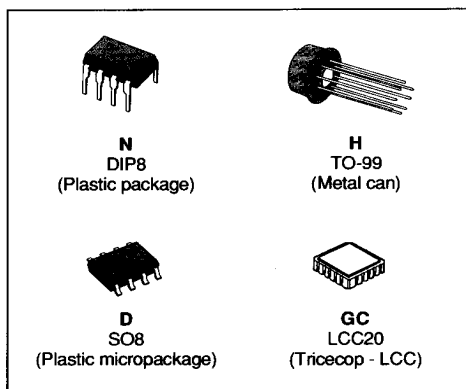


J-FET INPUT DUAL OP-AMPS

- LOW POWER CONSUMPTION
- WIDE COMMON-MODE AND DIFFERENTIAL VOLTAGE RANGE
- LOW INPUT BIAS AND OFFSET CURRENT
- OUTPUT SHORT-CIRCUIT PROTECTION
- HIGH INPUT IMPEDANCE J-FET INPUT STAGE
- INTERNAL FREQUENCY COMPENSATION
- LATCH UP FREE OPERATION
- HIGH SLEW RATE : 13 V/ μ s (typ)



DESCRIPTION

The TL082, TL082A and TL082B are high speed J-FET input dual operational amplifiers incorporating well matched, high voltage J-FET and bipolar transistors in a monolithic integrated circuit.

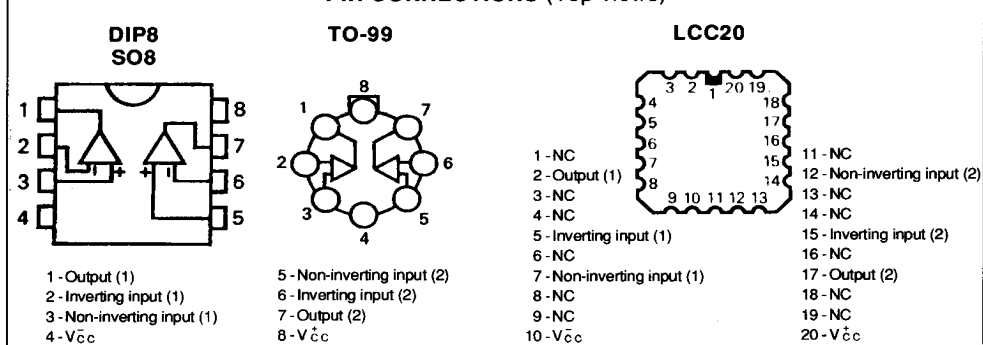
The devices feature high slew rates, low input bias and offset current, and low offset voltage temperature coefficient.

ORDER CODES

Part Number	Temperature Range	Package			
		N	H	D	GC
TL082M	- 55 °C to + 125 °C	•	•		•
TL082I	- 40 °C to + 105 °C	•			
TL082C	0 °C to + 70 °C	•		•	
TL082AC	0 °C to + 70 °C	•		•	
TL082BC	0 °C to + 70 °C	•		•	

Note : Hi-Rel Versions Available
Examples : TL082CD, TL082MGC, TL082IN

PIN CONNECTIONS (Top views)

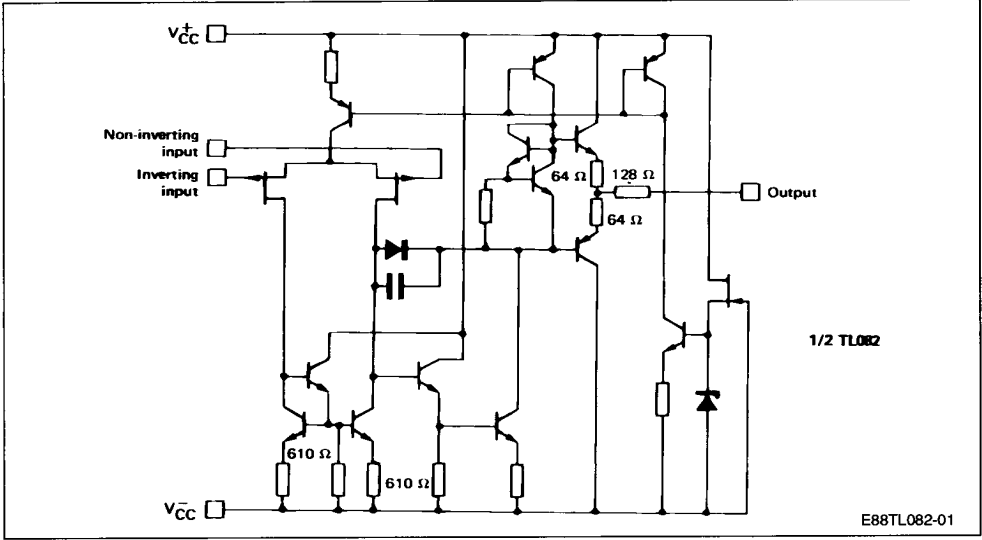


MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage (note 1)	± 18	V
V _I	Input Voltage (note 3)	± 15	V
V _{ID}	Differential Input Voltage (note 2)	± 30	V
P _{tot}	Power Dissipation	680	mW
	Output Short-circuit Duration (note 4)	Indefinite	
T _{oper}	Operating Free Air Temperature Range	TL082C, AC, BC TL082I, BI TL082M 0 to + 70 - 40 to + 105 - 55 to + 125	°C
T _{stg}	Storage Temperature Range	- 65 to + 150	°C

- Notes :
- 1. All voltage values, except differential voltage, are with respect to the zero reference level (ground) of the supply voltages where the zero reference level is the midpoint between V_{CC} and V_{CC}.
 - 2. Differential voltages are at the non-inverting input terminal with respect to the inverting input terminal.
 - 3. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 volts, whichever is less.
 - 4. The output may be shorted to ground or to either supply. Temperature and /or supply voltages must be limited to ensure that the dissipation rating is not exceeded.

SCHEMATIC DIAGRAM



Case	Outputs	Inverting Inputs	Non-inverting Inputs	V _{cc}	V _{cc}	N.C.
DIP8 SO8 TO-99	1, 7	3, 5	2, 6	4	8	
LCC20	2, 17	7, 12	5, 15	10	20	*

* LCC20 : Other pins are not connected.

ELECTRICAL CHARACTERISTICSV_{CC} = ± 15 V (unless otherwise specified)**TL082M** : - 55 °C ≤ T_{amb} ≤ + 125 °C**TL082I, BI** : - 40 °C ≤ T_{amb} ≤ + 105 °C**TL082C, AC, BC** : 0 °C ≤ T_{amb} ≤ + 70 °C

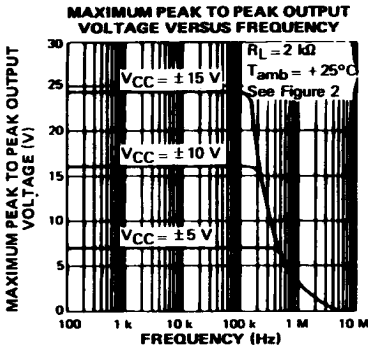
Symbol	Parameter	TL082M, I, BI TL082BC, AC			TL082C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V _{IO}	Input Offset Voltage T _{amb} = 25 °C (R _S ≤ 10 kΩ) TL082BI, BC T _{min} ≤ T _{amb} ≤ T _{max} TL082BI, BC		3 1	5 3 9 5		3	8 13	mV
DV _{IO}	Input Offset Voltage Drift		10			10		μV/°C
I _{IO}	Input Offset Current * T _{amb} = 25 °C T _{min} ≤ T _{amb} ≤ T _{max}		5	50 4		5	50 4	pA nA
I _{IB}	Input Bias Current * T _{amb} = 25 °C T _{min} ≤ T _{amb} ≤ + 70 °C		20	200 20		20	200 20	pA nA
A _{VD}	Large Signal Voltage Gain (R _L ≥ 2 kΩ, V _O = ± 10 V) T _{amb} = 25 °C T _{min} ≤ T _{amb} ≤ T _{max}	50 25	200		50 25	200		V/mV
SVR	Supply Voltage Rejection Ratio (R _S ≤ 10 kΩ) T _{amb} = 25 °C T _{min} ≤ T _{amb} ≤ T _{max}	80 80	86		80 80	86		dB
I _{CC}	Supply Current, per Amp, no Load T _{amb} = 25 °C T _{min} ≤ T _{amb} ≤ T _{max}		1.4	2.5 2.5		1.4	2.5 2.5	mA
V _I	Input Voltage Range	- 11		+ 11	- 11		+ 11	V
CMR	Common Mode Rejection Ratio (R _S ≤ 10 kΩ) T _{amb} = 25 °C T _{min} ≤ T _{amb} ≤ T _{max}	80 80	86		70 70	86		dB
I _{OS}	Output Short-circuit Current T _{amb} = 25 °C T _{min} ≤ T _{amb} ≤ T _{max}	10 10	40	60 60	10 10	40	60 60	mA
± V _{OPP}	Output Voltage Swing T _{amb} = 25 °C R _L ≥ 2 kΩ R _L ≥ 10 kΩ T _{min} ≤ T _{amb} ≤ T _{max} R _L ≥ 2 kΩ R _L ≥ 10 kΩ	11 12 11 12	12 13.5		11 12 11 12	12 13.5		V
S _{VO}	Slew-rate (V _I = 10 V, R _L = 2 kΩ C _L ≤ 100 pF, T _{amb} = 25 °C, unity gain)	12	16		8	16		V/μs
t _r	Rise Time (V _I = 20 mV, R _L = 2 kΩ C _L = 100 pF, T _{amb} = 25 °C, unity gain)		0.1			0.1		μs

* The input bias currents are junction leakage currents which approximately double for every 10 °C increase in the junction temperature.

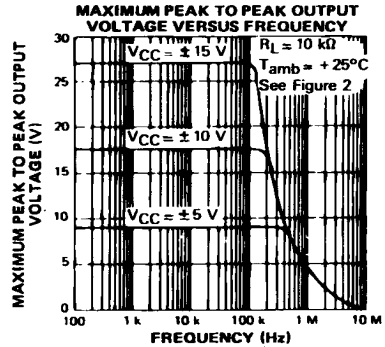
ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	TL082M, I, BI TL082BC, AC			TL082C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
K _{OV}	Overshoot (V _I = 20 mV, R _L = 2 kΩ C _L ≤ 100 pF, T _{amb} = 25 °C, unity gain)		10			10		%
GBP	Gain Bandwidth Product (f = 100 kHz, T _{amb} = 25 °C V _{IN} = 10 mV, R _L = 2 kΩ, C _L = 100 pF) TL082BI, BC	2.5 3.3	4.0 4.0	5.0 5.0	2.5	4.0	5.0	MHz
R _I	Input Resistance (T _{amb} = 25 °C)		10 ¹²			10 ¹²		Ω
THD	Total Harmonic Distortion (f = 1 kHz, A _v = 20 dB, R _L = 2 kΩ C _L ≤ 100 pF, T _{amb} = 25 °C, V _O = 2 V _{PP})		0.01			0.01		%
V _n	Equivalent Input Noise Voltage (f = 1 kHz, R _g = 100 Ω)		15			15		nV/√Hz
∅ _m	Phase Margin		45			45		Degrees
V _{O1} / V _{O2}	Channel Separation A _{vd} = 100, T _{amb} = 25 °C		120			120		dB

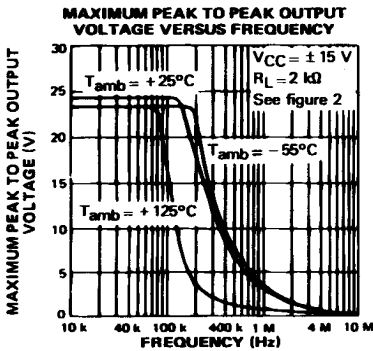
TYPICAL CHARACTERISTICS



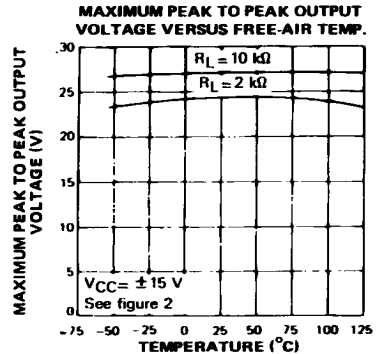
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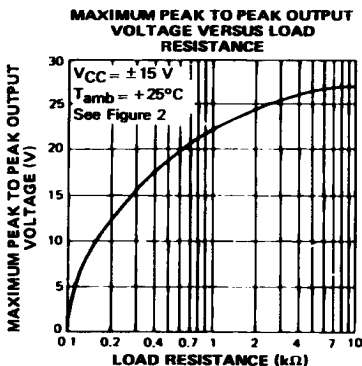
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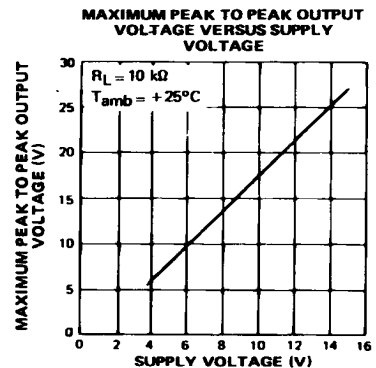
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E88TL072-05

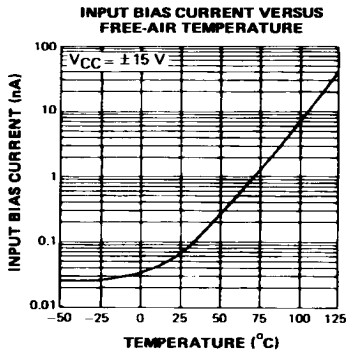


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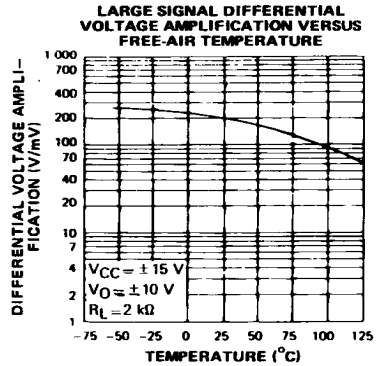


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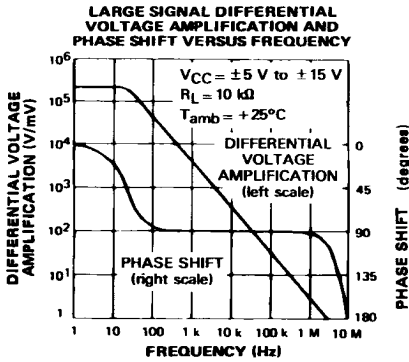
TYPICAL CHARACTERISTICS (continued)



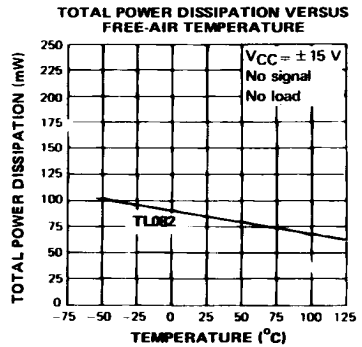
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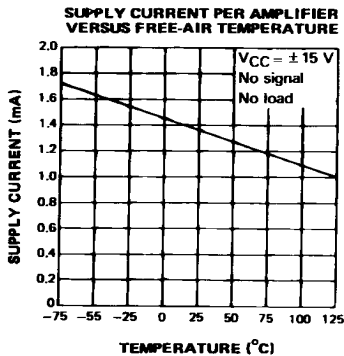
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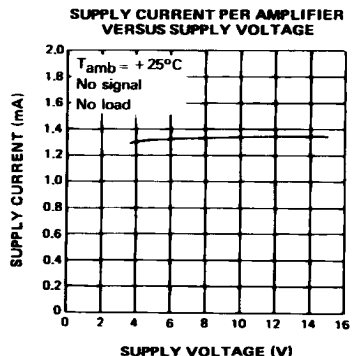
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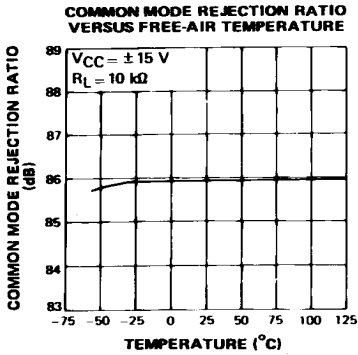


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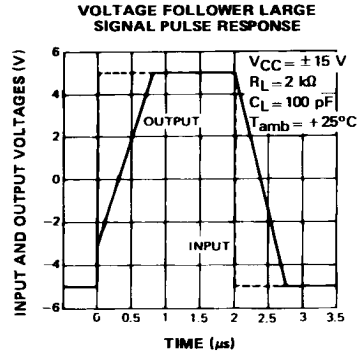


E88TL082-02

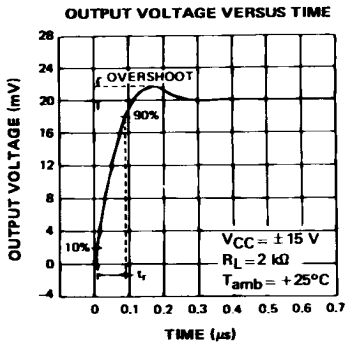
TYPICAL CHARACTERISTICS (continued)



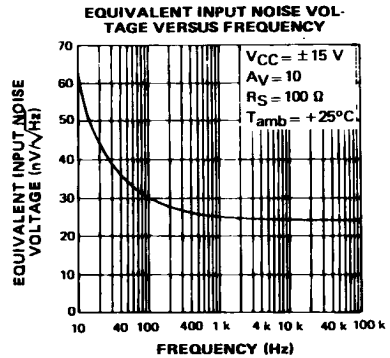
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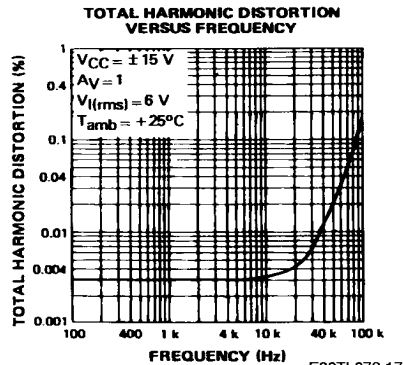
E88TL072-14



E88TL072-15



E88TL072-16



E88TL072-17

PARAMETER MEASUREMENT INFORMATION

Figure 1 : Voltage follower.

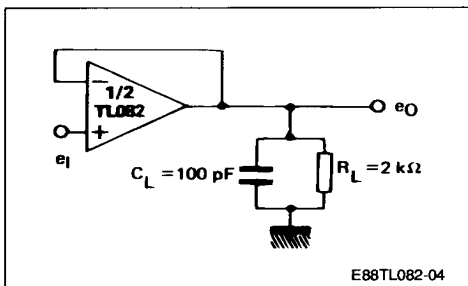
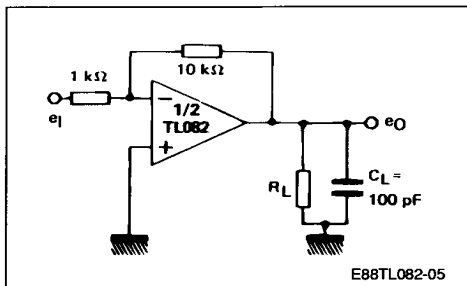
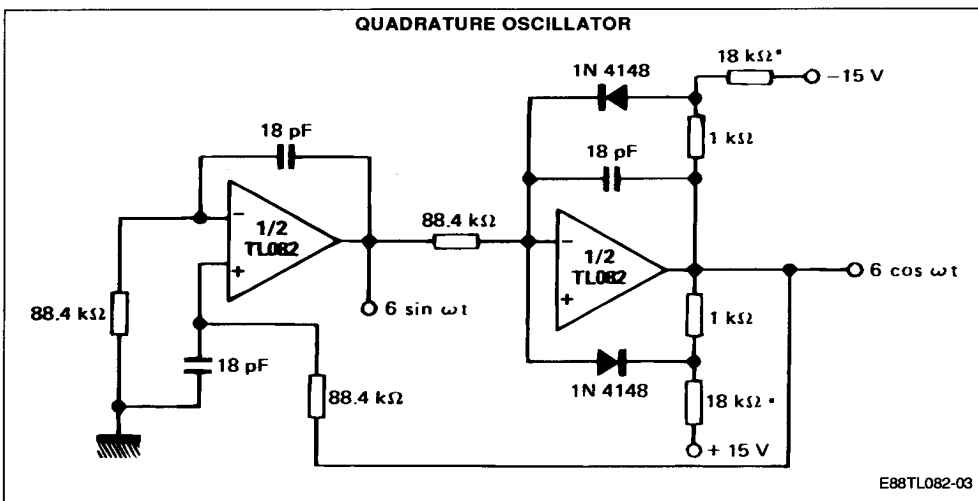


Figure 2 : Gain-of-10 inverting amplifier.

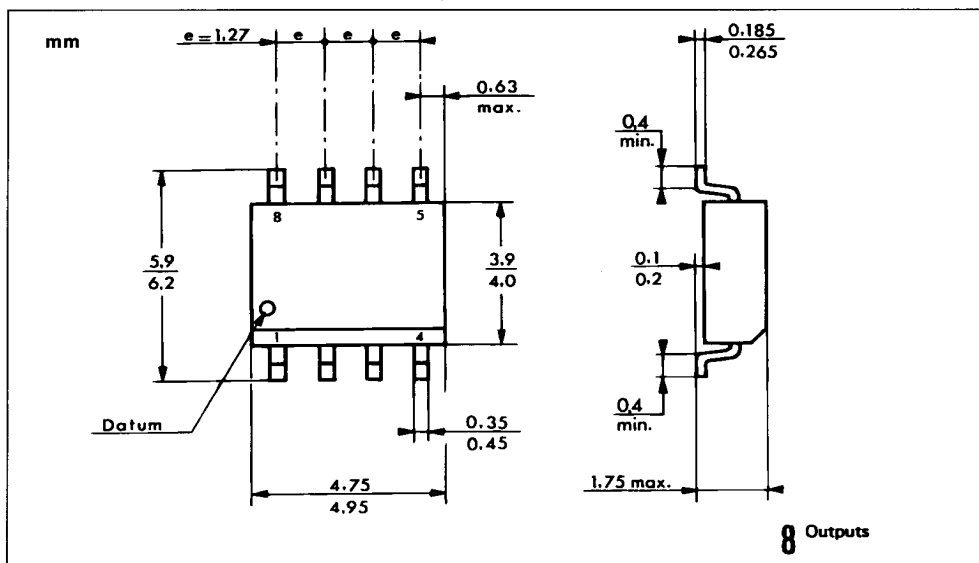


TYPICAL APPLICATION

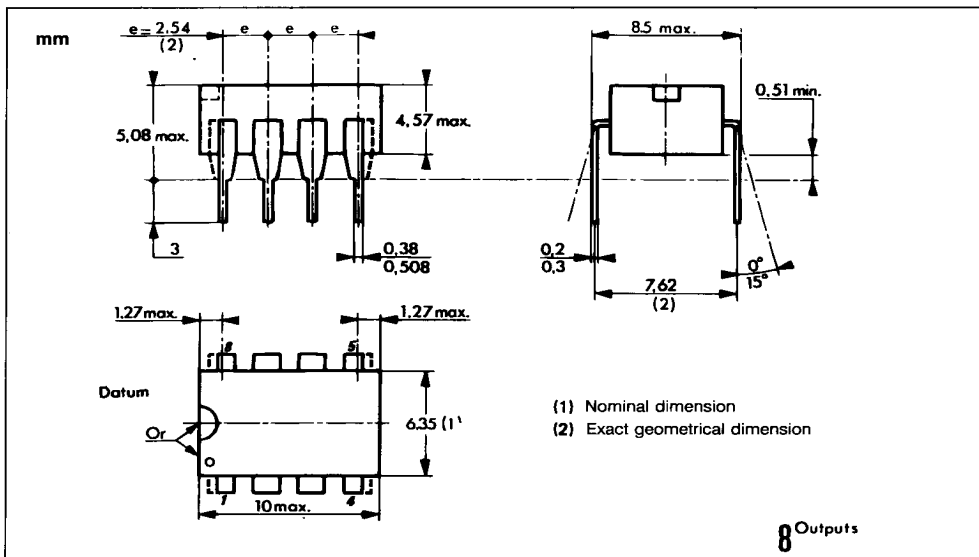


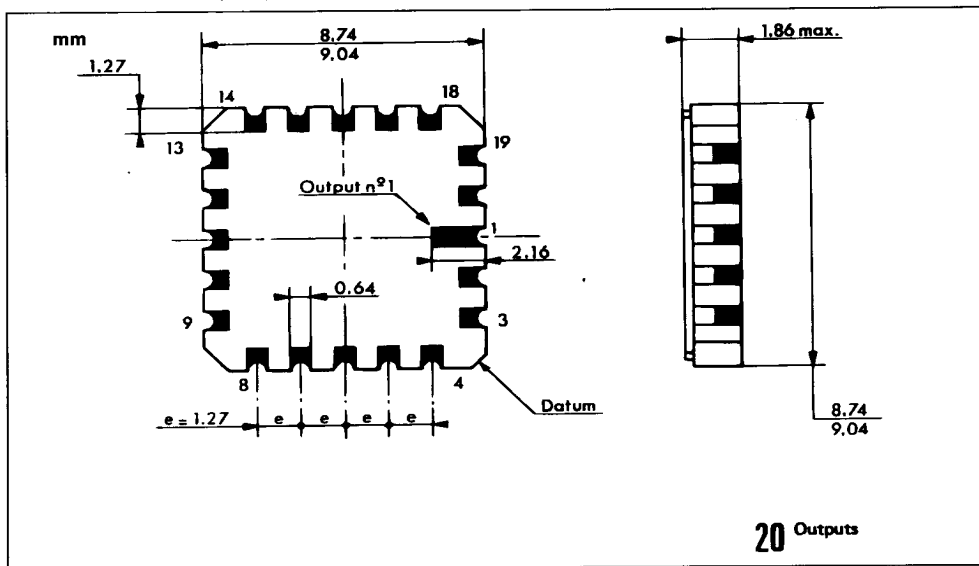
PACKAGE MECHANICAL DATA

8 PINS - PLASTIC MICROPACKAGE (SO)



8 PINS - PLASTIC DIP





TO-99 – METAL CAN

