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Optoelectronics Division
TRW Electronic Components Group

1987 Cost Saver Product!
Call TRW for more information!

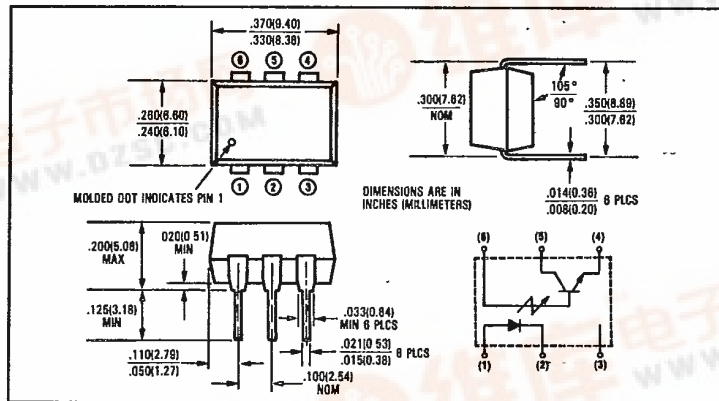
TRIV

Product Bulletin 5204
January 1985

T-41-83

Optically Coupled Isolators

Types OPI2152, OPI2252



Features

- 1500 or 2500 volt isolation
- High current transfer ratio
- Low cost 6 pin dual-in-line package
- UL recognized File No. E58730

Description

The OPI2152 and OPI2252 each consist of a gallium arsenide infrared light emitting diode coupled to an NPN silicon phototransistor mounted in a six pin dual-in-line package. The OPI2152 and OPI2252 are identical except for input-to-output isolation voltage.

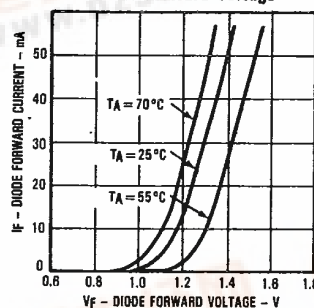
Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Input-to-Output Isolation Voltage OPI2152	± 1500 VDC ⁽¹⁾
OPI2252	± 2500 VDC ⁽¹⁾
Storage Temperature Range	-55°C to +150°C
Operating Temperature Range	-55°C to +100°C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) ⁽²⁾	280°C
Input Diode	
Forward DC Current	60 mA
Peak Forward Current (1 μ s pulse, 300 pps)	3.0 A
Reverse Voltage	3.0 V
Power Dissipation (25°C)	100 mW ⁽³⁾
Output Transistor	
Power Dissipation	150 mW ⁽⁴⁾
B(BR)CEO	30 V
V(BR)CBO	50 V
V(BR)ECO	5.0 V

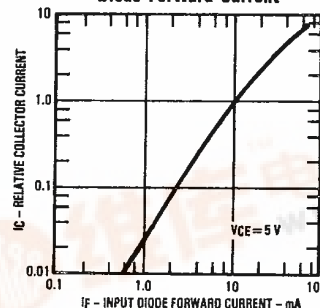
Notes: (1) Measured with input diode leads shorted together and output leads shorted together. (2) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. (3) Derate linearly 1.33 mW/°C above 25°C. (4) Derate linearly 2.0 mW/°C above 25°C.

Typical Performance Curves

Diode Forward Current vs Diode Forward Voltage



Relative Collector Current vs Diode Forward Current



Optoelectronics Division, TRW Electronic Components Group, 1215 W. Crosby Rd., Carrollton, TX 75006 (214) 323-2200, TLX 6716032 or 215849



Types OPI2152, OPI2252

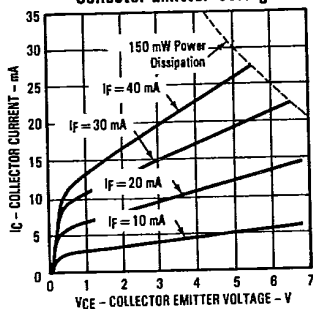
T-41-83

Electrical Characteristics (TA = 25°C unless otherwise noted)

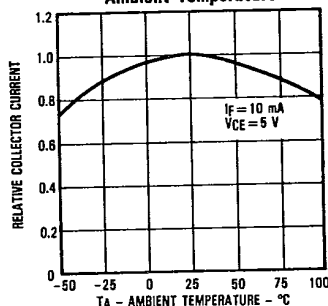
Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Input Diode						
VF	Forward Voltage			1.50	V	IF = 10.0 mA
V(BR)R	Reverse Breakdown Voltage	3.0			V	IR = 10.0 μA
IR	Reverse Leakage Current			10.0	μA	VR = 3.0 V
Output Phototransistor						
V(BR)CEO	Collector-to-Emitter Breakdown Voltage	30			V	IC = 1.00 mA
V(BR)ECO	Emitter-to-Collector Breakdown Voltage	5.0			V	IE = 10.0 μA
V(BR)CBO	Collector-to-Base Breakdown Voltage	50			V	IC = 10.0 μA
ICEO	Collector-Emitter Dark Current		5.0	60	nA	VCE = 10.0 V
ICBO	Collector-Base Dark Current			20	nA	VCB = 10.0 V
CCE	Capacitance Collector-to-Emitter		8.0		pF	VCE = 0
hFE	DC Current Gain		250			VCE = 5.0 V, IC = 100 μA
Coupled						
IC/IF	DC Current Transfer Ratio	20	40		%	IF = 10.0 mA, VCE = 5.0 V
VCE(SAT)	Collector-to-Emitter Saturation Voltage			0.40	V	IF = 10.0 mA, IC = 500 μA
VI(SO)	Isolation Voltage OPI2152 OPI2252	1500 2500			VDC	See Note 1
RI(O)	Input-to-Output Resistance	10 ¹¹			Ω	VIG = 600 V, See Note 1
CI(O)	Input-to-Output Capacitance		2.0		pF	f = 1.00 MHz, See Note 1
tr	Output Rise Time		2.0		μs	VCC = 10.0 V, IC = 2.0 mA
tf	Output Fall Time		2.0		μs	RL = 100Ω, See Test Circuit

Typical Performance Curves

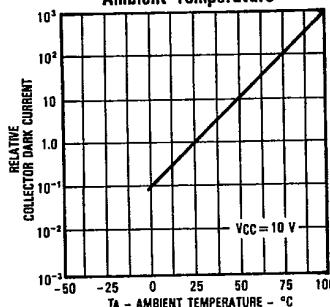
Collector Current vs Collector-Emitter Voltage



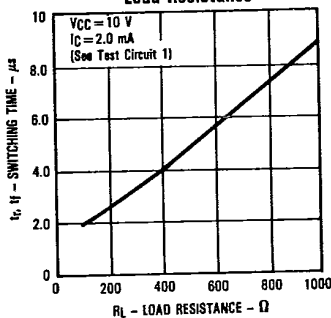
Relative Collector Current vs Ambient Temperature



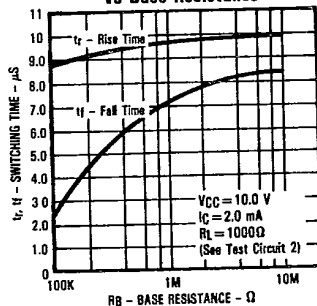
Relative Collector Dark Current vs Ambient Temperature



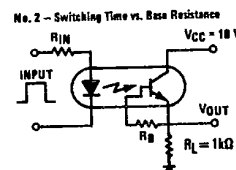
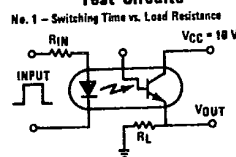
Rise and Fall Time vs Load Resistance



Delay, Rise, and Fall Time vs Base Resistance



Switching Time Test Circuits



TRW reserves the right to make changes at any time in order to improve design and to supply the best product possible. Plastic color may vary.
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