

Generic Optoisolator Specifications

MCS21, MCS2401

Optoisolator  
GaAs Infrared Emitting Diode and Light Activated SCR

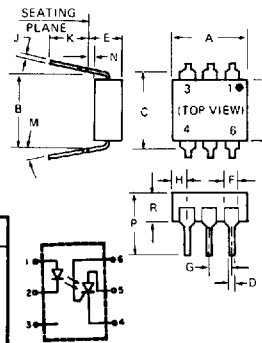
The MCS21 and MCS2401 consist of a gallium arsenide, infrared emitting diode coupled with a light activated silicon controlled rectifier in a dual in-line package. These devices are also available in surface-mount packaging.

■ Covered under U.L. component recognition program, reference file E51868

absolute maximum ratings

INFRARED EMITTING DIODE	
Power Dissipation	*100 milliwatts
Forward Current (Continuous)	60 milliamps
Forward Current (Peak) (100µsec 1% duty cycle)	1 ampere
Reverse Voltage	3 volts
*Derate 1.33mW/°C above 25°C ambient.	

PHOTO-SCR	
Off-State and Reverse Voltage	MCS21 200 volts MCS2401 400 volts
Peak Reverse Gate Voltage	6 volts
Direct On-State Current	300 milliamps
Surge (non-rep) On-State Current	10 amps
Peak Gate Current	10 milliamps
Output Power Dissipation	**400 milliwatts
**Derate 5.3mW/°C above 25°C ambient.	



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN	MAX	MIN	MAX	
A	8.38	8.89	330	350	1
B	7.62 REF		300 REF		
C		8.64		340	2
D	4.06	5.08	0.16	0.20	
E		5.08		200	3
F	1.01	1.78	0.40	0.70	
G		2.28		0.90	4
H		2.16		0.85	
J	2.03	3.05	0.08	0.12	4
K	2.54		100		
M		15		15	4
N	3.81		0.15		
P		9.53		375	4
R	2.92	3.43	1.15	135	
S	6.10	6.86	240	270	4

NOTES  
1 INSTALLED POSITION LEAD CENTERS  
2 OVERALL INSTALLED DIMENSION  
3 THESE MEASUREMENTS ARE MADE FROM THE SEATING PLANE 4 FOUR PLACES

TOTAL DEVICE	
Storage Temperature Range	— 55°C to 150°C
Operating Temperature Range	— 55°C to 100°C
Soldering Temperature (1/16" from case, 10 seconds)	260°C
Total Device Dissipation	450 milliwatts
Linear Derating Factor (above 25°C)	6.0mW/°C
Surge Isolation Voltage (Input to Output)	4000 V <sub>(peak)</sub> 3000 V <sub>(RMS)</sub>
Steady-State Isolation Voltage (Input to Output)	3500 V <sub>(peak)</sub> 2500 V <sub>(RMS)</sub>

individual electrical characteristics (25°C) (unless otherwise specified)

INFRARED EMITTING DIODE	TYP.	MAX.	UNITS
Forward Voltage V <sub>F</sub> (I <sub>F</sub> = 20mA)	1.1	1.5	V
Reverse Current I <sub>R</sub> (V <sub>R</sub> = 3V)	—	10	µA
Capacitance C <sub>J</sub> (V = 0, f = 1MHz)	50	—	pF

PHOTO-SCR	MIN.	MAX.	UNITS
Peak Off-State Voltage — V <sub>DM</sub> R <sub>GK</sub> = 10KΩ, T <sub>A</sub> = 100°C, I <sub>D</sub> = 150µA	MCS21 200 MCS2401 400	—	V
Peak Reverse Voltage — V <sub>RM</sub> (T <sub>A</sub> = 100°C, I <sub>R</sub> = 150µA)	MCS21 200 MCS2401 400	—	V
On-State Voltage — V <sub>T</sub> (I <sub>T</sub> = 100mA)	—	1.3	V
Off-State Current — I <sub>D</sub> (V <sub>D</sub> = 200V, I <sub>F</sub> = 0, R <sub>GK</sub> = 27K)	MCS21	2	µA
Off-State Current — I <sub>D</sub> (V <sub>D</sub> = 400V, I <sub>F</sub> = 0, R <sub>GK</sub> = 27K)	MCS2401	2	µA
Reverse Current — I <sub>R</sub> (V <sub>R</sub> = 200V, I <sub>F</sub> = 0)	MCS21	2	µA
Reverse Current — I <sub>R</sub> (V <sub>R</sub> = 400V, I <sub>F</sub> = 0)	MCS2401	2	µA
Holding Current — I <sub>H</sub> (V <sub>FX</sub> = 50V, R <sub>GK</sub> = 27KΩ)	10	500	µA

coupled electrical characteristics (25°C)

	MIN.	MAX.	UNITS
Input Current to Trigger V <sub>AK</sub> = 50V, R <sub>GK</sub> = 10KΩ		20	milliamps
Isolation Resistance (Input to Output) V <sub>AK</sub> = 100V, R <sub>GK</sub> = 27KΩ	.5	11	milliamps
Turn-On Time — V <sub>AK</sub> = 50V, I <sub>F</sub> = 30mA, R <sub>GK</sub> = 10KΩ, R <sub>L</sub> = 200Ω	100	—	gigaohms
Coupled dv/dt, Input to Output	—	50	microseconds
Input to Output Capacitance (Input to Output Voltage = 0, f = 1MHz)	500	—	volts/microsec.
	—	2	picofarads

Ⓢ VDE Approved to 0883/6.80 01 10b Certificate # 35025

MCS21, MCS2401

TYPICAL CHARACTERISTICS

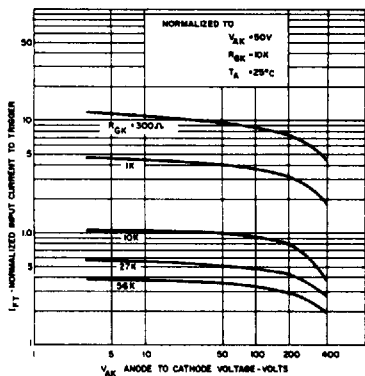


FIGURE 1. INPUT CURRENT TO TRIGGER VS. ANODE-CATHODE VOLTAGE

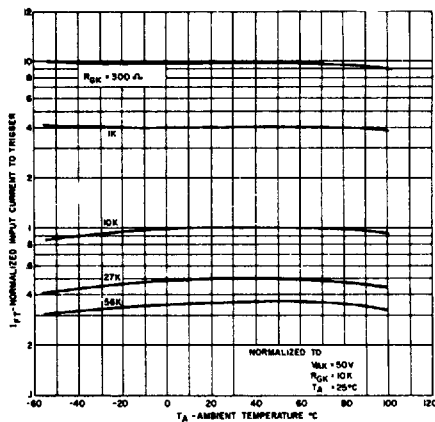


FIGURE 2. INPUT CURRENT TO TRIGGER VS. TEMPERATURE

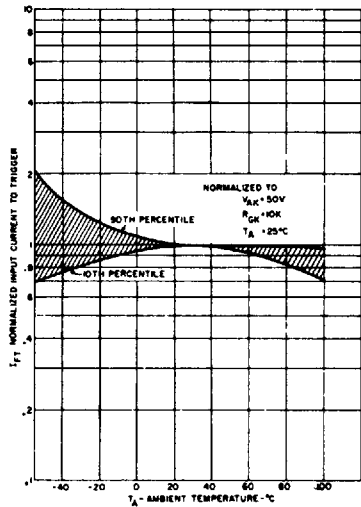


FIGURE 3. INPUT CURRENT TO TRIGGER DISTRIBUTION VS. TEMPERATURE

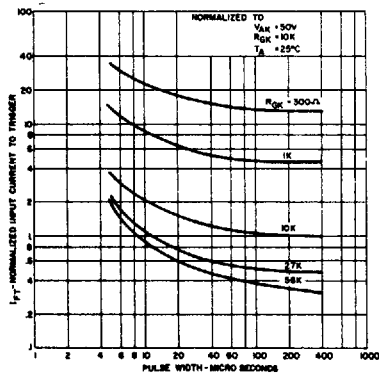


FIGURE 4. INPUT CURRENT TO TRIGGER VS. PULSE WIDTH

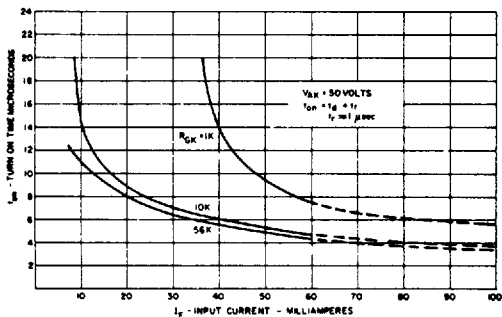


FIGURE 5. TURN-ON TIME VS. INPUT CURRENT

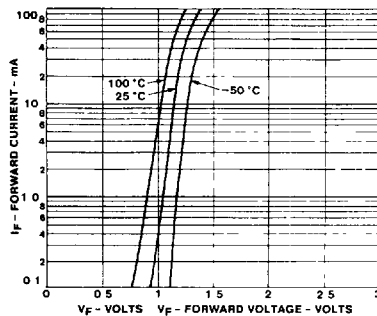


FIGURE 6. INPUT CHARACTERISTICS I<sub>F</sub> VS. V<sub>F</sub>