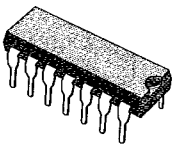
SGS-THOMSON MICROELECTRONICS

TS339C,I,M

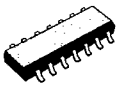
MICROPOWER QUAD CMOS VOLTAGE COMPARATORS

PRELIMINARY DATA

- EXTREMELY LOW SUPPLY CURRENT : 11µA TYP / COMPARATOR
- WIDE SINGLE SUPPLY RANGE (3V TO 16V) OR DUAL SUPPLIES (± 1.5V TO ± 8V)
- 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 : $10^{12}\Omega$ TYP
- FAST RESPONSE TIME : 2.5µs TYP FOR 5mV OVERDRIVE
- PIN-TO-PIN AND FUNCTIONALLY COMPATIBLE WITH BIPOLAR LM339



N
DIP14
(Plastic Package)



D
SO14
(Plastic Micropackage)

J
CERDIP14
(Cerdip Package)

DESCRIPTION

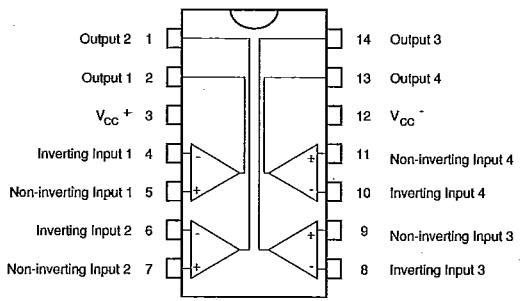
The TS339 is a micropower CMOS quad voltage comparator with extremely low consumption of 11µA typ / comparator (20 times less than bipolar LM339). Similar performances are offered by the quad micropower comparator TS3704 with a push-pull CMOS output.
Thus response times remain similar to the LM339.

ORDER CODES

Part Number	Temperature Range	Package		
		N	J	D
TS339C	0°C to + 70°C	•	•	•
TS339I	- 40°C to + 105°C	•	•	•
TS339M	- 55°C to + 125°C	•	•	•
Example : TS339CN				

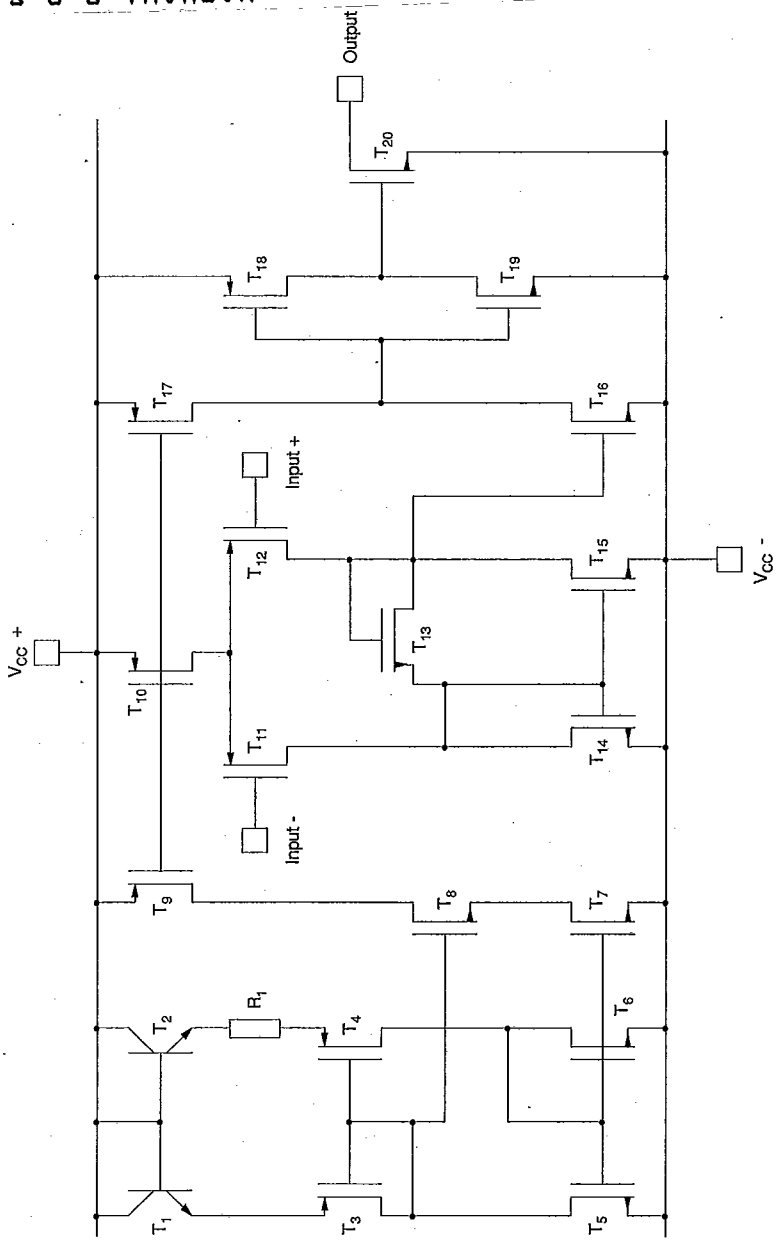
PIN CONNECTIONS (Top view)

DIP14 - CERDIP 14 - SO14



S90TS339-01

SCHEMATIC DIAGRAM (for 1/4 TS339)



S90TS339-02

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{CC}^+	Supply Voltage (Note 1)		18	V
V_{id}	Differential Input Voltage (Note 2)		± 18	V
V_i	Input Voltage (Note 3)		18	V
V_O	Output Voltage		18	V
I_O	Output Current		20	mA
T_{oper}	Operating Free-Air Temperature Range	TS339C TS339I TS339M	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 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 postive 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	TS339C,I TS339M	3* to 16 4 to 16	V
V_{ic}	Common Mode Input Voltage		0 to V_{CC}^+ -1.5	V

* For selected devices only

ELECTRICAL CHARACTERISTICS

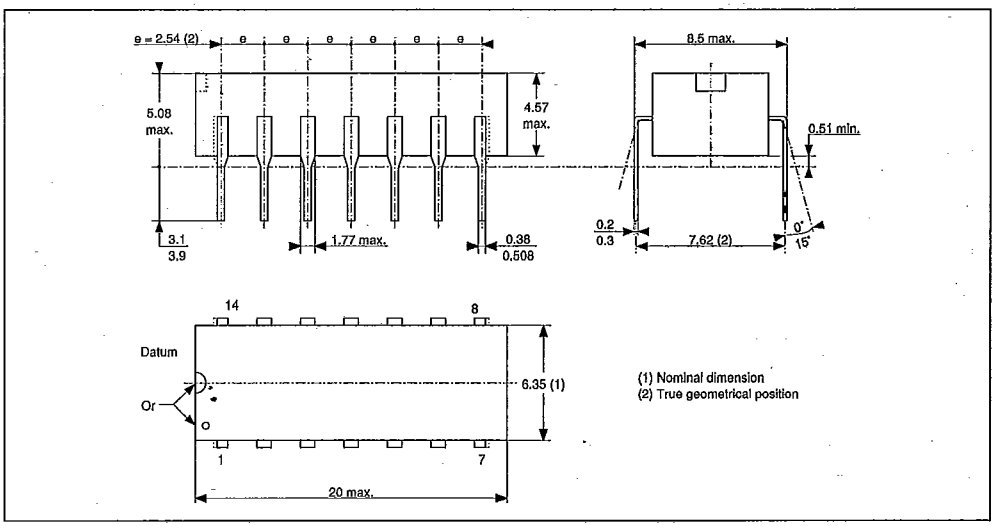
$V_{CC}^+ = 5V$, $V_{CC}^- = 0V$, $T_{AMB} = 25°C$
(unless otherwise specified)

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
V_{io}	Input Offset Voltage ($V_{IC} = V_{ICR\ Min.}$, $V_{CC}^+ = 5V$ to 10V), (note 1)		1.4	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 V			V
CMR	Common-mode Rejection Ratio ($V_{IC} = V_{ICRMIN}$)		84		dB
SVR	Supply Voltage Rejection Ratio ($V_{CC}^+ = +5V$ to +10V)		85		dB
I_{OH}	High Level Output Current ($V_{id} = 1V$, $V_{oh} = +5V$)		0.8	40	nA
V_{OL}	Low Level Output Voltage ($V_{id} = 1V$, $I_{ol} = 6mA$)		0.8	40	nA
I_{CC}	Supply Current (4 comparators) - no load - Outputs low		44	80	µA
t_{PHL}	Response Time High to Low f = 10kHz, C_L = 15pF, Overdrive 5mV TTL Input		 2.1 0.1		µs
t_{PLH}	Response Time Low to High f = 10kHz, C_L = 15pF, Overdrive 5mV TTL Input		 2.5 1.1		µs
t_{THL}	Transition Time High to Low f = 10kHz, C_L = 15pF, Overdrive 50mV		 20		ns

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

PACKAGE MECHANICAL DATA

14 PINS - PLASTIC DIP OR CERDIP



14 PINS - PLASTIC MICROPACKAGE (SO)