m	Gain Margin		11		dB
V_{O1}/V_{O2}	Channel Separation		120		dB

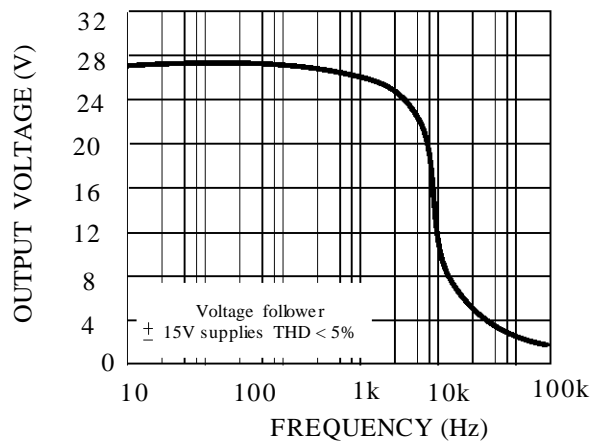
OPEN LOOP VOLTAGE GAIN



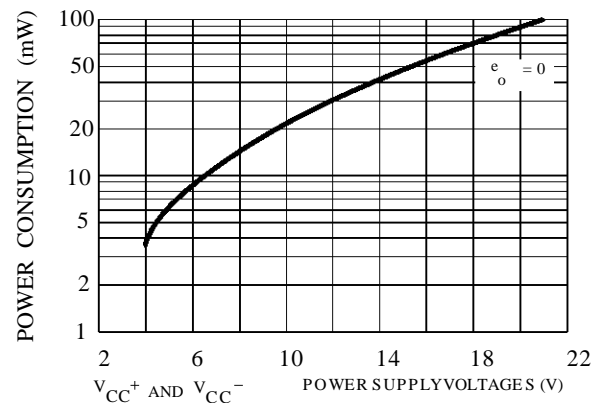
OPEN LOOP FREQUENCY RESPONSE

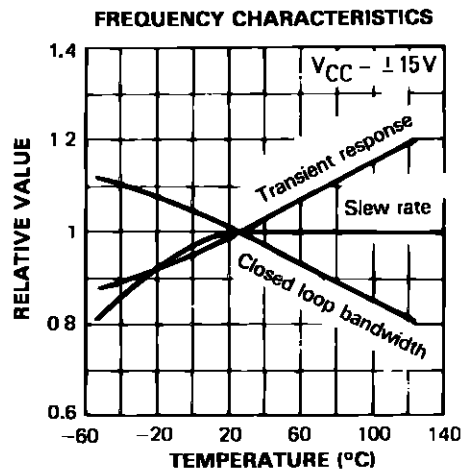
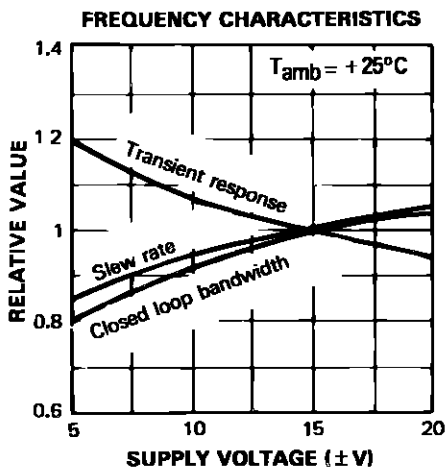
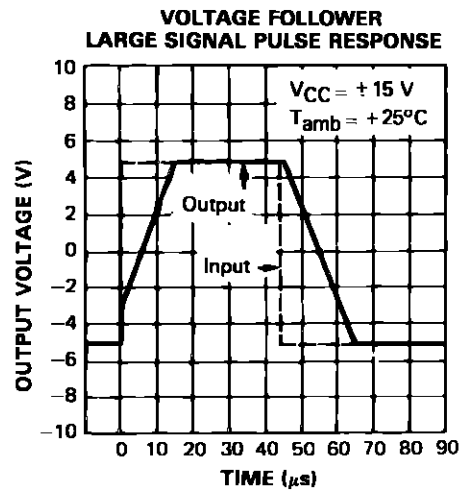
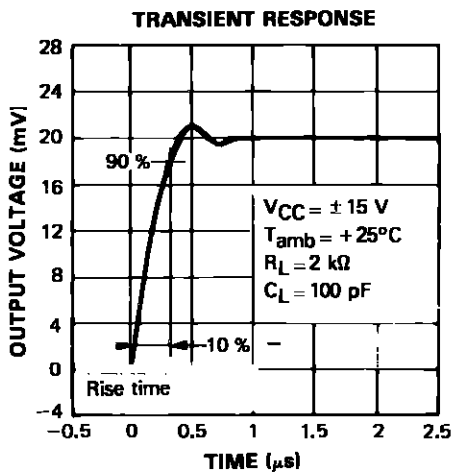
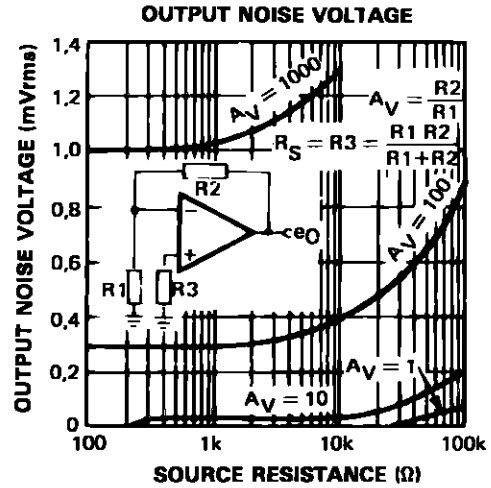
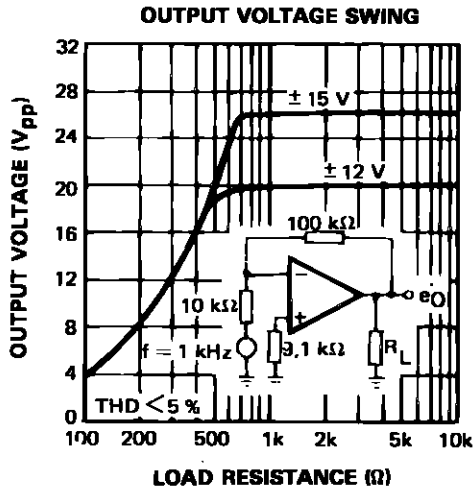


POWER BANDWIDTH (LARGE SIGNAL SWING)



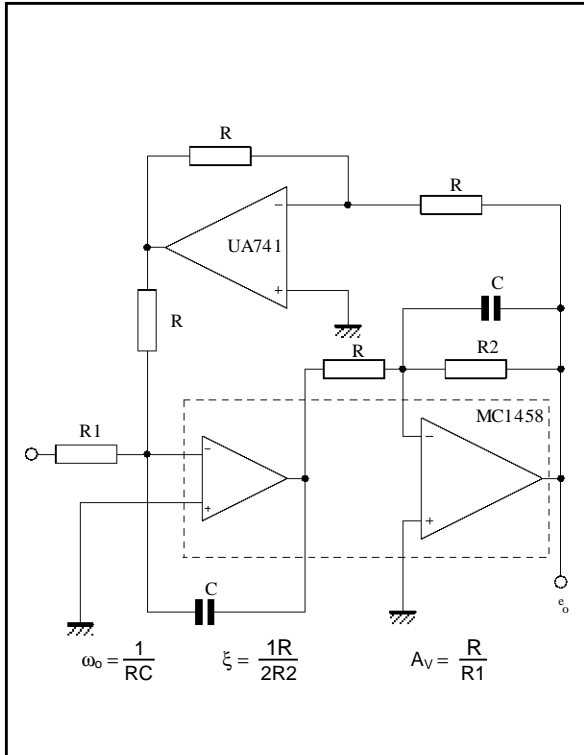
POWER CONSUMPTION



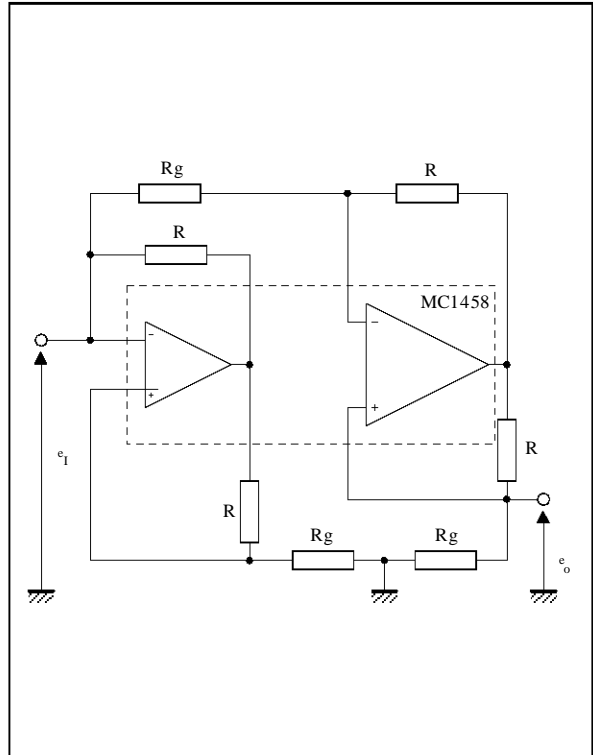


TYPICAL APPLICATIONS

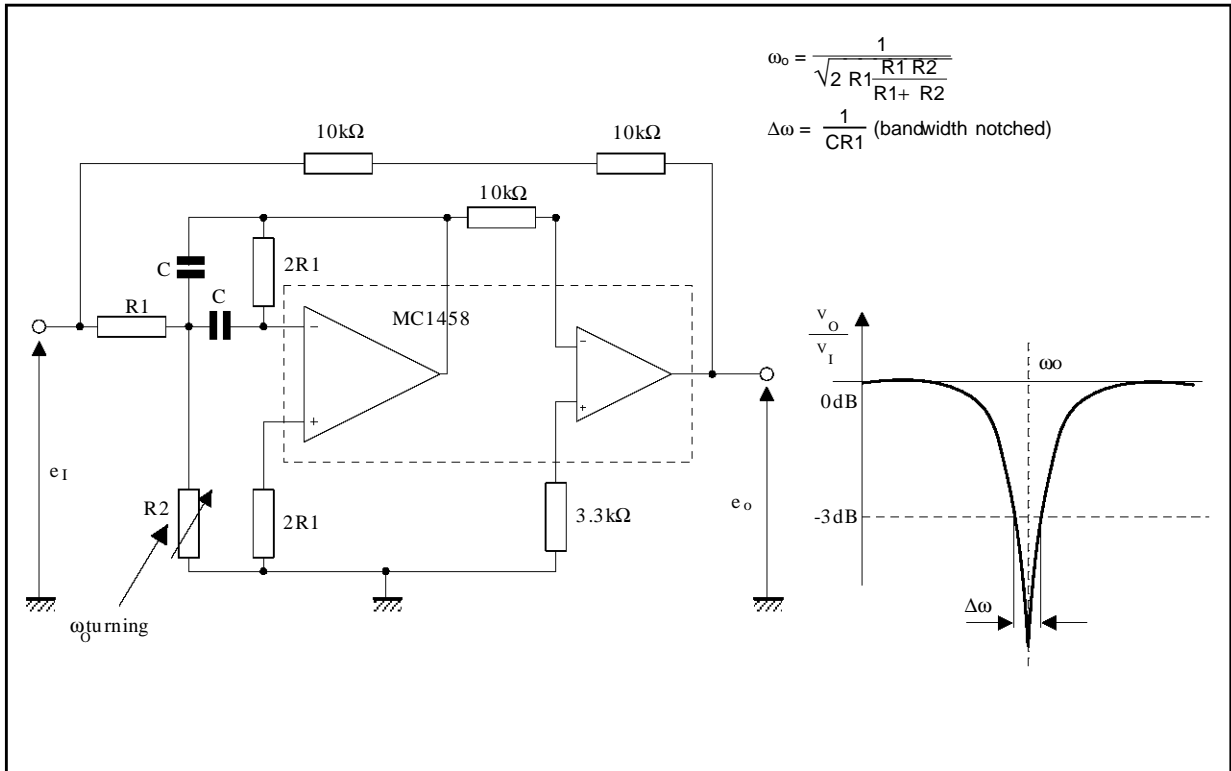
LOW PASS FILTER



GIRATOR

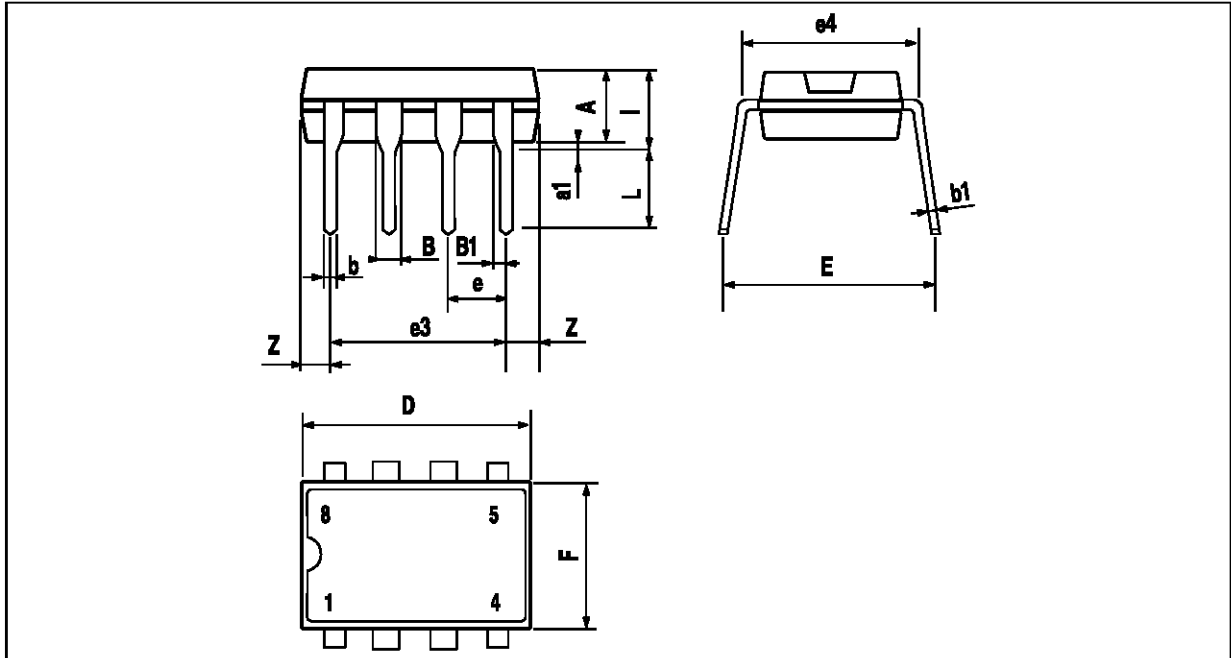


TURNABLE NOTCH FILTER



PACKAGE MECHANICAL DATA

8 PINS - PLASTIC DIP



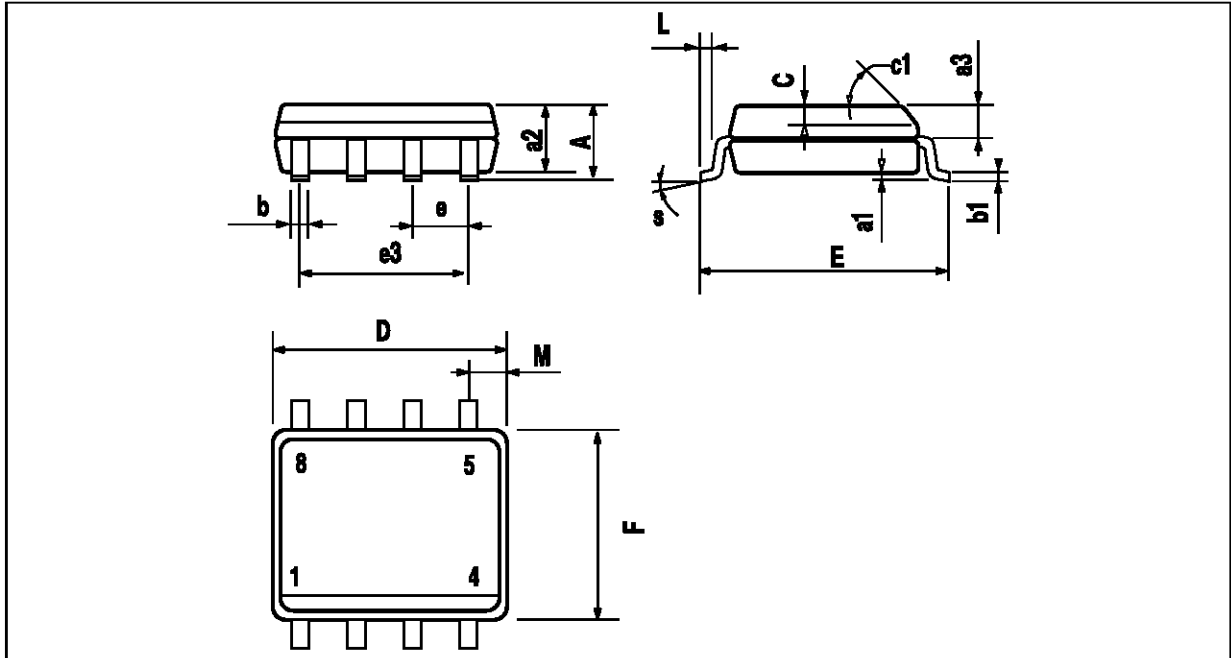
PM-DIP8EFS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
i			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060

DIP8.TBL

MC1458 - MC1558

PACKAGE MECHANICAL DATA
8 PINS - PLASTIC MICROPACKAGE (SO)



PM-S08:EPS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.150		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)					

S08.TBL

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