

Photon Coupled Isolator MCS21, MCS2401

GaAs Infrared Emitting Diode & Light Activated SCR

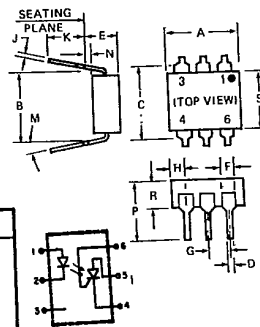
The GE Solid State MCS21 and MCS2401 consist of a gallium arsenide, infrared emitting diode coupled with a light activated silicon controlled rectifier in a dual-in-line package. These devices are also available in Surface-Mount packaging.

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	
B	7.62 REF	8.64	.300 REF	.340	1
C	—	5.08	.200	.200	2
D	.406	—	.016	—	
E	—	5.08	—	.200	3
F	1.01	1.78	.040	.070	
G	2.28	2.80	.090	.110	
H	—	2.16	—	.085	4
J	.203	.305	.008	.012	
K	2.54	—	.100	—	
M	—	.15	—	.15	
N	.381	—	.015	—	
P	—	9.53	—	.375	
R	—	2.92	—	.115	
S	6.10	6.86	.240	.270	

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 (peak) 3000 V (RMS)
 Steady-State Isolation Voltage (Input to Output).
 3500 V (peak) 2500V (RMS)

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

INFRARED EMITTING DIODE	TYP.	MAX.	UNITS	PHOTO-SCR	MIN.	MAX.	UNITS
Forward Voltage V_F ($I_F = 20mA$)	1.1	1.5	V	Peak Off-State Voltage — V_{DM} $R_{GK} = 10K\Omega, T_A = 100^\circ C, I_D = 150\mu A$	MCS21	200	V
					MCS2401	400	V
				Peak Reverse Voltage — V_{RM} ($T_A = 100^\circ C, I_R = 150\mu A$)	MCS21	200	V
					MCS2401	400	V
				On-State Voltage — V_T ($I_T = 100mA$)		—	1.3 V
				Off-State Current — I_D ($V_D = 200V, I_F = 0, R_{GK} = 27K$)	MCS21	—	2 µA
				Off-State Current — I_D ($V_D = 400V, I_F = 0, R_{GK} = 27K$)	MCS2401	—	2 µA
Reverse Current I_R ($V_R = 3V$)	—	10	µA	Reverse Current — I_R ($V_R = 200V, I_F = 0$)	MCS21	—	2 µA
				Reverse Current — I_R ($V_R = 400V, I_F = 0$)	MCS2401	—	2 µA
Capacitance ($V = 0, f = 1MHz$)	50	—	pF	Holding Current — I_H ($V_{FX} = 50V, R_{GK} = 27K\Omega$)		10	500 µA

coupled electrical characteristics (25°C)

	MIN.	MAX.	UNITS
Input Current to Trigger $V_{AK} = 50V, R_{GK} = 10K\Omega$		20	milliamps
Isolation Resistance (Input to Output) $V_{AK} = 100V, R_{GK} = 27K\Omega$.5	11	milliamps
Turn-On Time — $V_{AK} = 50V, I_F = 30mA, R_{GK} = 10K\Omega, R_L = 200\Omega$	100	—	gigaohms
Coupled dv/dt, Input to Output $V_{io} = 500V_{DC}$	—	50	microseconds
Input to Output Capacitance (Input to Output Voltage = 0, f = 1MHz)	500	—	volts/microsec.
	—	2	picofarads

VDE Approved to 0883/6.80 0110b Certificate # 35025

TYPICAL CHARACTERISTICS

T-41-87

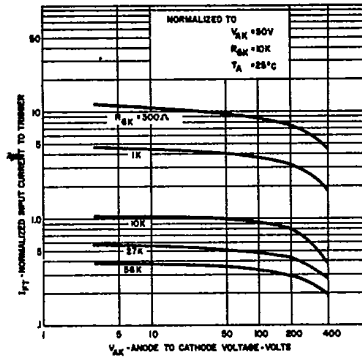


FIGURE 1. INPUT CURRENT TO TRIGGER VS. ANODE-CATHODE VOLTAGE

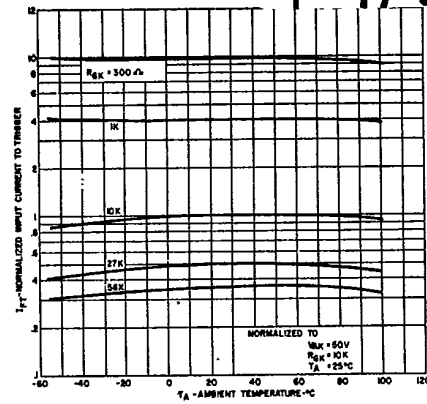


FIGURE 2. INPUT CURRENT TO TRIGGER VS. TEMPERATURE

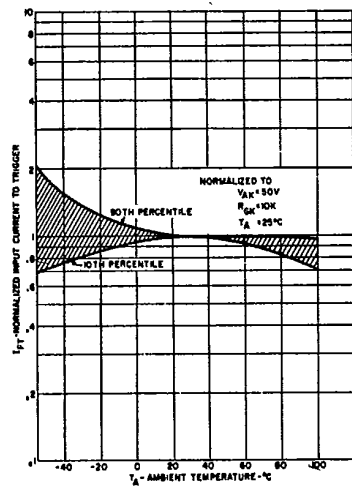


FIGURE 3. INPUT CURRENT TO TRIGGER DISTRIBUTION VS. TEMPERATURE

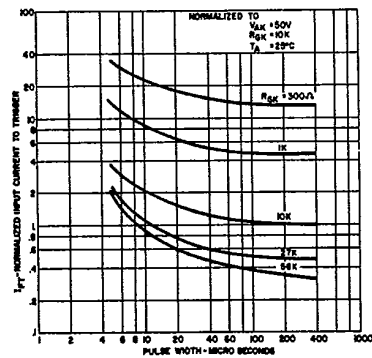


FIGURE 4. INPUT CURRENT TO TRIGGER VS. PULSE WIDTH

10

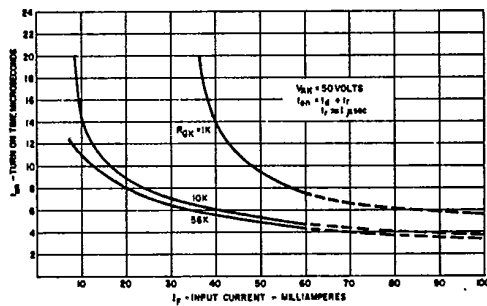


FIGURE 5. TURN-ON TIME VS. INPUT CURRENT

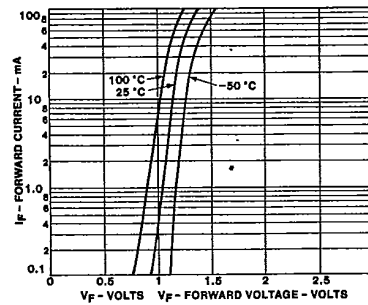


FIGURE 6. INPUT CHARACTERISTICS I_F VS. V_F