M51204L

VOLTAGE COMPARATOR

DESCRIPTION

The M51204L is a semiconductor integrated circuit consisting of precision voltage comparator. It is designed specifically to operate from a single power supply of wide range. Input stage has a characteristic of low bias current and output stage is capable of sinking high current. So, it is intended for a wide range of applications, ex. CR Timer, relays and lamps driver. M51204L's package is a mini SIL package, therefore can use very easily.

FEATURES

- Low input current ····· 20nA (typ.)
- Wide supply voltage range ····· 3.0~28V
- Low circuit current ····· 2.5mA(max.)
- 60mA output current capability can drive a relay or a lamp.
- High output break down voltage ····· 30V(max.)

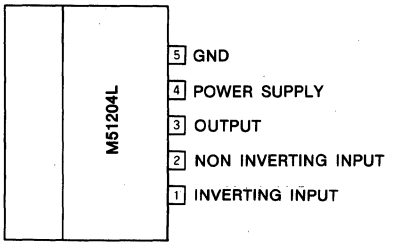
APPLICATIONS

- Electric shutter
- Comparator
- Level detector
- CR Timer
- Time delay circuit

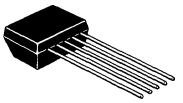
RECOMMENDED OPERATING CONDITIONS

Supply voltage range ····· 2.5~28V
Rated supply voltage ····· 12V±10%

PIN CONFIGURATION (TOP VIEW)

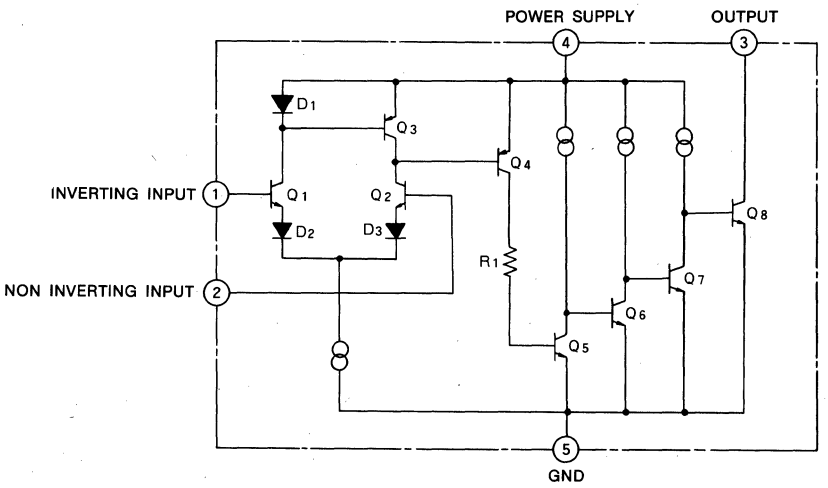


Outline 5P5



5-pin molded plastic SIL

EQUIVALENT CIRCUIT



MITSUBISHI ELECTRIC

ABSOLUTE MAXIMUM RATINGS (T_a=25℃, unless otherwise noted)

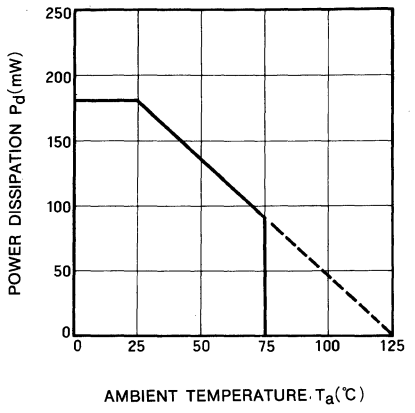
Symbol	Parameter	Conditions	Limits	Unit
V_{CC}	Supply voltage		28	V
V_{IN}	Input voltage		V_{CC}	V
I_{OL}	Output drive current	Output saturated	60	mA
V_{OH}	Output drive voltage		30	V
Pd	Power dissipation		180	mW
K_θ	Thermal derating	T_a≧25℃	1.8	mW/℃
Topr	Operating temperature		−20～+75	℃
Tstg	Storage temperature		−40～+125	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃)

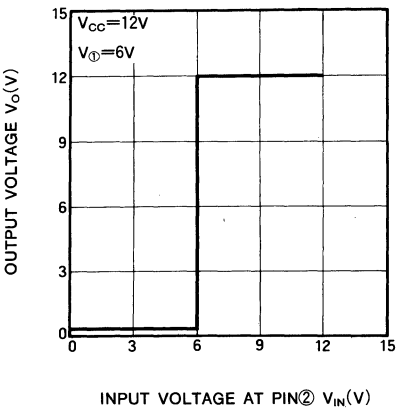
Symbol	Parameter	V_{CC}(V)	Test conditions	Limits Min	Limits Typ	Limits Max	Unit
V_{CC}	Supply voltage range			2.5		28	V
I_{CC}	Circuit current	6.0			1.8	2.5	mA
		12.0					
		24.0					
V_{IN}	Input voltage range	12.0		1.4		V_{CC}−0.2	V
I_{IN}	Input current	6.0			20	75	nA
		12.0					
		24.0					
V_{IO}	Input offset voltage	6.0			2	20	mV
		12.0					
		24.0					
V_{OL}	Output saturation voltage	6.0			0.3	0.6	V
		12.0	I_{OL}=60mA				
		24.0					
t_{PLH}	Output "L-H" propagation delay time	12.0			1		μs
t_{PHL}	Output "H-L" propagation delay time				10		

TYPICAL CHARACTERISTIC (T_a=25℃, unless otherwise noted)

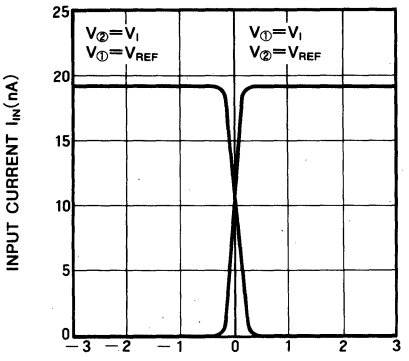
THERMAL DERATING (MAXIMUM RATING)



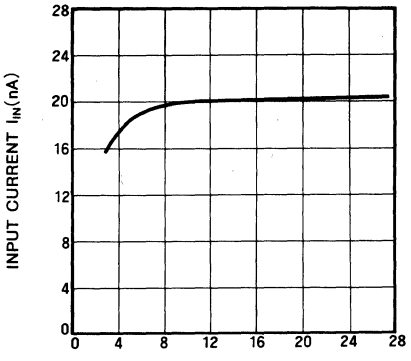
OUTPUT VOLTAGE VS INPUT VOLTAGE AT PIN ②



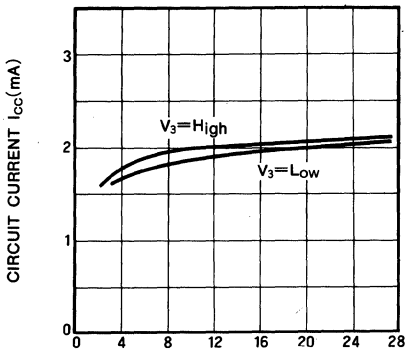
INPUT CURRENT VS
INPUT VOLTAGE



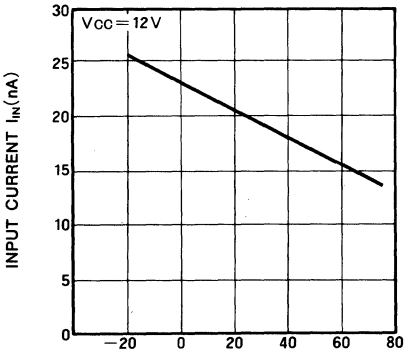
INPUT CURRENT VS
SUPPLY VOLTAGE



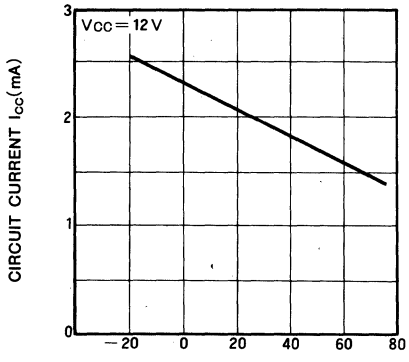
CIRCUIT CURRENT VS
SUPPLY VOLTAGE



INPUT CURRENT VS
AMBIENT TEMPERATURE

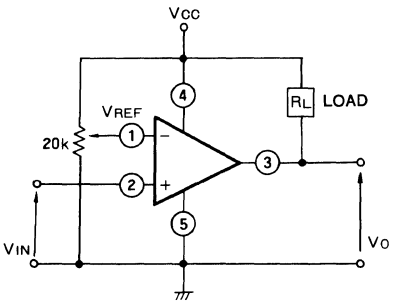


CIRCUIT CURRENT VS
AMBIENT TEMPERATURE

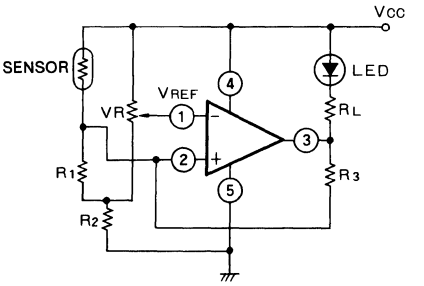


APPLICATION EXAMPLES

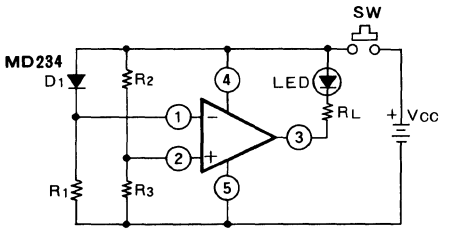
Voltage comparator



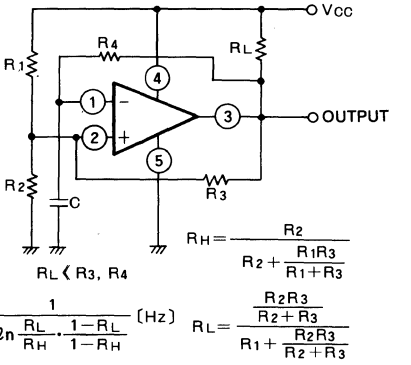
Detector



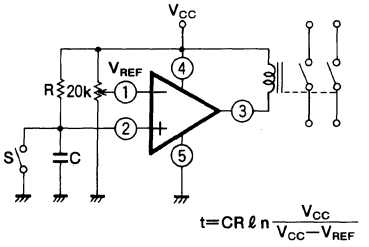
Battery checker



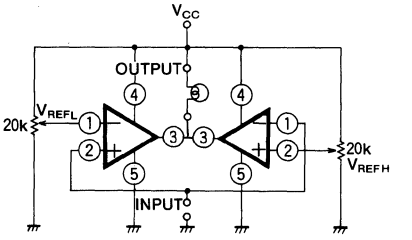
Oscillator



CR Timer



Window comparator



PRECAUTIONS FOR USE

1. Paying much attention is necessary for fear that the M51204L may flow large current and reach to destroy because of the structure when the terminals of V_{CC} and GND of the M51204L is connected wrong position each other.
2. Output is "open collector" and a loading resistor is not included. Connect a loading resistor to stabilize operation, in case of driving a next stage.