PLESSEY
Semiconductors

SP9680

ULTRA FAST COMPARATOR

The SP9680 is an ultra fast comparator manufactured using a high performance bipolar process which makes possible very short propagation delays (2.4ns typ.).

The circuit has differential inputs and complementary ECL outputs, capable of driving 50 Ω lines.

The device is manufactured in a low cost mini-dip package and is intended as an alternative to the faster SP9685 in applications where performance premium and the latch facility are not required.

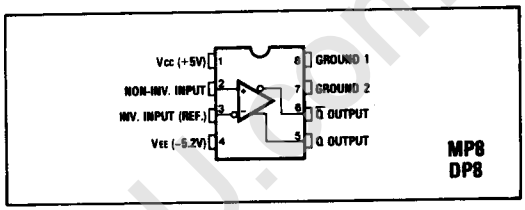
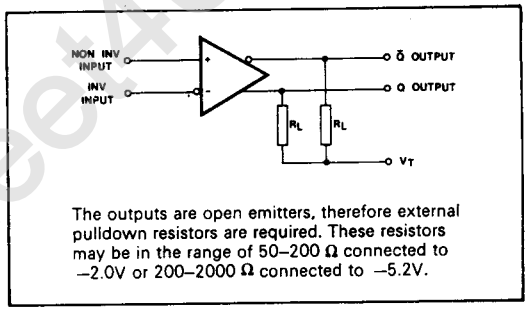


Fig. 1 Pin connections

FEATURES

- Propagation Delay 2.4ns Typ.
- Complementary ECL Outputs
- 50 Ω Line Driving Capability
- Excellent Common Mode Rejection
- 8-Lead Plastic Package
- Supply Voltages +5, −5.2V
- Operating Temperature Range −30°C to +70°C



The outputs are open emitters, therefore external pulldown resistors are required. These resistors may be in the range of 50–200 Ω connected to −2.0V or 200–2000 Ω connected to −5.2V.

Fig. 2 Functional diagram

ORDERING INFORMATION

SP9680DP (Industrial - Plastic DIL package)
SP9680MP (Industrial - Miniature Plastic package)

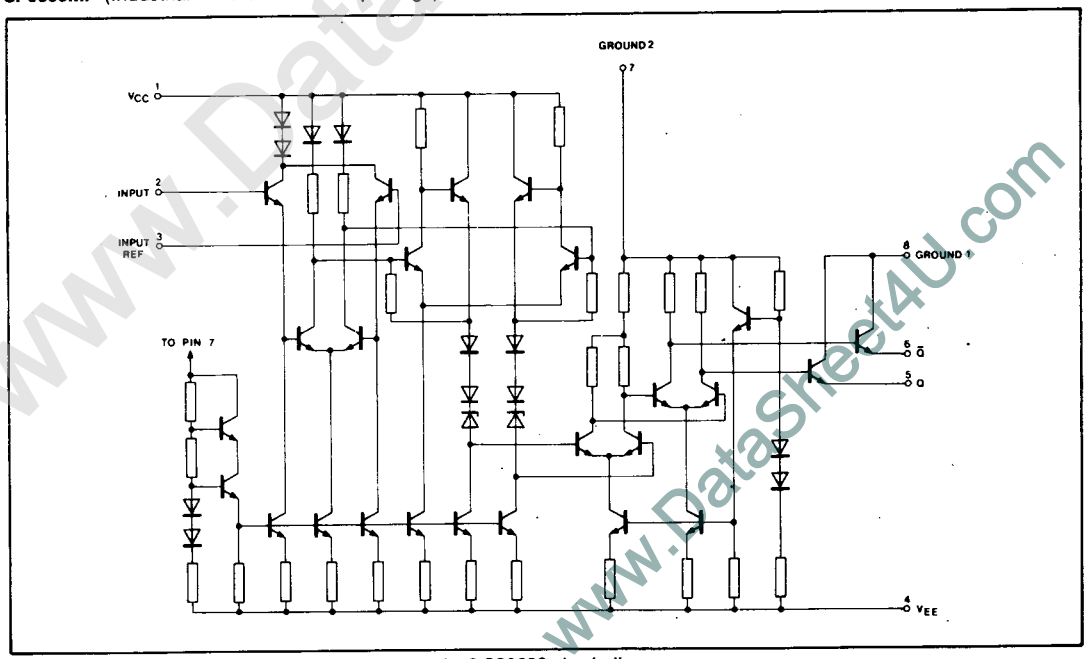


Fig. 3 SP9680 circuit diagram

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):

T_{amb} = 25 C
V_{CC} = 5.00V 0.25V
V_{EE} = −5.2V 0.25V
R_L = 50 Ω
V_T = −2.0V (See Fig. 2)

Characteristic	Value			Units	Conditions
	Min.	Typ.	Max.		
Input offset voltage	−6		+6	mV	Rs <100 Ω
Input bias current		20	40	μA	
Input offset current			10	μA	
Supply current I_{CC}		18	25	mA	
I_{EE}		22	35	mA	
Total power dissipation		200	300	mW	
Input to Q output delay		2.4	4	ns	} 100mV pulse,10mV overdrive
Input to $\overline{Q}$ output delay		2.4	4	ns	
Common mode range	−2		+2	V	
Common mode rejection ratio		80		dB	
Output logic levels					
Output HIGH	−0.96		−0.81	V	
Output LOW	−1.85		−1.65	V	
Input capacitance		3.5		pF	
Input resistance	50			kΩ	
Operating temperature range	−30		+70	°C	

Thermal characteristics θ_{JA} = 111°C/W
θ_{JC} = 71°C/W

ABSOLUTE MAXIMUM RATINGS

Positive supply voltage V_{CC} +6V
Negative supply voltage V_{EE} −6V
Output current 30mA
Input voltage ±3V
Differential input voltage 3.5V
Storage temperature range -55°C to +150°C
Operating junction temperature <150°C