Comparator

multicomp PRO

RoHS Compliant

Features

- Input Common Mode Range to Ground Level
- Differential Input Voltage Range Equal to Power Supply Voltage

Specification

Wide Single-Supply Range	: 2V to 36V
Split-Supply Range	: 1V to 18V
Very Low Current Drain Independent of Supply Voltage	: 0.4 mA
Low Input Bias Current	: 25 nA
Low Input Offset Current	: 5nA
Low Input Offset Voltage	: 5mV (max)

Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating
Power Supply Voltage	V_{CC}	+36V or 18V
Input Differential Voltage Range	V_{IDR}	36V
Input Common Mode Voltage Range	V_{ICR}	-0.3V to +36V
Output Short Circuit-to-Ground	I_{SC}	Continuous
Output Sink Current*	I_{Sink}	20
Power Dissipation @ TA = 25°C Derate above 25°C	P_D $1/R_{JA}$	570 5.7
Operating Ambient Temperature Range	T_A	09°C to 70°C
Maximum Operating Junction Temperature	$T_{J(max)}$	150°C
Storage Temperature Range	T_{stg}	-65°C to +150°C
ESD Protection at any Pin • Human Body Model • Machine Model	Vesd	2000V 200V

* The maximum output current may be as high as 20mA, independent of the magnitude of V_{CC}, output short circuits to V_{CC} can cause excessive heating and eventual destruction.

Electrical Characteristics (V_{CC} = 5V, 0°C≤TA 70°C, = 25°C, unless otherwise noted.)

Parameter Name	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage*1	V_{IO}	TA = 25°C 0°C≤T_A≤70°C		±1	±5 9	mV
Input Offset Current	I_{IO}			±5	±50 ±150	nA
Input Bias Current *2	I_{IB}			25	250 400	
Input Common Mode Voltage Range *2	V_{ICR}		0 0		V_{CC} -1.5 V_{CC}-2	V
Voltage Gain	A_{VOL}	R_L≥15 k , V_{CC} = 15V, T_A = 25°C	50	200		V/mV
Large Signal Response Time		V_{in} = TTL Logic Swing, V_{ref}= 1.4 V,V_{RL} = 5.0 V, R_L = 5.1k , T_A = 25		300		ns
Response Time *4	t_{TLH}	V_{RL} = 5V, R_L= 5.1kΩ, TA = 25°C		1.3		µs
Input Differential Voltage *5	V_{ID}	All V_{in} GND or V-Supply (if used)			Vcc	V
Output Sink Current	I_{Sink}	V_{in}≥1V, V_{in}+ = 0V, V_O≤1.5V T_A = 25°C	6	16		mA
Output Saturation Voltage	V_{OL}	V_{in}≥1V, V_{in}+ = 0, I_{Sink}≤4mA, T_A= 25°C		150	400	mV
		0°C≤T_A≤70°C			700	
Output Leakage Current	I_{OL}	V_{in}- = 0V, V_{in}+ 1V, V_O= 5V, TA = 25		0.1		nA
		V_{in}- = 0V, V_{in}+ 1V, V_O = 30 V,0°C T_A≤70°C			1000	
Supply Current	I_{CC}	RL = ∞ Both Comparators, T_A= 25		0.4	1	mA
		RL = ∞ Both Comparators, V_{CC}= 30V			2.5	

*1. At output switch point, VO=1.4 V, RS = 0Ù with V_{CC} from 5V to 30V, and over the full input common mode range (0V to V_{CC} = -1.5 V).

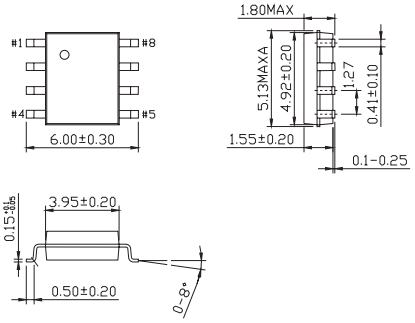
*2. Due to the PNP transistor inputs, bias current will flow out of the inputs. This current is essentially constant, independent of the output state, therefore, no loading changes will exist on the input lines.

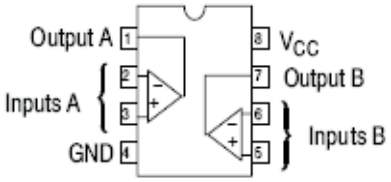
*3. Input common mode of either input should not be permitted to go more than 0.3 V negative of ground or minus supply. The upper limit of common mode range is VCC -1.5 V.

*4. Response time is specified with a 100 mV step and 5.0 mV of overdrive. With larger magnitudes of overdrive faster responseq times are obtainable.

*5. The comparator will exhibit proper output state if one of the inputs becomes greater than VCC, the other input must remain within the common mode range. The low input state must not be less than -0.3 V of ground or minus supply.

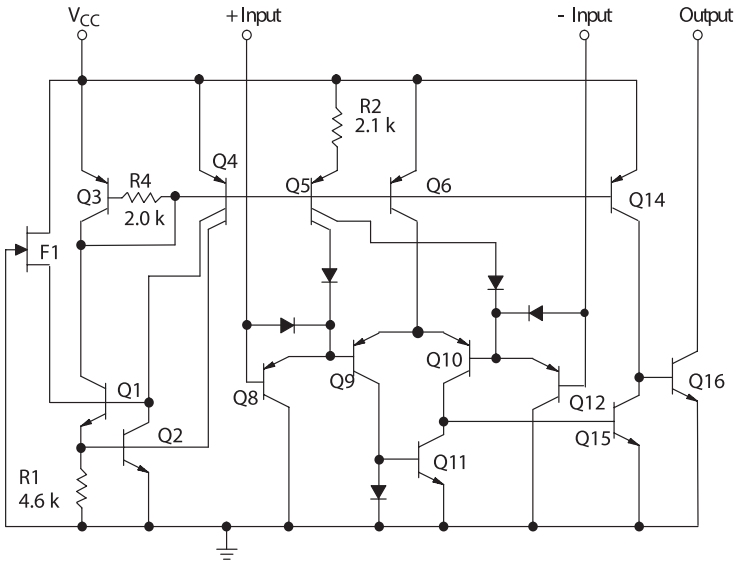
Diagram





Dimensions : Millimetres

Representative Schematic Diagram



Part Number Table

Description	Part Number
Dual Comparator, Low Power Offset, SOP-8	KM393

Dimensions : Millimetres