

SLOTTED SWITCH

T-41-73

MTSS10000 INFRARED LED+ PHOTO IC

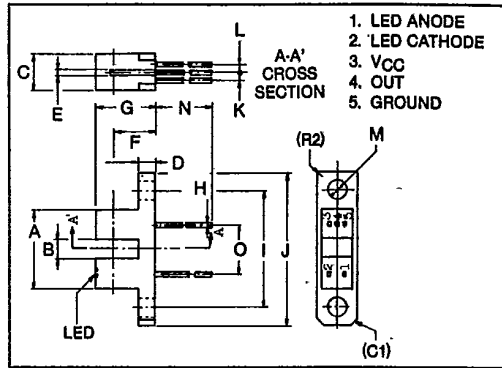
MTSS10000 contains a gallium arsenide infrared emitting diode coupled to a monolithic integrated circuit, which incorporates a photodiode, a linear amplifier and a Schmitt trigger on a single silicon chip.

APPLICATIONS

- OPTICAL SWITCH
- SHAFT POSITION AND VELOCITY SENSOR

FEATURES

- TTL, LSTTL compatible.
- Wide supply voltage ($V_{CC}=4.5\sim 16V$)
- Non sensitivity for visible light.
- High speed ($t_{on} 3\mu s, t_{off} 5\mu s$ typ.)
- Output terminal contains a high voltage limiting diode.



SYMBOL	INCHES	MM
A	0.512 ± 0.010	13 ± 0.25
B	0.118 ± 0.010	3 ± 0.25
C	0.244	6.2
D	0.098 ± 0.010	2.5 ± 0.25
E	0.039	1.0
F	0.270 ± 0.012	6.85 ± 0.3
G	0.394 ± 0.010	10 ± 0.25
H	0.197 ± 0.018	5 ± 0.45
I	0.748 ± 0.010	19 ± 0.25
J	0.984	25.0
K	0.075	1.9
L	0.075	1.9
M	0.130	3.3
N	0.709 MIN	18 MIN
O	0.300	7.62

MAXIMUM RATINGS ($T_a = 25^\circ C$)

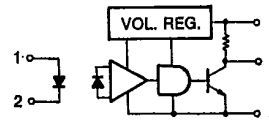
CHARACTERISTIC	SYMBOL	RATING	UNIT
Forward Current	I_F	50	mA
Reverse Voltage	V_R	5	V
Forward Current Derating	$\Delta I_F / ^\circ C$	-0.67	mA/ $^\circ C$
Supply Voltage	V_{CC}	16	V
Low Level Output Current	I_{OL}	50	mA
Total Output Power Dissipation	P_O	250	mW
Operating Temperature Range	T_{opr}	-25 ~ 85	$^\circ C$
Storage Temperature Range	T_{stg}	-40 ~ 100	$^\circ C$
Soldering Temperature and Time	T_{sol}	260 $^\circ C$, 3sec	

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	5	NOTE	V
Forward Current	I_F	11	13	15	mA
Operating Temperature	T_{opr}	0	—	70	$^\circ C$

Note: Limited by total output power dissipation.

A - LED B - DETECTOR



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OPTO-ELECTRICAL CHARACTERISTICS (Ta=25°C)

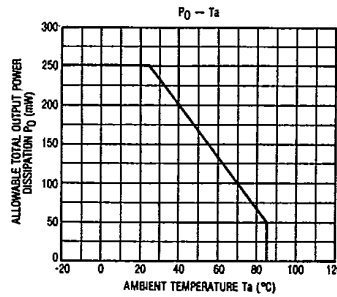
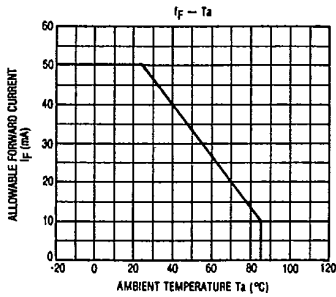
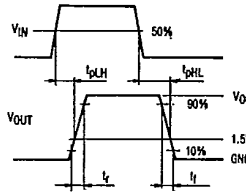
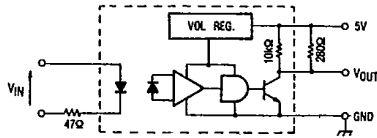
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(Over recommended temperature Ta=0~70°C unless otherwise noted.)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
A	Forward Voltage	V _F	I _F =8mA	—	1.15	1.4	V	
	Reverse Current	I _R	V _R =5V, Ta=25°C	—	—	10	μA	
	Capacitance	C _T	V=0, f=1MHz, Ta=25°C	—	30	—	pF	
B	Supply Voltage	V _{CC}	Ta=25°C	4.5	—	16	V	
	Low Level Supply Current	I _{CC} L	V _{CC} =5V, I _F =0	—	6	15	mA	
	High Level Supply Current	I _{CC} H	V _{CC} =5V, I _F =8mA	—	4	10	mA	
	Low Level Output Voltage	V _{OL}	I _{OL} =16mA, V _{CC} =5V, I _F =0	—	0.15	0.4	V	
	High Level Output Voltage	V _{OH}	V _{CC} =5V, I _F =8mA	4.0	—	—	V	
	'H'→'L' LED Threshold Current	I _{FLH}	V _{CC} =5V, Ta=25°C	—	2	5	mA	
C	Hysteresis Ratio	I _{FHL} /I _{FLH}	V _{CC} =5V	—	0.9	—	—	
			V _{CC} =5V	—	—	8	mA	
	Propagation Delay (NOTE)	L→H	t _{PLH}	Ta=25°C	—	3	—	μS
		H→L	t _{PHL}	V _{CC} =5V, I _F =0↔8mA	—	5	—	
	Rise Time (NOTE)	t _r	R _L =280Ω	—	0.1	—		
	Fall Time (NOTE)	t _f	(NOTE)	—	0.05	—		

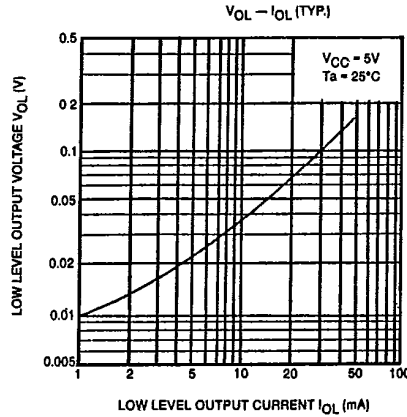
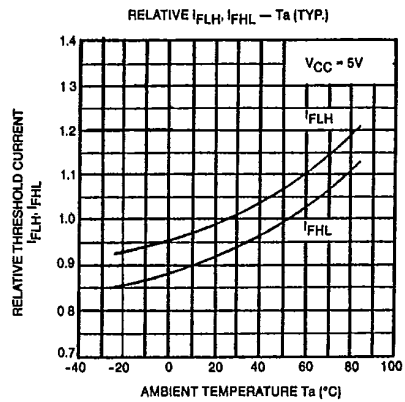
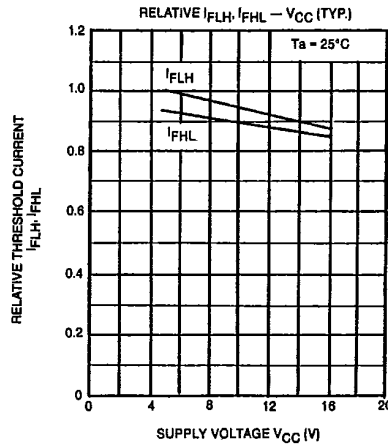
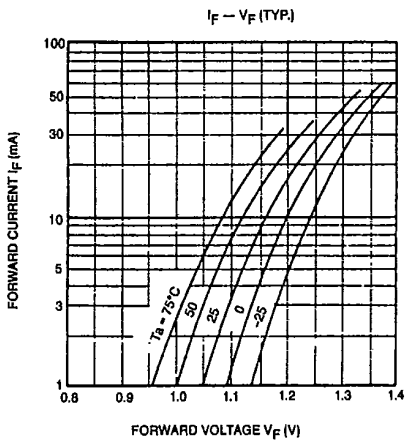
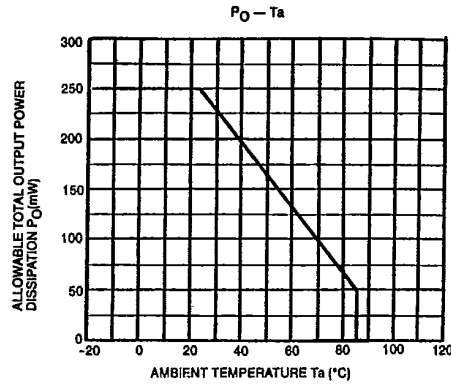
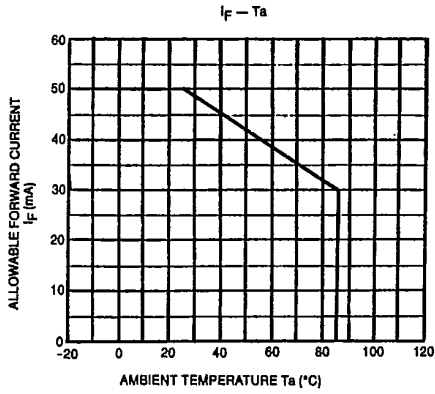
Note: Switching time test circuit and voltage waveform.

A - LED B - DETECTOR C - COUPLED



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