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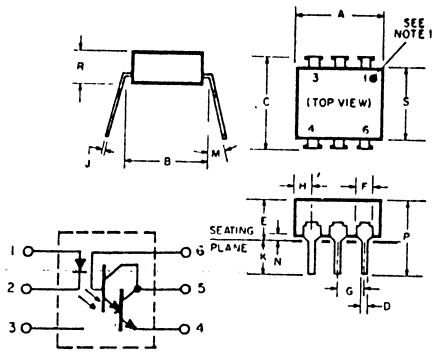
Photon Coupled Isolator

4N29-4N29A-4N30-4N31
4N32-4N32A-4N33

FEATURES:

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

†Parameters are JEDEC registered values.



SYMBOL	INCH MIN.	INCH MAX	MILLIMETER MIN.	MILLIMETER MAX.	NOTES
A	.330	.350	8.38	8.89	
B	.300	REF	7.62	REF	2
C		.340		8.64	3
D	.016	.020	.406	.508	4
E		.200		5.08	
F	.040	.070	1.01	1.78	
G	.090	.110	2.28	2.79	
H		.085		2.16	5
J	.008	.012	.203	.305	
K	.100		2.54		3
M		15°		15°	
N	.015		.381		3
P		.375		9.53	
R	.100	.185	2.54	4.70	
S	.225	.280	5.71	7.12	

NOTES
1. There shall be a permanent indication of terminal orientation in the quadrant adjacent to terminal 1.
2. Installed position lead centers.
3. Overall installed dimension.
4. These measurements are made from the seating plane.
5. Four places.

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.

INFRARED EMITTING DIODE		
†Power Dissipation	*150	milliwatts
†Forward Current (Continuous)	80	milliamps
†Forward Current (Peak) (Pulse width 300μsec, 2% duty cycle)	3	ampere
†Reverse Voltage	3	volts

*Derate 2.0mW/°C above 25°C ambient.

PHOTO-DARLINGTON		
†Power Dissipation	**150	milliwatts
†V_{CEO}	30	volts
†V_{CBO}	30	volts
†V_{ECO}	5	volts
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 DIODE	TYP.	MAX.	UNITS
†Forward Voltage (I_F = 10mA)	1.2	1.5	volts
†Reverse Current (V_R = 3V)	–	100	microamps
Capacitance V = O, f = 1 MHz	50	–	picofarads

PHOTO-DARLINGTON	MIN.	TYP.	MAX.	UNITS
†Breakdown Voltage – $V_{(BR)CBO}$ (I_C = 100μA, I_F = O)	30	–	–	volts
†Breakdown Voltage – $V_{(BR)CEO}$ (I_C = 1mA, I_F = O)	30	–	–	volts
†Breakdown Voltage – $V_{(BR)ECO}$ (I_E = 100μA, I_F = O)	5	–	–	volts
†Collector Dark Current – I_{CEO} (V_{CE} = 10V, I_F = O)	–	–	100	nanoamps

coupled electrical characteristics (25°C)

		MIN.	TYP.	MAX.	UNITS
†Collector Output Current (I_F = 10mA, V_{CE} = 10V)	4N32, 4N32A, 4N33	50	–	–	mA
	4N29, 4N29A, 4N30	10	–	–	mA
	4N31	5	–	–	mA
†Saturation Voltage – Collector – Emitter	4N29,29A,30,32,32A,33	–	–	1.0	volts
(I_F = 8mA, I_C = 2mA)	4N31	–	–	1.2	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)	4N29,29A,32,32A	2500	–	–	volts (peak)
shorted together and the output terminals (transistor)	4N30, 4N31, 4N33	1500	–	–	volts (peak)
shorted together	4N29A, 4N32A	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}	4N29, 4N29A, 4N30, 4N31	–	–	40	microseconds
Turn-Off Time – t_{off}	4N32, 4N32A, 4N33	–	–	100	microseconds

Quality Semi-Conductors