

T-41-85

Photon Coupled Isolator 4N29-4N29A-4N30-4N31 4N32-4N32A-4N33

Ga As Infrared Emitting Diode & NPN Silicon Photo-Darlington Amplifier

The GE Solid State 4N29 thru 4N33 devices consist of a gallium arsenide infrared emitting diode coupled with a silicon photodarlington amplifier in a dual in-line package. These devices are also available in surface-mount packaging.

FEATURES:

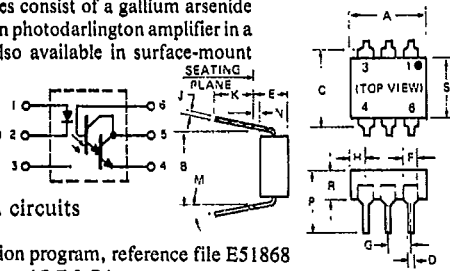
- High DC current transfer ratio
- High isolation resistance
- 2500 volts isolation voltage
- I/O compatible with integrated circuits

†Parameters are JEDEC registered values.

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

absolute maximum ratings: (25°C) (unless otherwise specified)

†Storage Temperature -55 to 150°C. Operating Temperature -55 to 100°C. Lead Soldering Time (at 260°C) 10 seconds.



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	8.38	8.89	.330	.350	
B	7.62 REF.		.300 REF.		1
C		8.64		.340	2
D	.408	5.08	.016	.200	3
E		5.08		.200	
F	1.01	1.78	.040	.070	
G	2.28	2.80	.080	.110	
H		2.18		.085	4
J	.203	.305	.008	.012	
K	2.54		.100		
M		.15		.15	
N	.381		.015		
P		9.63		.375	
R	2.82	3.43	.115	.135	
S	8.10	8.86	.240	.270	

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

INFRARED EMITTING DIODE			PHOTO-DARLINGTON		
†Power Dissipation	*150	milliwatts	†Power Dissipation	**150	milliwatts
†Forward Current (Continuous)	80	milliamps	†V _{CEO}	30	volts
†Forward Current (Peak) (Pulse width 300µsec, 2% duty cycle)	3	ampere	†V _{CBO}	30	volts
†Reverse Voltage	3	volts	†V _{EBO}	5	volts
	*Derate 2.0mW/°C above 25°C ambient.		Collector Current (Continuous)	100	milliamps
				**Derate 2.0mW/°C above 25°C ambient.	

†Total device dissipation @ T_A = 25°C. P_D 250 mW.

†Derate 3.3 mW/°C above 25°C ambient.

Individual electrical characteristics (25°C)

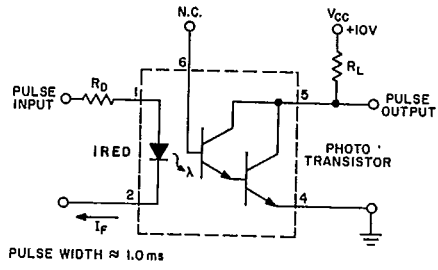
INFRARED EMITTING	TYP.	MAX.	UNITS	PHOTO-DARLINGTON	MIN.	TYP.	MAX.	UNITS
†Forward Voltage (I _F = 10mA)	1.2	1.5	volts	†Breakdown Voltage - V _{(BR)CBO} (I _C = 100µA, I _F = 0)	30	-	-	volts
†Reverse Current (V _R = 3V)	-	100	microamps	†Breakdown Voltage - V _{(BR)CEO} (I _C = 1mA, I _F = 0)	30	-	-	volts
Capacitance V = 0, f = 1 MHz	50	-	picofarads	†Breakdown Voltage - V _{(BR)EBO} (I _E = 100µA, I _F = 0)	5	-	-	volts
				†Collector Dark Current - I _{CEO} (V _{CE} = 10V, I _F = 0)	-	-	100	nanoamps

coupled electrical characteristics (25°C)

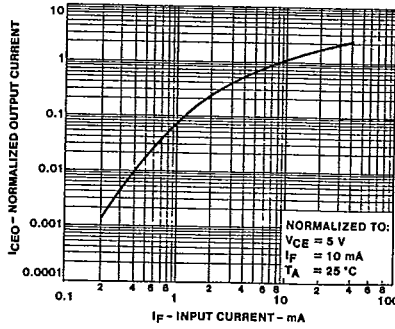
	MIN.	TYP.	MAX.	UNITS
†Collector Output Current (I _F = 10mA, V _{CE} = 10V)	50	-	-	mA
	10	-	-	mA
	5	-	-	mA
†Saturation Voltage - Collector - Emitter (I _F = 8mA, I _C = 2mA)	-	-	1.0	volts
Resistance - IRED to Photo-Transistor (@ 500 volts)	-	100	-	gigaohms
Capacitance - IRED to Photo-Transistor (@ 0 volts, f = 1 MHz)	-	1	-	picofarad
†Isolation Voltage 60 Hz with the input terminals (diode) shorted together and the output terminals (transistor) shorted together	2500	-	-	volts (peak)
	1500	-	-	volts (peak)
	1775	-	-	volts (RMS) (1 sec.)
†Switching Speeds: I _C = 50mA, I _F = 200mA) Figure 1				
Turn-On Time - t _{on}	-	-	5	microseconds
Turn-Off Time - t _{off}	-	-	40	microseconds
	-	-	100	microseconds

VDE Approved to 0883/6.80 0110b Certificate # 35025

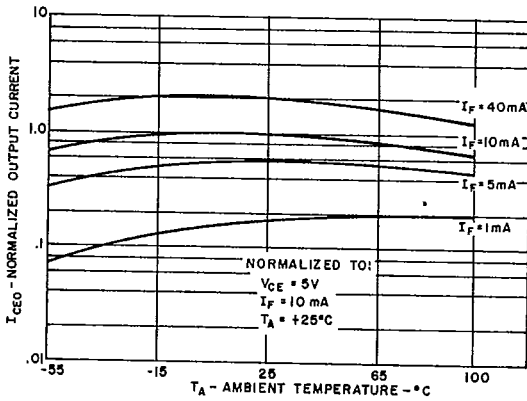
T-41-85



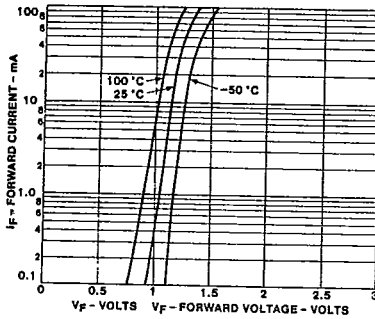
SWITCHING TIME TEST CIRCUIT



OUTPUT CURRENT VS INPUT CURRENT

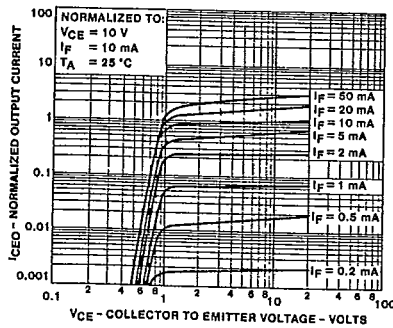


OUTPUT CURRENT VS TEMPERATURE

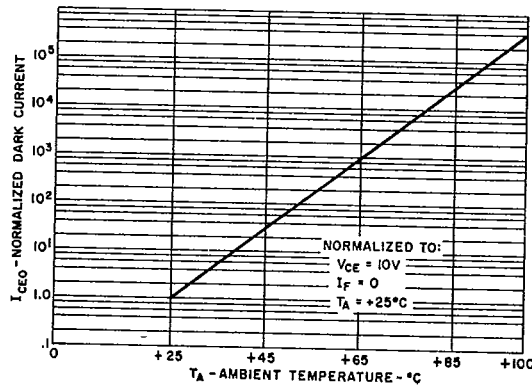


INPUT CHARACTERISTICS

10



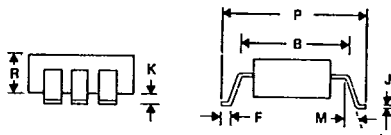
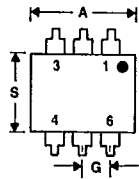
OUTPUT CHARACTERISTICS



NORMALIZED DARK CURRENT VS TEMPERATURE

T-91-20

Surface-Mount Optoisolators



Surface-mount packaging for the entire 6-pin DIP optoisolator line!

Add the "SMA" or "SMB" suffix to any 6-pin optoisolator part number when ordering.

DIMENSIONAL OUTLINE NO. 298
All Surface-Mount Types

SMB (Standard)
Surface-Mount Package

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	0.330	0.350	8.38	8.89	
B	0.330 REF		8.38 REF		
F	0.020	0.040	0.508	1.02	
J	0.008	0.012	0.203	0.305	
K	0.0040	0.0098	0.102	0.249	
M	—	15°	—	15°	
P	0.375	0.395	9.53	10.03	
R	0.115	0.135	2.92	3.43	
S	0.240	0.270	6.10	6.86	
Coplanarity	0	0.002	0	0.051	1

92CS-42862

1. Coplanarity is the distance from a plane, defined by the end of the three longest legs to the end of the shortest leg.

SMA (Low Profile)
Surface-Mount Package

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	0.330	0.350	8.38	8.89	
B	0.330 REF		8.38 REF		
F	0.020	0.040	0.508	1.02	
J	0.008	0.012	0.203	0.305	
K	0.0005	0.0040	0.013	0.102	
M	—	15°	—	15°	
P	0.373	0.393	9.47	9.98	
R	0.115	0.135	2.92	3.43	
S	0.240	0.270	6.10	6.86	
Coplanarity	0	0.002	0	0.051	1

92CS-42861

1. Coplanarity is the distance from a plane, defined by the end of the three longest legs to the end of the shortest leg.

