

Photon Coupled Isolator MCA230, MCA231, MCA255

GaAs Infrared Emitting Diode & NPN Silicon Darlington Connected Phototransistor

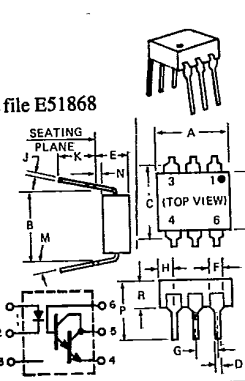
The GE Solid State MCA series consists of a gallium arsenide infrared emitting diode coupled with a silicon photo-darlington amplifier in a dual-in-line package. These devices are also available in Surface-Mount packaging.

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

absolute maximum ratings: (25°C)

INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak)		
(Pulse width 300µsec, 2% Duty Cycle)	0.5	amperes
(Pulse width 1µsec, 300Hz)	3	amperes
Reverse Voltage	3	volts
*Derate 1.33mW/°C above 25°C ambient.		

DARLINGTON CONNECTED PHOTO-TRANSISTOR		
Power Dissipation	**210	milliwatts
V _{CEO} — MCA230/MCA231	30	volts
— MCA255	55	volts
V _{CBO} — MCA230/MCA231	30	volts
— MCA255	55	volts
V _{EBO}	8	volts
Collector Current (Continuous)		
— Forward	150	milliamps
Collector Current (Continuous)		
— Reverse	10	milliamps
**Derate 2.8mW/°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	406	.508	.016	.020	
E	—	5.08	—	.200	3
F	1.01	1.78	.040	.070	
G	2.28	2.80	.090	.110	4
H	—	2.16	—	.085	
J	203	.305	.008	.012	4
K	2.54	—	.100	—	
M	—	15	—	15	4
N	.381	—	.015	—	
P	—	9.53	—	.375	4
R	2.92	3.43	.115	.135	
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	-55°C to +150°C
Operating Temperature	-55°C to +100°C
Lead Soldering Time (at 260°C)	10 seconds
Surge Isolation Voltage (Input to Output)	
3550V _(peak)	2500V _(RMS)
Steady-State Isolation Voltage (Input to Output)	
3180V _(peak)	2250V _(RMS)

individual electrical characteristics: (25°C)

EMITTER	TYR.	MAX.	UNITS
Forward Voltage (I _F = 20mA)	1.1	1.5	volts
Reverse Current (V _R = 3V)	—	10	microamps
Capacitance (V = 0, f = 1MHz)	50	—	picofarads

DETECTOR	MIN.	TYR.	MAX.	UNITS
Breakdown Voltage — V _{(BR)CEO} (I _C = 1.0mA, I _F = 0) — MCA255	55	—	—	volts
MCA230/MCA231	30	—	—	volts
Breakdown Voltage — V _{(BR)CBO} (I _C = 10µA, I _F = 0) — MCA255	55	—	—	volts
MCA230/MCA231	30	—	—	volts
Breakdown Voltage — V _{(BR)EBO} (I _E = 10µA, I _F = 0)	8	—	—	volts
Collector Dark Current — I _{CEO} (V _{CE} = 10V, I _F = 0)	—	—	100	nanoamps

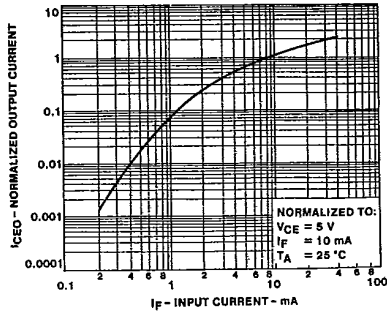
coupled electrical characteristics: (25°C)

	MIN.	TYR.	MAX.	UNITS
DC Current Transfer Ratio — (I _F = 10mA, V _{CE} = 5V)	100	—	—	%
MCA230/MCA255	200	—	—	%
MCA231	—	—	1.0	volts
Saturation Voltage — Collector to Emitter — (I _F = 50mA, I _C = 50mA)	—	—	1.0	volts
— (I _F = 1mA, I _C = 2mA)	—	—	1.0	volts
— (I _F = 5mA, I _C = 10mA)	—	—	1.2	volts
— (I _F = 10mA, I _C = 50mA)	—	—	—	gigaohms
Isolation Resistance (Input to Output Voltage = 500V _{DC})	100	—	—	picofarads
Input to Output Capacitance (Input to Output Voltage = 0, f = 1MHz)	—	—	2	microseconds
Switching Speeds:	—	5	—	microseconds
On-Time — (V _{CE} = 5V, R _L = 100Ω, I _F = 10mA)	—	100	—	microseconds
Off-Time — (Pulse width ≤ 300µsec, f ≤ 30HZ)	—	—	—	

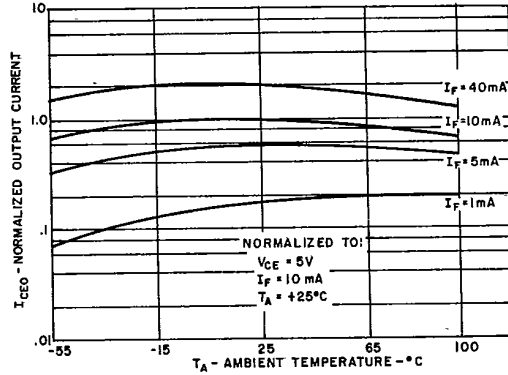
VDE Approved to 0883/6.80 0110b Certificate # 35025

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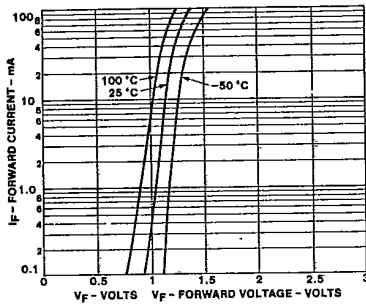
TYPICAL CHARACTERISTICS



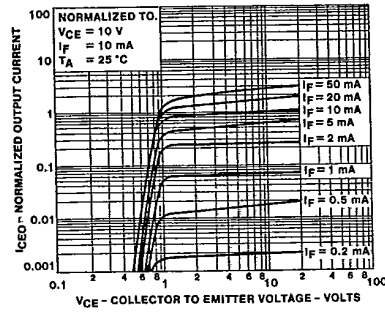
1. OUTPUT CURRENT VS. INPUT CURRENT



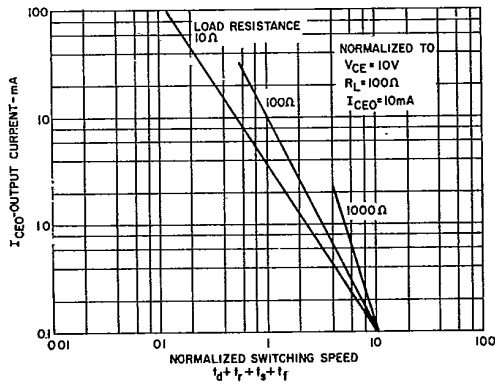
2. OUTPUT CURRENT VS. TEMPERATURE



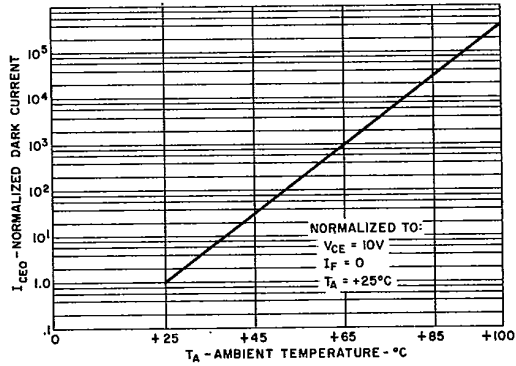
3. INPUT CHARACTERISTICS



4. OUTPUT CHARACTERISTICS



5. SWITCHING SPEED VS. OUTPUT CURRENT



6. NORMALIZED DARK CURRENT VS. TEMPERATURE

10