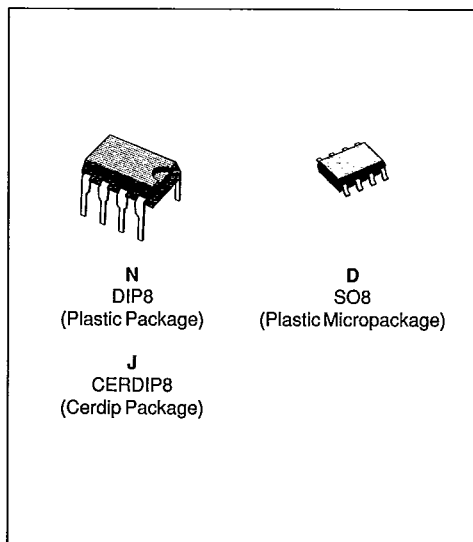


SGS-THOMSON

30E D

MICROPOWER DUAL CMOS VOLTAGE COMPARATORS
PRELIMINARY DATA

- PUSH-PULL CMOS OUTPUT (NO EXTERNAL PULL-UP RESISTOR REQUIRED)
- EXTREMELY LOW SUPPLY CURRENT :
9 μ A TYP / COMPARATOR
- WIDE SINGLE SUPPLY RANGE (3V TO 16V)
OR DUAL SUPPLIES (± 1.5 V TO ± 8 V)
- EXTREMELY LOW INPUT BIAS CURRENT:
1pA TYP
- EXTREMELY LOW INPUT OFFSET CURRENT:
1pA TYP
- INPUT COMMON-MODE VOLTAGE RANGE
INCLUDES GND
- BUILT-IN ESD PROTECTION
- HIGH INPUT IMPEDANCE : 10¹² Ω TYP
- FAST RESPONSE TIME : 2.5 μ s TYP FOR
5mV OVERDRIVE
- PIN-TO-PIN AND FUNCTIONALLY COMPATIBLE WITH BIPOLAR LM393

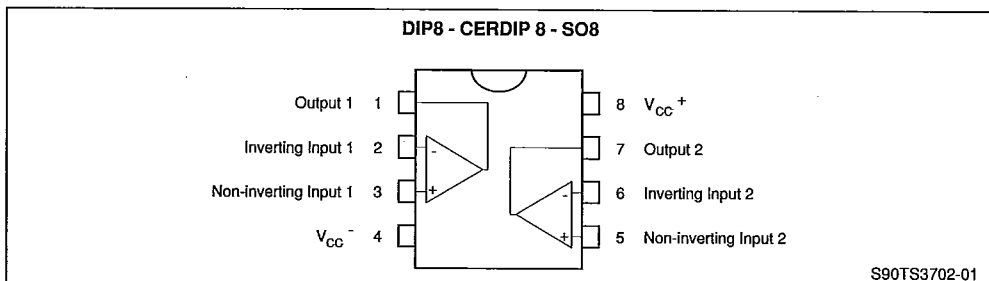

DESCRIPTION

The TS3702 is a micropower CMOS dual voltage comparator with extremely low consumption of 9 μ A typ / comparator (20 times less than bipolar LM393). The push-pull CMOS output stage allows power and space saving by eliminating the external pull-up resistor required by usual open-collector output comparators.

Thus response times remain similar to the LM393.

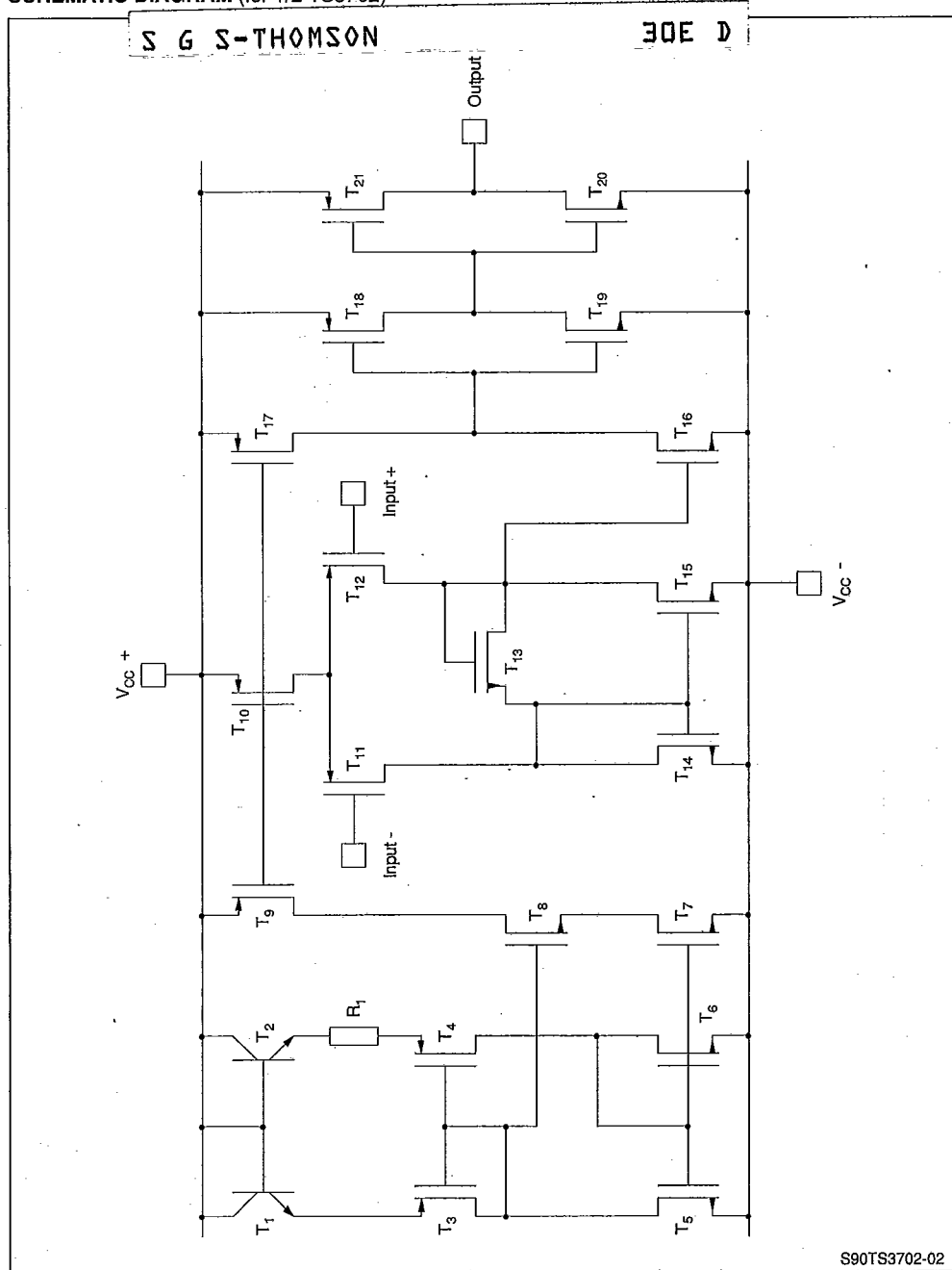
ORDER CODES

Part Number	Temperature Range	Package		
		N	J	D
TS3702C	0°C to +70°C	•	•	•
TS3702I	-40°C to +105°C	•	•	•
TS3702M	-55°C to +125°C	•	•	•
Example : TS3702CN				

PIN CONNECTIONS (Top view)


T-73-53

SCHEMATIC DIAGRAM (for 1/2 TS3702)



ABSOLUTE MAXIMUM RATINGS

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Symbol	Parameter	Value	Unit
V_{CC}^+	Supply Voltage (Note 1)	16	V
V_{id}	Differential Input Voltage (Note 2)	± 16	V
V_i	Input Voltage (Note 3)	16	V
V_o	Output Voltage	16	V
I_o	Output Current	20	mA
T_{oper}	Operating Free-Air Temperature Range TS3702C TS3702I TS3702M	0 to + 70 - 40 to + 105 - 55 to + 125	$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	- 65 to + 150	$^{\circ}\text{C}$

- Notes : 1. All voltage values, except differential voltage, are with respect to network ground terminal.
 2. Differential voltages are the non-inverting input terminal with respect to the inverting input terminal.
 3. The magnitude of the input and the output voltages must never exceed the magnitude of the positive supply voltage.
 4. Short circuit from outputs to V_{CC}^+ can cause excessive heating and eventual destruction.

OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{CC}^+	Supply Voltage Range TS3702C,I TS3702M	3* to 14 4 to 14	V
V_{ic}	Common Mode Input Voltage	0 to $V_{CC}^+ - 1.5$	V

* For selected devices only

ELECTRICAL CHARACTERISTICS

 $V_{CC}^+ = 5\text{V}$, $V_{CC}^- = 0\text{V}$, $T_{AMB} = 25^{\circ}\text{C}$

(unless otherwise specified)

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
V_{io}	Input Offset Voltage ($V_{ic} = V_{ICR\text{ Min.}}$, $V_{CC}^+ = 5\text{V}$ to 10V), (note 1)		1.2	5	mV
I_{io}	Input Offset Current		1		pA
I_{ib}	Input Bias Current		1		pA
V_{ICR}	Input Common Voltage Range	0 to $V_{CC} - 1.2\text{V}$			V
CMR	Common-mode Rejection Ratio ($V_{ic} = V_{ICR\text{ Min.}}$)		84		dB
SVR	Supply Voltage Rejection Ratio ($V_{CC}^+ = +5\text{V}$ to $+10\text{V}$)		85		dB
V_{oh}	High Level Output Voltage ($V_{id} = 1\text{V}$, $I_{oh} = -4\text{mA}$)	4.5	4.7		V
V_{OL}	Low Level Output Voltage ($V_{id} = -1\text{V}$, $I_{ol} = 4\text{mA}$)		210	300	mV
I_{CC}	Supply Current (2 comparators) - no load - Outputs low		18	40	μA
t_{PHL}	Response time high to low $f = 10\text{kHz}$, $C_L = 50\text{pF}$, Overdrive 5mV TTL Input		2.3 0.15		μs
t_{PLH}	Response time low to high $f = 10\text{kHz}$, $C_L = 50\text{pF}$, Overdrive 5mV TTL Input		2.7 1.1		μs
t_f	Fall time $f = 10\text{kHz}$, $C_L = 50\text{pF}$, Overdrive 50mV		50		ns
t_r	Rise time $f = 10\text{kHz}$, $C_L = 50\text{pF}$, Overdrive 50mV		125		ns

Note : 1. The specified offset voltage is the maximum value required to drive the output up to 4.5V or down to 0.3V.

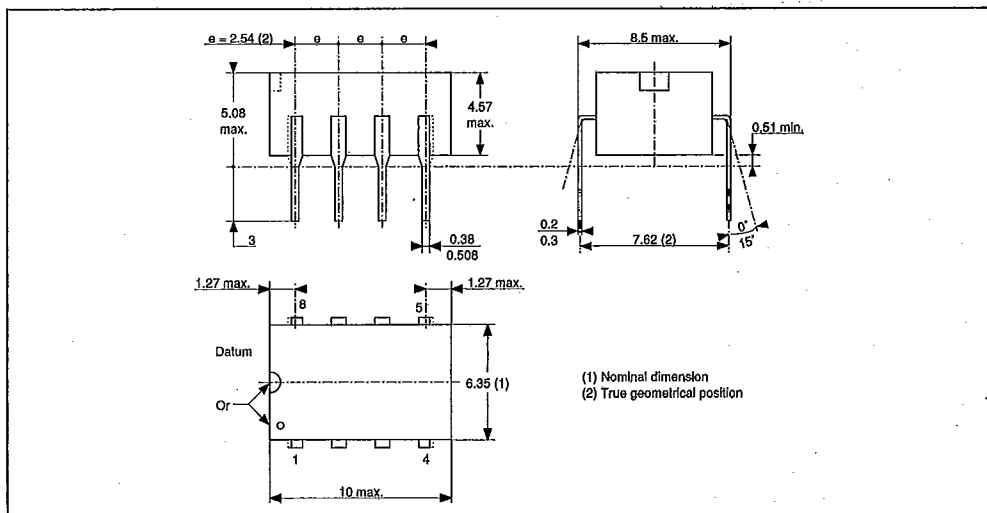
PACKAGE MECHANICAL DATA

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30E D

8 PINS - PLASTIC DIP OR Cerdip

T-73-53



8 PINS - PLASTIC MICROPACKAGE SO

