

OPTTEK TECHNOLOGY INC ONE D 6798580 0000226 6

Optoelectronics Division  
TRW Electronic Components Group

1987 Cost Saver Product!  
Call TRW for more information!

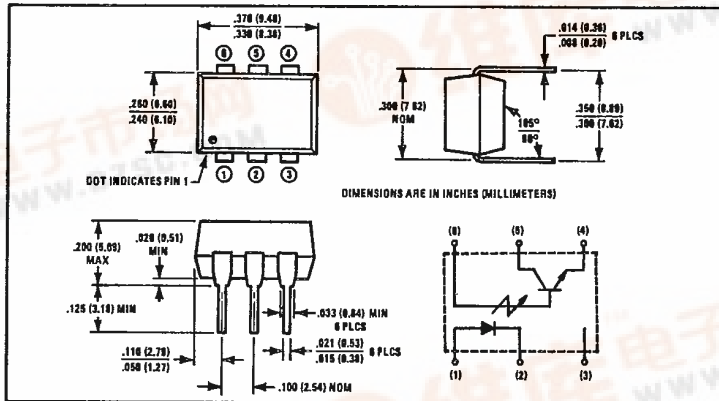


Product Bulletin 5202  
January 1985

T-41-83

# Optically Coupled Isolators

## Types OPI2151, OPI2251



**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 OPI2151 and OPI2251 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 OPI2151 and OPI2251 are identical except for input-to-output isolation voltage.

**Absolute Maximum Ratings** (T<sub>A</sub> = 25°C unless otherwise noted)

Input-to-Output Isolation Voltage OPI2151	±1500 VDC <sup>(1)</sup>
OPI2251	±2500 VDC <sup>(1)</sup>
Storage Temperature Range	-55°C to +150°C
Operating Temperature Range	-55°C to +150°C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) <sup>(2)</sup>	260°C

**Input Diode**

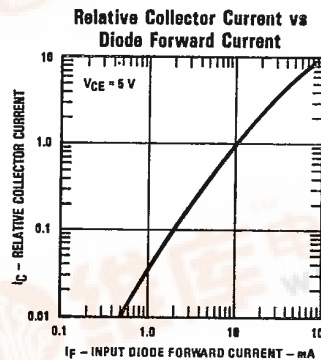
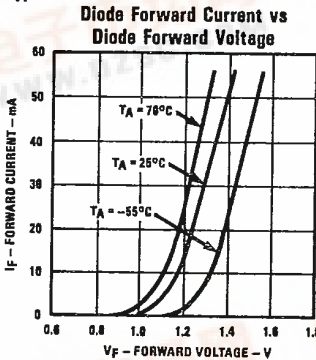
Forward DC Current	60 mA
Peak Forward Current (1 μs pulse width, 300 pps)	3.0 A
Reverse Voltage	3.0 V
Power Dissipation (25°C)	100 mW <sup>(3)</sup>

**Output Transistor**

Power Dissipation	150 mW <sup>(4)</sup>
V <sub>BR</sub> (ICED)	30 V
V <sub>BR</sub> (ICBO)	30 V
V <sub>BR</sub> (IECO)	5.0 V

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

**Typical Performance Curves**



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



Types OPI2151, OPI2251

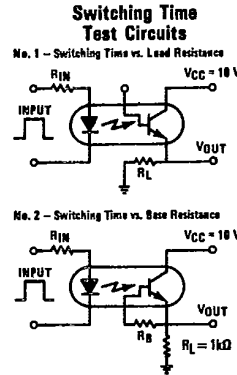
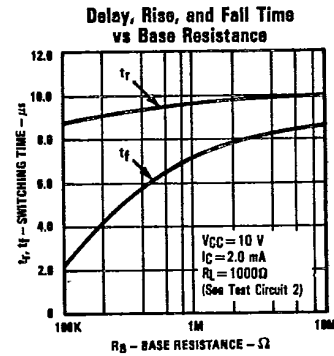
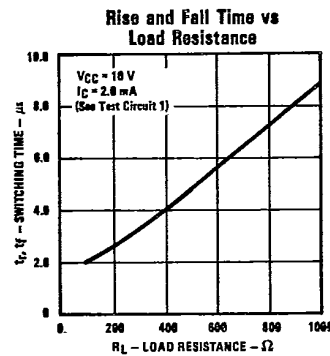
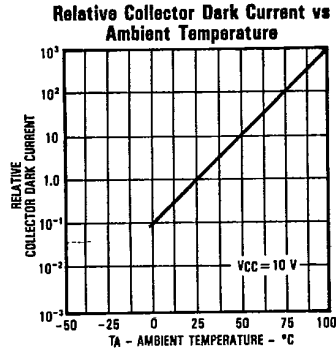
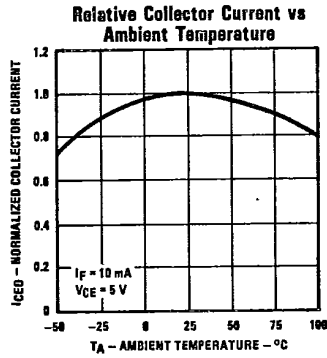
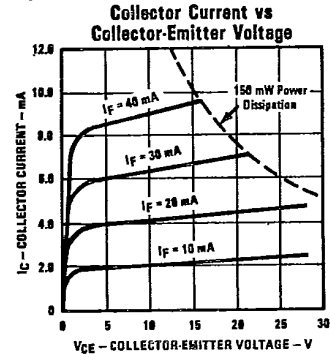
T-41-83

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

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
<b>Input Diode</b>						
V <sub>F</sub>	Forward Voltage			1.60	V	I <sub>F</sub> = 10.0 mA
V <sub>BR</sub> (R)	Reverse Breakdown Voltage	3.0 V			V	I <sub>R</sub> = 10.0 μA
I <sub>R</sub>	Reverse Current			10.0	μA	V <sub>R</sub> = 3.0 V
<b>Output Phototransistor</b>						
V <sub>BR</sub> (C)E	Collector-to-Emitter Breakdown Voltage	30			V	I <sub>C</sub> = 1.0 mA
V <sub>BR</sub> (E)C	Emitter-to-Collector Breakdown Voltage	5.0			V	I <sub>E</sub> = 100 μA
V <sub>BR</sub> (C)B	Collector-Base Breakdown Voltage	30			V	I <sub>C</sub> = 100 μA
I <sub>CEO</sub>	Collector-Emitter Dark Current		5.0	100	nA	V <sub>CE</sub> = 10.0 V
I <sub>CBO</sub>	Collector-Base Dark Current			20	nA	V <sub>CB</sub> = 10.0 V
C <sub>CE</sub>	Capacitance Collector-to-Emitter		8.0		pF	V <sub>CE</sub> = 0
h <sub>FE</sub>	DC Current Gain		160			V <sub>CE</sub> = 5.0 V, I <sub>C</sub> = 100 μA
<b>Coupled</b>						
I <sub>C</sub> /I <sub>F</sub>	DC Current Transfer Ratio	10.0	20		%	I <sub>F</sub> = 10.0 mA, V <sub>CE</sub> = 5.0 V, I <sub>B</sub> = 0
V <sub>CE</sub> (SAT)	Collector-to-Emitter Saturation Voltage			0.40	V	I <sub>F</sub> = 10.0 mA, I <sub>C</sub> = 250 μA, I <sub>B</sub> = 0
V <sub>ISO</sub>	Isolation Voltage OPI2151 OPI2251	1600 2500			VDC VDC	See Note 1
R <sub>IO</sub>	Input-to-Output Resistance	10 <sup>11</sup>			Ω	V <sub>IO</sub> = 500 V, See Note 1
C <sub>IO</sub>	Input-to-Output Capacitance		2.0		pF	f = 1.00 MHz, See Note 1
t <sub>r</sub>	Output Rise Time		2.0		μs	V <sub>CC</sub> = 10.0 V, I <sub>C</sub> = 2.0 mA
t <sub>f</sub>	Output Fall Time		2.0		μs	R <sub>L</sub> = 100Ω, See Test Circuit



Typical Performance Curves



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.  
 Optoelectronics Division, TRW Electronic Components Group, 1215 W. Crosby Rd., Carrollton, TX 75006 (214) 323-2200, TLX 6718032 or 215849  
 © TRW Inc. 1985. TRW is the name and mark of TRW Inc. Printed in U.S.A.