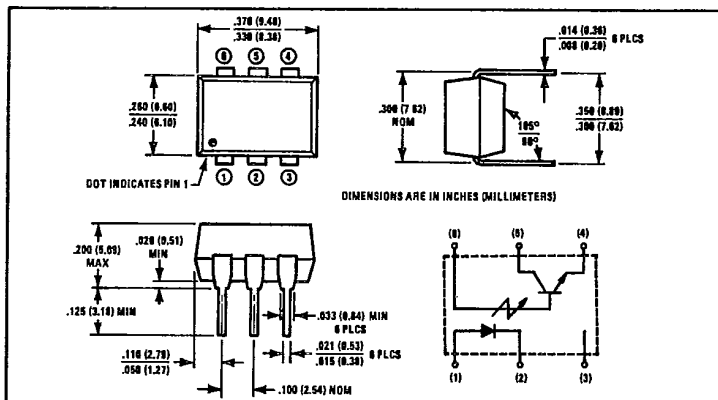
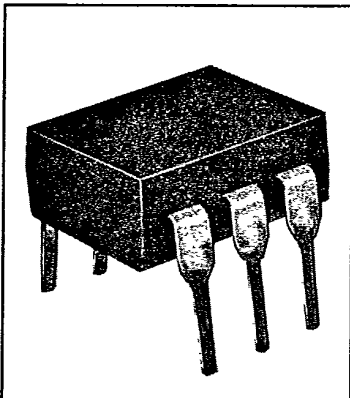


Optically Coupled Isolators

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

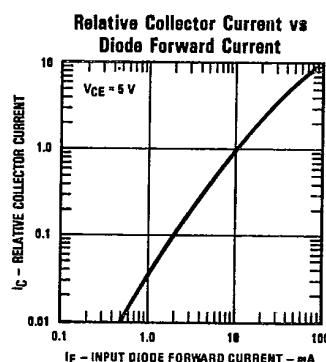
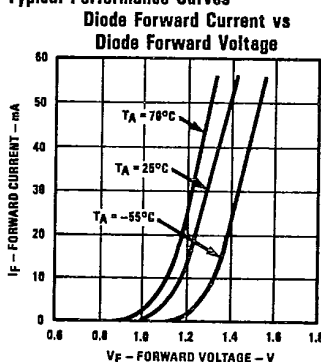
The OPI2151 and OPI2251 each consist of a gallium arsenide infrared light emitting diode coupled to an NPN silicon phototransistor mounted in a six pin dual-in-line package. The OPI2151 and OPI2251 are identical except for input-to-output isolation voltage.

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Input-to-Output Isolation Voltage OPI2151	± 1500 VDC ⁽¹⁾
OPI2251	± 2500 VDC ⁽¹⁾
Storage Temperature Range	-55°C to $+150^\circ\text{C}$
Operating Temperature Range	-55°C to $+150^\circ\text{C}$
Lead Soldering Temperature (1/16 inch (1.6 mm) from case for 5 sec. with soldering iron) ⁽²⁾	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 ⁽³⁾
Output Transistor	
Power Dissipation	150 mW ⁽⁴⁾
BIBRICEO	30 V
VIBRICEO	30 V
VIBRICEO	5.0 V

Notes: (1) Measured with input diode leads shorted together and output leads shorted together. (2) RMA resin 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/ $^\circ\text{C}$ above 25°C . (4) Derate linearly 2.0 mW/ $^\circ\text{C}$ above 25°C .

Typical Performance Curves



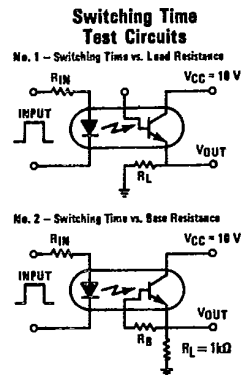
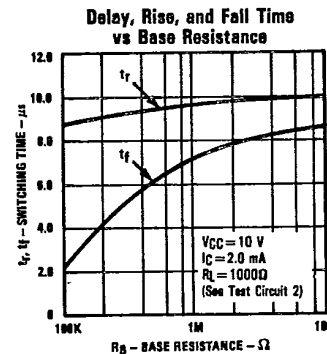
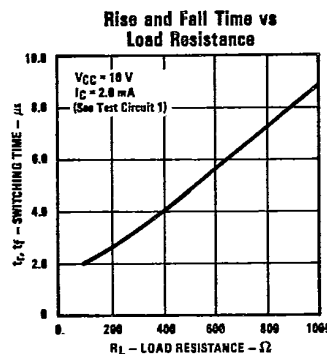
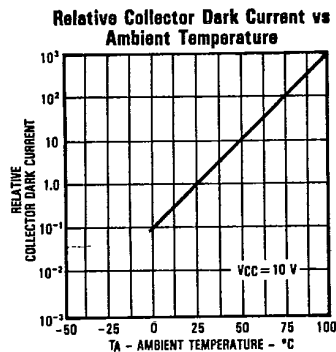
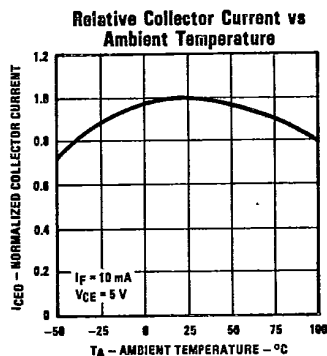
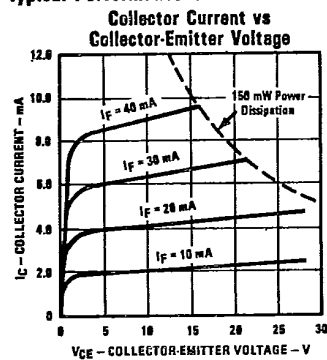
Types OPI2151, OPI2251

T-41-83

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Input Diode						
V_F	Forward Voltage			1.50	V	$I_F = 10.0\text{ mA}$
V_{BRIR}	Reverse Breakdown Voltage	3.0 V			V	$I_R = 10.0\text{ }\mu\text{A}$
I_R	Reverse Current			10.0	μA	$V_R = 3.0\text{ V}$
Output Phototransistor						
V_{BRICEO}	Collector-to-Emitter Breakdown Voltage	30			V	$I_C = 1.0\text{ mA}$
V_{BRECO}	Emitter-to-Collector Breakdown Voltage	5.0			V	$I_E = 100\text{ }\mu\text{A}$
V_{BRICBO}	Collector-Base Breakdown Voltage	30			V	$I_C = 100\text{ }\mu\text{A}$
I_{CEO}	Collector-Emitter Dark Current		5.0	100	nA	$V_{CE} = 10.0\text{ V}$
I_{CBO}	Collector-Base Dark Current			20	nA	$V_{CB} = 10.0\text{ V}$
C_{CE}	Capacitance Collector-to-Emitter		8.0		pF	$V_{CE} = 0$
h_{FE}	DC Current Gain		160			$V_{CE} = 5.0\text{ V}, I_C = 100\text{ }\mu\text{A}$
Coupled						
I_C/I_F	DC Current Transfer Ratio	10.0	20		%	$I_F = 10.0\text{ mA}, V_{CE} = 5.0\text{ V}, I_B = 0$
$V_{CE(SAT)}$	Collector-to-Emitter Saturation Voltage			0.40	V	$I_F = 10.0\text{ mA}, I_C = 250\text{ }\mu\text{A}, I_B = 0$
V_{ISO}	Isolation Voltage OPI2151 OPI2251	1500 2500			VDC VDC	See Note 1
R_{IO}	Input-to-Output Resistance	10^{11}			Ω	$V_{IO} = 500\text{ V}$, See Note 1
C_{IO}	Input-to-Output Capacitance		2.0		pF	$f = 1.00\text{ MHz}$, See Note 1
t_r	Output Rise Time		2.0		μs	$V_{CC} = 10.0\text{ V}, I_C = 2.0\text{ mA}$
t_f	Output Fall Time		2.0		μs	$R_L = 100\Omega$, 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.