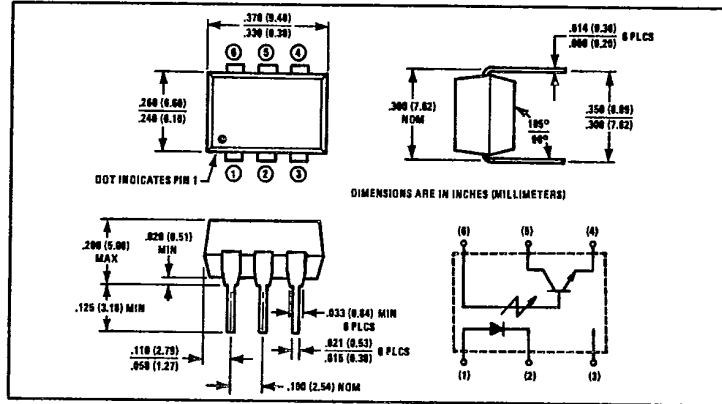
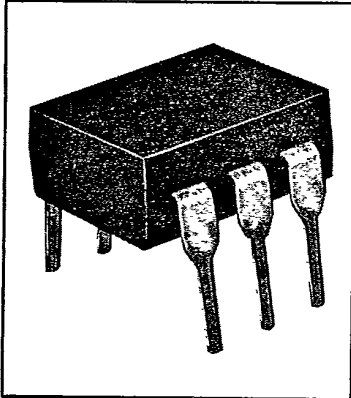


T-41-83

## Optically Coupled Isolators, High $V_{(BR)CEO}$ Types OPI6000, OPI6100



### Features

- 300 V collector-emitter breakdown voltage
- Low cost 6 pin dual-in-line package
- UL recognized File No. E58730

### Description

The OPI6000 and OPI6100 are optically coupled isolators each consisting of a gallium arsenide infrared emitting diode and an NPN silicon phototransistor mounted in a standard plastic six pin dual-in-line package. This series is intended for applications where high collector-emitter breakdown voltages are required.

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

Input-to-Output Isolation Voltage	.....	$\pm 1500$ VDC <sup>(1)</sup>
Storage Temperature Range	.....	$-55^\circ\text{C}$ to $+150^\circ\text{C}$
Operating Temperature Range	.....	$-55^\circ\text{C}$ to $+100^\circ\text{C}$
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) <sup>(2)</sup>	.....	$260^\circ\text{C}$

### Input Diode

Forward DC Current	.....	60 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps)	.....	3.0 A
Reverse Voltage	.....	3.0 V
Power Dissipation	.....	100 mW <sup>(3)</sup>

### Output Phototransistor

$V_{(BR)CEO}$	OPI6000	.....	300 V
	OPI6100	.....	200 V
$V_{(BR)CBO}$	OPI6000	.....	300 V
	OPI6100	.....	200 V
$V_{(BR)ECO}$	.....	.....	7.0 V
Power Dissipation	.....	.....	300 mW <sup>(4)</sup>

### 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/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (4) Derate linearly 4.0 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .

Types OPI6000, OPI6100

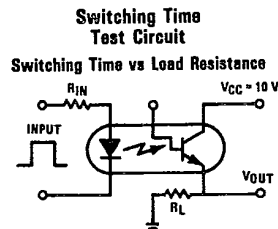
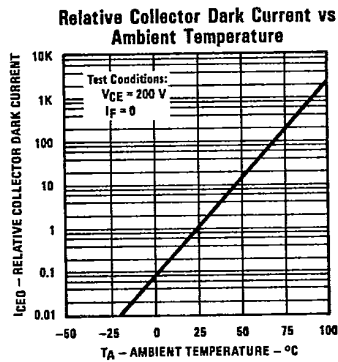
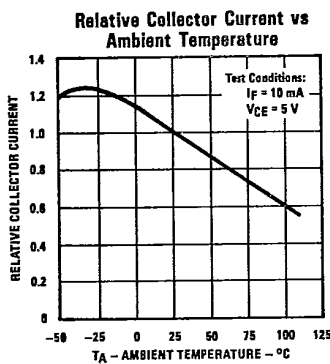
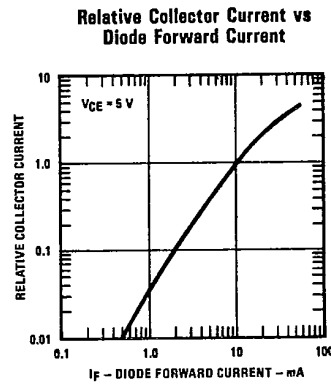
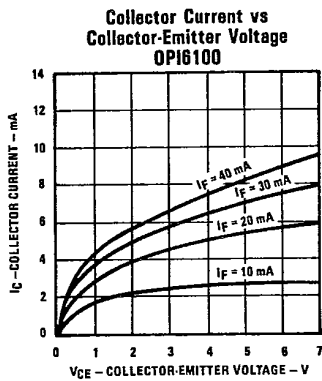
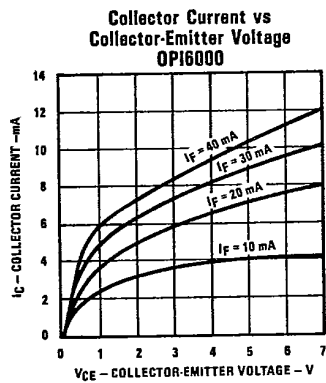
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Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
<b>Input Diode</b>						
V <sub>F</sub>	Forward Voltage			1.50	V	I <sub>F</sub> = 10.0 mA
I <sub>R</sub>	Reverse Current			10.0	μA	V <sub>R</sub> = 3.0 V
<b>Output Phototransistor</b>						
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage (See Note 1)	OPI6000 300	OPI6100 200		V	I <sub>C</sub> = 1.00 mA
V <sub>(BR)ECO</sub>	Emitter-Collector Breakdown Voltage		7.0		V	I <sub>E</sub> = 100 μA
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage	OPI6000 300	OPI6100 200		V	I <sub>C</sub> = 100 μA, I <sub>F</sub> = 0
I <sub>CEO</sub>	Collector Dark Current	OPI6000 100	OPI6100 100		nA	V <sub>CE</sub> = 200 V, R <sub>BE</sub> = 1.00 MΩ V <sub>CE</sub> = 100 V, R <sub>BE</sub> = 1.00 MΩ
<b>Coupled</b>						
I <sub>C</sub> /I <sub>F</sub>	DC Current Transfer Ratio	OPI6000 20	OPI6100 10.0		%	I <sub>F</sub> = 10.0 mA, V <sub>CE</sub> = 5.0 V I <sub>F</sub> = 10.0 mA, V <sub>CE</sub> = 5.0 V
V <sub>CE(SAT)</sub>	Collector-to-Emitter Saturation Voltage			0.40	V	I <sub>F</sub> = 10.0 mA, I <sub>C</sub> = 0.50 mA
V <sub>ISO</sub>	Isolation Voltage		1500		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>on</sub>	Turn On Time		4.0		μs	V <sub>CC</sub> = 10.0 V, R <sub>L</sub> = 100 Ω
t <sub>off</sub>	Turn Off Time		2.5		μs	I <sub>F</sub> = 2.0 mA, See Test Circuit



Typical Performance Curves



**Note:** Rise Time (t<sub>r</sub>) is time required for collector current to increase from 10% to 90% of its final value. Fall Time (t<sub>f</sub>) is time required for the collector current to decrease from 90% to 10% of its initial value.

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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