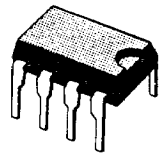
SGS-THOMSON MICROELECTRONICS

MC33172/MC34172 MC35172

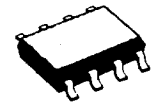
LOW POWER DUAL BIPOLAR OP AMPs

PRELIMINARY DATA

- GOOD CONSUMPTION/SPEED RATIO: ONLY 200 µA/Amp FOR 1.8 MHz, 2.1 V/µs
- SINGLE (OR DUAL) SUPPLY OPERATION FROM +4V TO +44V (±2V TO ±22V)
- WIDE INPUT COMMON MODE VOLTAGE RANGE INCLUDING V_{CC}-
- LOW LEVEL OUTPUT VOLTAGE CLOSE TO V_{CC}-: 100mV TYPICAL
- ESD INTERNAL PROTECTION
- PIN TO PIN COMPATIBLE WITH STANDARD DUAL OP AMPs



N
DIP8
(Plastic Package)



D
SO8
(Plastic Micropackage)

DESCRIPTION:

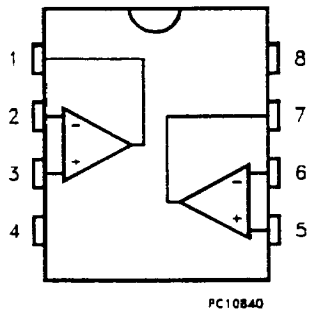
The MC33172 series are dual bipolar operational amplifiers offering both low consumption (200µA/Amp) and good speed (1.8MHz, 2.1V/µs). Moreover the Input Common Mode Range extends down to the lower supply rail, allowing single supply operation from +4V to +44V.

ORDER CODES

Part Number	Temperature Range	Package	
		N	D
MC33172	- 40°C to + 105°C	•	•
MC34172	0°C to + 70°C	•	•
MC35172	- 55°C to +125°C	•	•
Example: MC33172N			

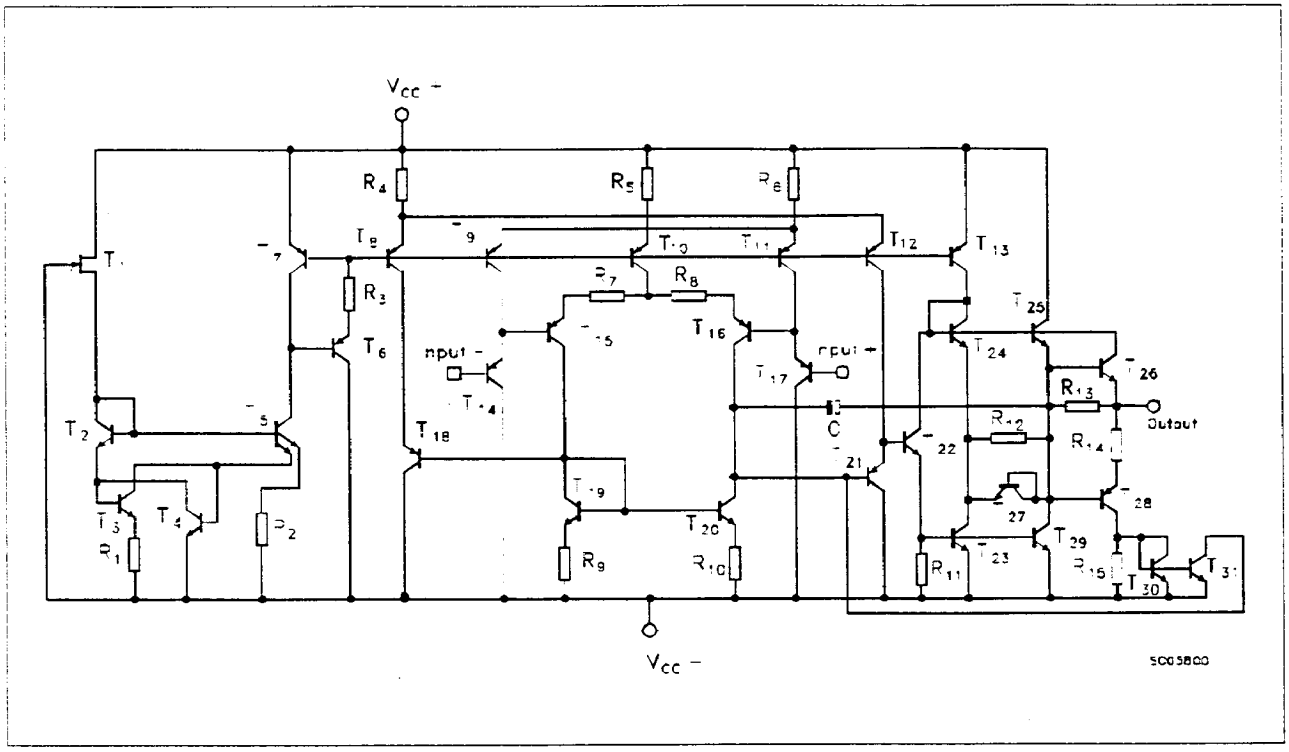
PIN CONNECTION (Top View)

DIP8 / SO8



1 - Output 1
2 - Inverting Input 1
3 - Non Inverting Input 1
4 - V_{CC}-
5 - Non Inverting Input 2
6 - Inverting Input 2
7 - Output 2
8 - V_{CC}+

SCHEMATIC DIAGRAM (for 1/2 MC33172)



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{CC}	Supply Voltage		±22	V
V_{id}	Differential Input Voltage		(Note 1)	V
V_i	Input Voltage		(Note 1)	V
	Output Short Circuit Duration		Indefinite	s
T_{oper}	Operating Temperature Range	MC33172 MC34172 MC35172	-40 to 105 0 to 70 -55 to 125	°C °C °C
T_j	Junction Temperature		150	°C
T_{stg}	Storage Temperature		-65 to 150	°C

Note 1: Either or both input voltages must not exceed the magnitude of V_{CC}

OPERATING CONDITIONS

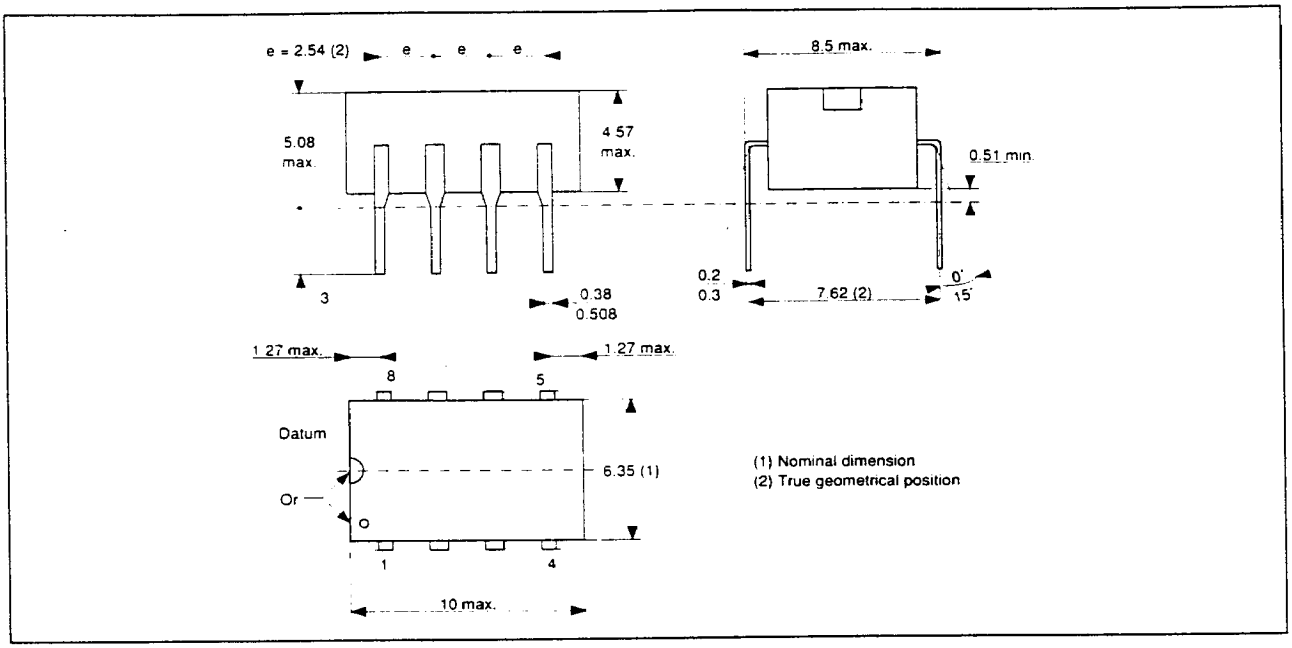
Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage Range	±2 to ±15	V

ELECTRICAL CHARACTERISTICS (V_{CC} = ± 15V, R_L connected to Ground, T_{amb} = 25 °C unless otherwise specified)

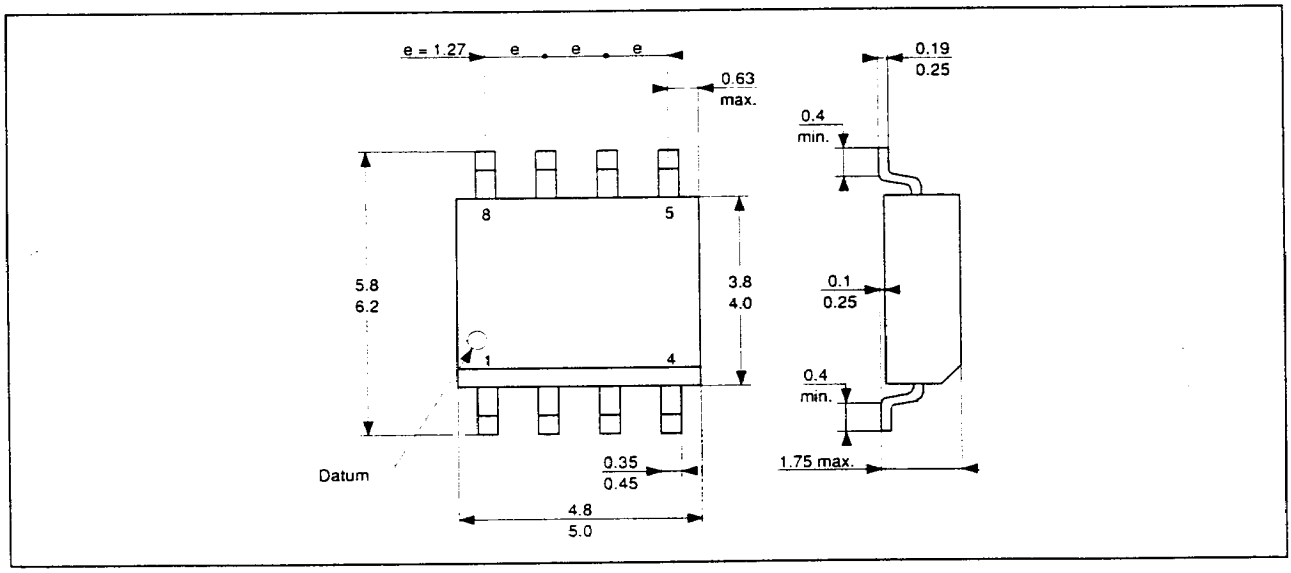
Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{io}	Input Offset Voltage V_{CC} = ± 15V V_{cm} = 0V V_{CC+} = 5V V_{CC-} = 0 V V_{o} = 0V		 1 1	 4.5 5	mV
DV_{io}	Input Offset Voltage Drift		10		µV/°C
I_{io}	Input Offset Current (V_{cm} = 0 V)		4	20	nA
I_{ib}	Input Bias Current (V_{cm} = 0 V)		15	100	nA
A_{vd}	Large Signal Voltage Gain (R_L = 10 KΩ V_O = ± 10 V)	50	100		V/mV
V_{OH}	High Level Output Voltage V_{CC+} = 5 V V_{CC-} = 0 V R_L = 10 KΩ V_{CC} = ± 15 V R_L = 10 KΩ	 3.5 13.6	 4.2 14.2		V
V_{OL}	Low Level Output Voltage V_{CC+} = 5 V V_{CC-} = 0 V R_L = 10 KΩ V_{CC} = ± 15 V R_L = 10 KΩ		 0.1 -14	 0.15 -13.6	V
I_{sc}	Output Short Circuit Current (V_{id} = 1 V V_O = 0 V) Source Sink	 3 15	 9 27		mA
V_{icm}	Input Common Mode Voltage Range	0 to V_{CC}-1.8			V
CMR	Common Mode Rejection Ratio (V_i = $V_{icm\ min}$)	80	100		dB
SVR	Supply Voltage Rejection Ratio (V_{CC} = ± 5 to ± 15 V)	80	100		dB
I_{CC}	Supply Current (Per Amplifier) V_{CC+} = 5 V V_{CC-} = 0 V no load V_{CC} = ± 15 V no load		 200 230	 250 250	µA
S_{VO}	Slew Rate (V_i = ±10 V R_L = 10 KΩ C_L = 100 pF)	1.6	2		V/µs
GBP	Gain Bandwidth Product (R_L = 10 KΩ C_L = 100 pF f = 100 KHz)	1.4	2.1		MHz
φm	Phase Margin (R_L = 10 KΩ C_L = 100 pF)		45		degrees
Vn	Equivalent Input Noise Voltage (f = 1 KHz)		29		$nV/\sqrt{Hz}$
THD	Total Harmonic Distortion		0.05		%
	Channel Separation		120		dB

PACKAGE MECHANICAL DATA

8 PINS - PLASTIC DIP



8 PINS - PLASTIC MICROPACKAGE (SO)



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