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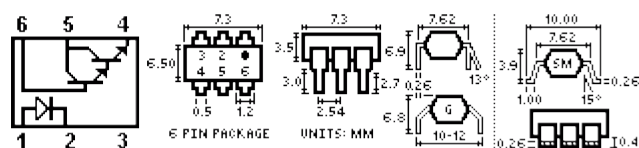
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4N29, 4N30, 4N31, 4N32, 4N33

Optically Coupled Isolators

Circuit



Features

- Very High Current Transfer Ratio (500% Min.)
- High Isolation Resistance
- Low Coupling Capacitance
- Standard Plastic Dip Package

Description

The 4N29, 4N30, 4N31, 4N32, 4N33 are optically coupled isolators consisting of a Gallium Arsenide infrared emitter and a silicon photo darlington sensor. Switching can be accomplished while maintaining a high degree of isolation between driving and load circuits. They can be used to replace reed and mercury relays with advantages of long life, high speed switching and elimination of magnetic fields. Surface Mount Option Available.

All electrical parameters are 100% tested by manufacturing. Specifications are guaranteed to a cumulative 0.65% AQL

Absolute Maximum Ratings: (Ta=25°C)

Storage Temperature: -55°C to +150°C
Operating Temperature: -55°C to +100°C
Lead Soldering: 260°C for 10s, 1.6mm from case
Input-to-Output Isolation Voltage: ±2500 Vdc (4N29, 4N32)
±1500 Vdc (4N30, 4N31, 4N33)

Input Diode

Forward DC Current: 60mA
Reverse DC Voltage: 3V
Peak Forward Current: 3A (t p=10µs)
Power Dissipation: 100mW
Derate Linearly: 1.33mW/°C above 25°C

Output Transistor

Collector-Emitter Voltage: 30V
Emitter-Collector Voltage: 7V
Power Dissipation: 150mW
Derate Linearly: 2.00mW/°C above 25°C

Package

Total Power Dissipation: 250mW
Derate Linearly: 3.3mW/°C above 25°C

Electro-optical Characteristics (Ta=25°C)

INPUT	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
V _F	Forward Voltage	I _F =10mA			1.5	V
I _R	Reverse Current	V _R =3.0V			100	µA
V _R	Reverse Breakdown Voltage	I _R =100µA	3			V
OUTPUT	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
BV _{CEO}	Collector-Emitter Voltage	I _C =1mA	30			V
BV _{ECO}	Emitter-Collector Voltage	I _E =100µA	5			V
I _{CEO}	Collector-Emitter Dark Current	V _{CE} =10V, I _B =0			100	nA
C _{CE}	Collector-Emitter Capacitance	V _{CE} =0		10		pf
COUPLED	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
I _C /I _F	DC Current Transfer Ratio 4N31	I _F =10mA, V _{CE} =10V	50			mA
	4N29, 4N30	I _B =0	100			mA
	4N32, 4N33		500			mA
R _{IO}	Input-to-Output Isolation Resistance	V _{IO} =500V, (Note 1)	1E11			ohm

V _{CE} (Sat)	Collector-Emitter Saturation Voltage	I _F =8mA, I _C =2mA, I _B =0				
	4N29, 4N30, 4N32, 4N33	V _{CC} =10V, I _C =2mA		1		V
	4N31			1.2		V
SWITCHING SPEED	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
T on	Turn-On Time	I _C =50mA V _{CC} =10V			5	μs
T off	Turn-Off Time					
	4N29, 4N30, 4N31	I _F =200mA, P.W.=1.0m.s.			40	μs
	4N32, 4N33				100	μs
	Input-to-Output Isolation Voltage					
	4N29, 4N32	Note 1	2500			VDC
	4N30, 4N31, 4N33		1500			VDC

Notes

Note 1. Measured with input leads shorted together and output leads shorted together.

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