

M51924P,FP**QUAD COMPARATOR****DESCRIPTION**

The M51924 is a quad (four independent) comparator and operates over a wide voltage range from a single supply voltage. Especially the M51924 has superiority as to characteristics of input current (input resistance) and fits to wide ranged applications, for example CR timer, oscillator, etc.

FEATURES

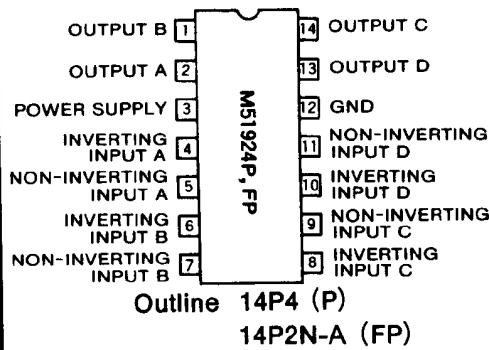
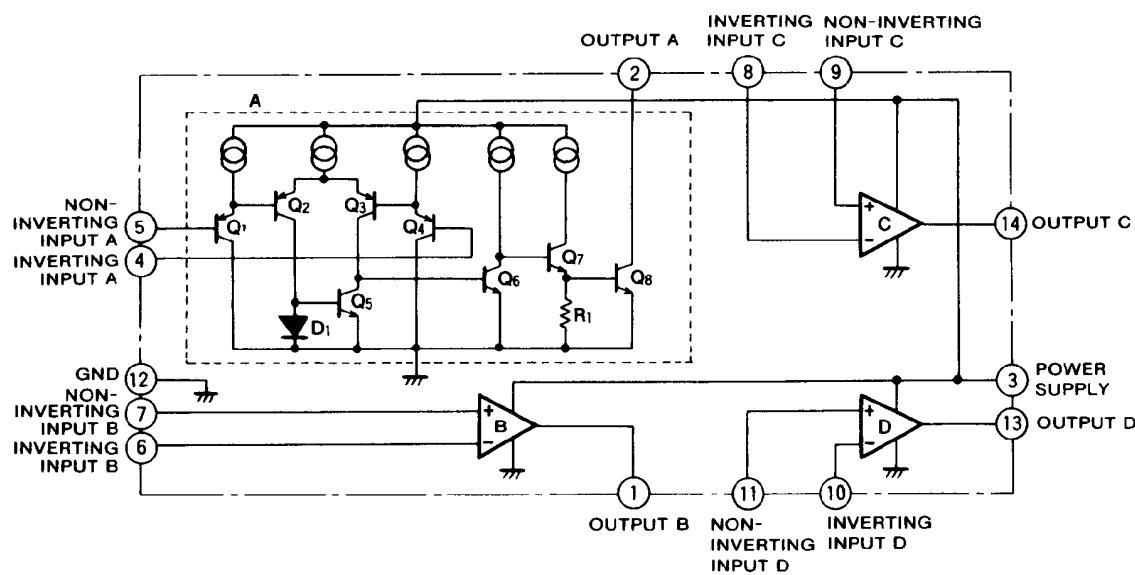
- Low input current 25nA(typ.)
- Wide supply voltage range 2.5~28V
- Low dissipation current 0.8mA(typ.)(All output OFF)
3mA(typ.)(ALL output ON)
- Enable high output drive $V_{OL}=0.15V$ (typ.)
(Output current 20mA)

APPLICATION

Voltage comparator, window comparator, CR timer, time delay circuit, oscillator.

RECOMMENDED OPERATING CONDITIONS

- Supply voltage range 2.5~28V
- Rated supply voltage 12V

PIN CONFIGURATION (TOP VIEW)**EQUIVALENT CIRCUIT**

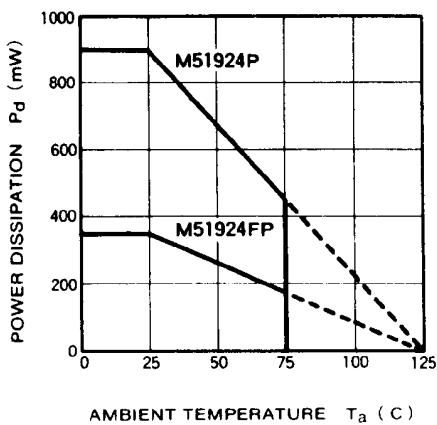
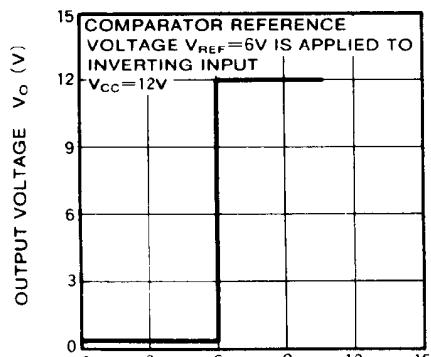
QUAD COMPARATOR**ABSOLUTE MAXIMUM RATINGS** ($T_a=25^\circ\text{C}$, unless otherwise noted)

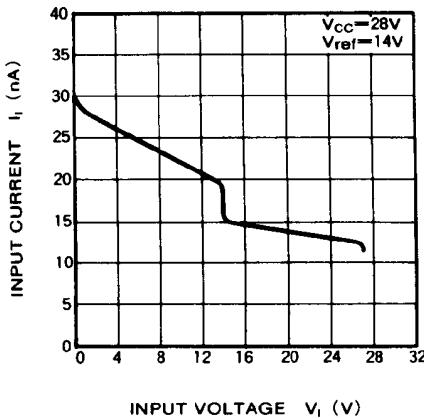
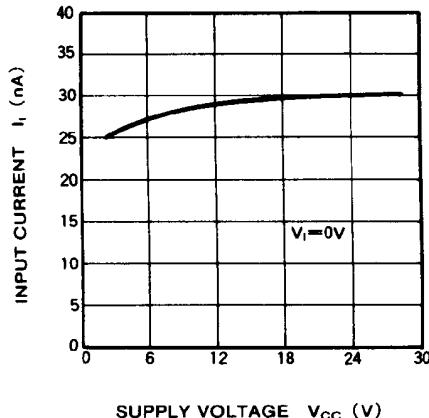
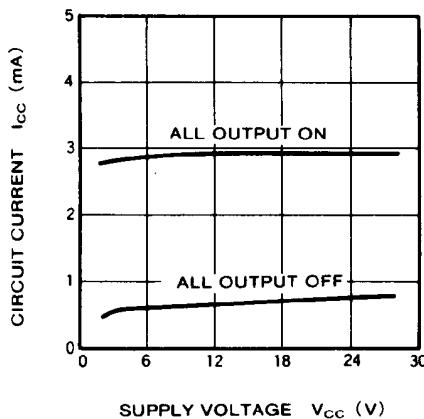
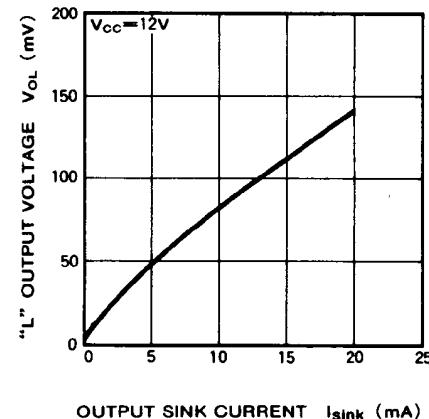
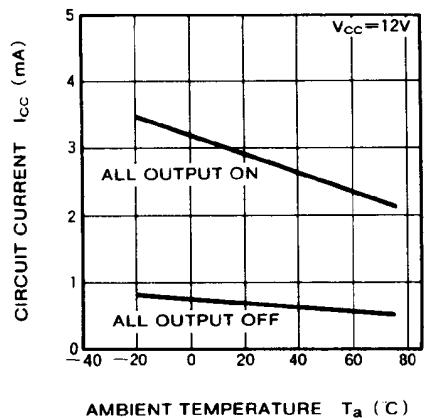
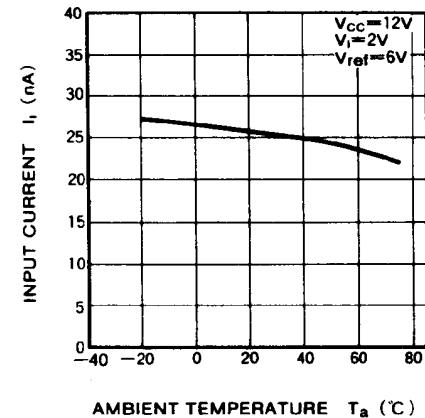
Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		28	V
V_{ID}	Differential input voltage		V_{CC}	V
V_{ICM}	Common mode input voltage range		-0.3~ V_{CC}	V
I_{sink}	Output sink current		80	mA
V_{OH}	"H" output voltage		30	V
P_d	Power dissipation		900(DIP)/350(FP)	mW
T_{opr}	Operating temperature		-20~+75	°C
T_{stg}	Storage temperature		-40~+125	°C

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$, $V_{CC}=2.5\sim28\text{V}$, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_{CC}	Supply voltage range		2.5		28	V
I_{CC1}	Circuit current 1	ALL OUTPUT ON		3.0	5.0	mA
I_{CC2}	Circuit current 2	ALL OUTPUT OFF		0.8	1.6	mA
$V_{i\ominus}$	Inverting input voltage range	NOTE	0		$V_{CC}-1.5$	V
$V_{i\oplus}$	Non-inverting input voltage range	NOTE	0		$V_{CC}-1.5$	V
V_{IO}	Input offset voltage			2	5	mV
$I_{i\ominus}$	Inverting input current			25	150	nA
$I_{i\oplus}$	Non-inverting input current			25	150	nA
I_{IO}	Input offset current			5	50	nA
V_{OL}	"L" output voltage	$I_{sink}=20\text{mA}$	0.15	0.4		V
		$I_{sink}=80\text{mA}$	1			
I_{LO}	Output leak current				0.1	μA
t_{PLH}	Output "L→H" propagation delay time			2		μs
t_{PHL}	Output "H→L" propagation delay time			0.2		μs

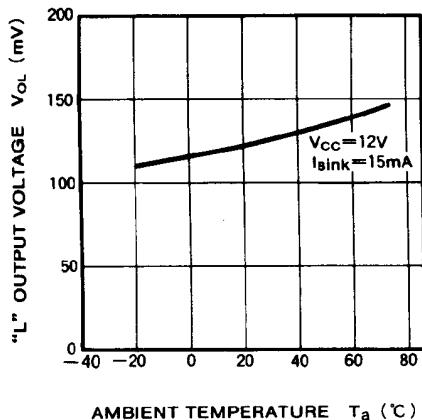
NOTE) Either inverting or non-inverting inputs (reference side) should be within this range. (Abnormal operation will not occur when the other is within the range of 0 to V_{CC} .)

TYPICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$, unless otherwise noted)**THERMAL DERATING (MAXIMUM RATING)****OUTPUT VOLTAGE VS. INPUT VOLTAGE**

QUAD COMPARATOR**INPUT CURRENT VS. INPUT VOLTAGE****INPUT CURRENT VS. SUPPLY VOLTAGE****CIRCUIT CURRENT VS. SUPPLY VOLTAGE****"L" OUTPUT VOLTAGE VS. OUTPUT SINK CURRENT****CIRCUIT CURRENT VS. AMBIENT TEMPERATURE****INPUT CURRENT VS. AMBIENT TEMPERATURE**

QUAD COMPARATOR

**"L" OUTPUT VOLTAGE VS.
AMBIENT TEMPERATURE**



**OUTPUT LEAK CURRENT VS.
AMBIENT TEMPERATURE**

