

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.

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

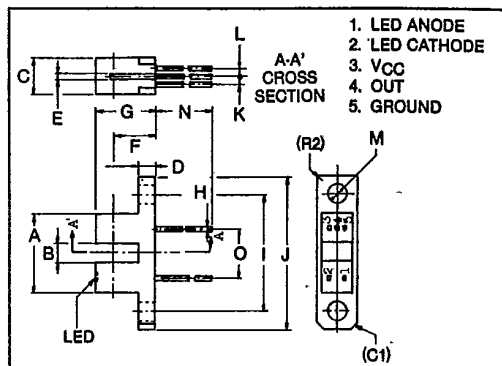
CHARACTERISTIC	SYMBOL	RATING	UNIT
Forward Current	I_F	50	mA
Reverse Voltage	V_R	5	V
Forward Current Derating	$\Delta I_F / ^\circ C$	-0.67	mA/ $^\circ C$
Supply Voltage	V_{CC}	16	V
Low Level Output Current	I_{OL}	50	mA
Total Output Power Dissipation	P_O	250	mW
Operating Temperature Range	T_{opr}	$-25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

RECOMMENDED OPERATING CONDITIONS

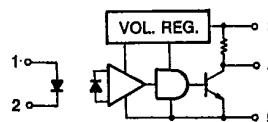
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	5	NOTE	V
Forward Current	I_F	11	13	15	mA
Operating Temperature	T_{opr}	0	—	70	$^\circ C$

Note: Limited by total output power dissipation.

A - LED B - DETECTOR



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



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OPTO-ELECTRICAL CHARACTERISTICS (Ta=25°C)

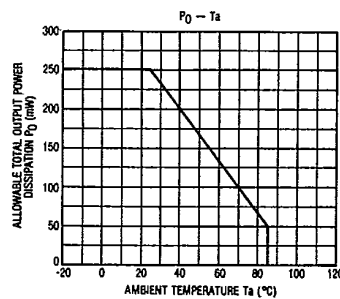
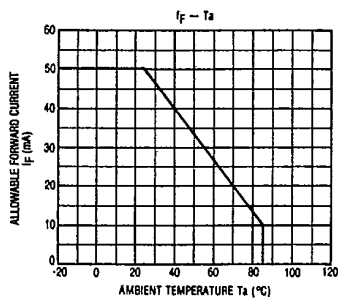
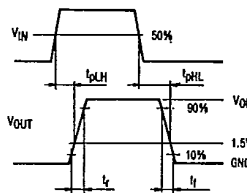
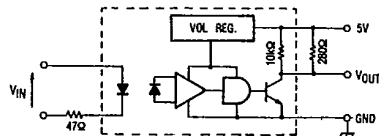
(Over recommended temperature Ta=0~70°C unless otherwise noted.)

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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 _{CCL}	V _{CC} =5V, I _F =0	—	6	15	mA
	High Level Supply Current	I _{CCH}	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	—	—
	Propagation Delay	L→H	Ta=25°C V _{CC} =5V, I _F =0→8mA R _L =280Ω	—	3	—	μS
	(NOTE)	H→L		—	5	—	
	Rise Time	(NOTE)		—	0.1	—	
	Fall Time	(NOTE)		—	0.05	—	

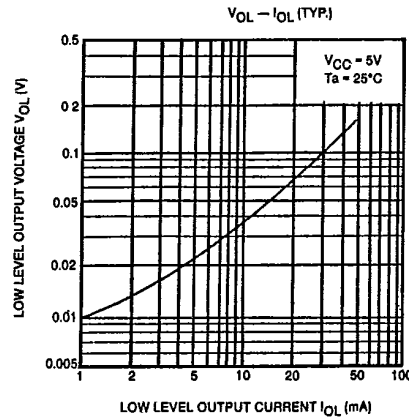
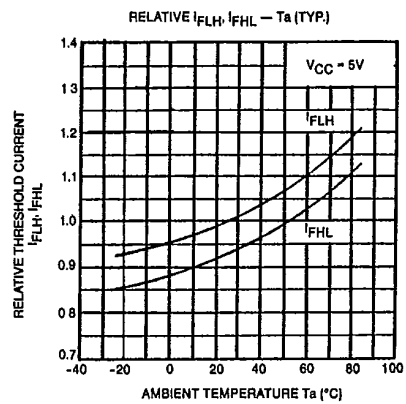
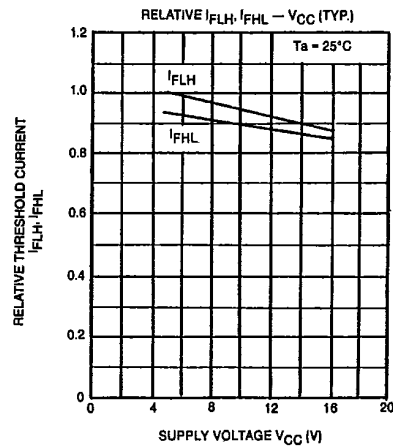
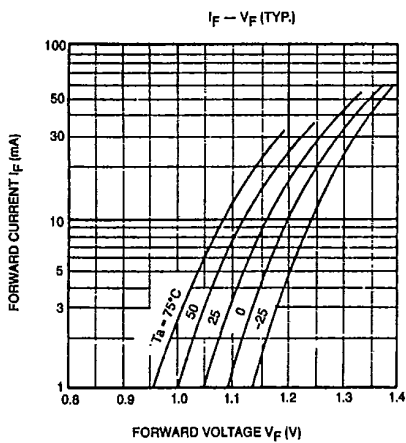
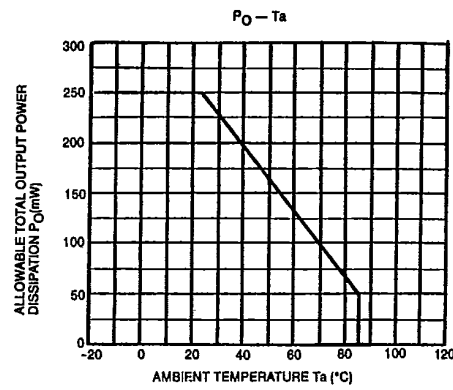
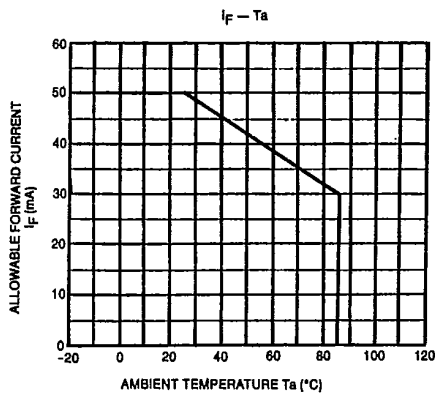
Note: Switching time test circuit and voltage waveform.

A - LED B - DETECTOR C - COUPLED



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