

Optoelectronics Division
TRW Electronic Components Group

Product Bulletin 5224
January 1985

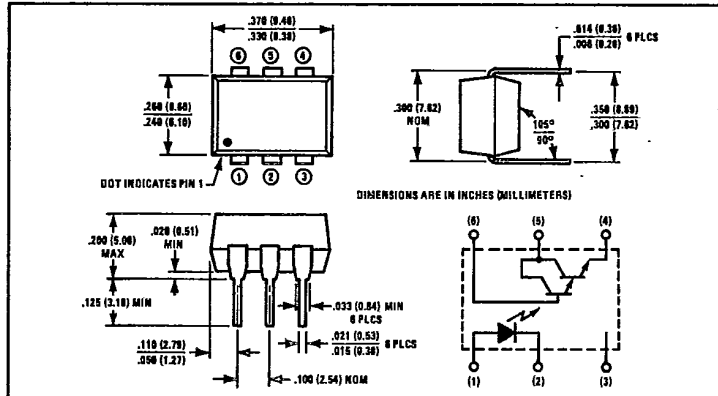
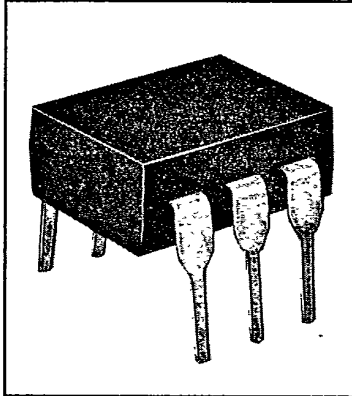
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TRW

T-41-85

Optically Coupled Isolators

Types OPI3152, OPI3252



Features

- Photodarlington output
- High current transfer ratio
- 2500 or 1500 volt isolation ratings
- UL recognized File No. E58730

Description

The OPI3152 and OPI3252 are optically coupled isolators each consisting of a gallium arsenide infrared emitting diode and an NPN silicon photodarlington mounted in a standard plastic six pin dual-in-line package. Except for isolation voltage, the OPI3152 and OPI3252 are identical.

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

Input-to-Output Isolation Voltage — OPI3152 $\pm 1500\text{ VDC}^{(1)}$
OPI3252 $\pm 2500\text{ VDC}^{(1)}$

Storage Temperature Range -55°C to $+150^\circ\text{C}$

Operating Temperature Range -55°C to $+100^\circ\text{C}$

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, 330 pps) 3.0 A

Reverse DC Voltage 3.0 V

Power Dissipation 100 mW⁽³⁾

Output Transistor

Collector-Emitter Voltage 55 V

Collector-Base Voltage 55 V

Emitter-Collector Voltage 5.0 V

Power Dissipation 150 mW⁽⁴⁾

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°C .
- (4) Derate linearly 2.0 mW/ $^\circ\text{C}$ above 25°C .

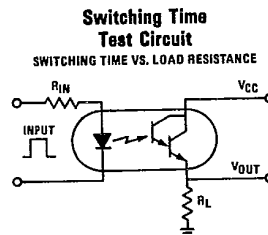
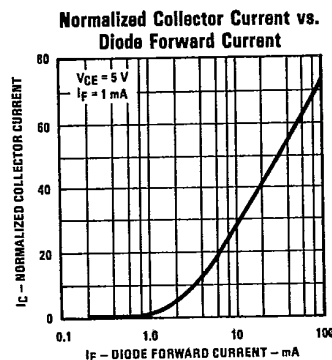
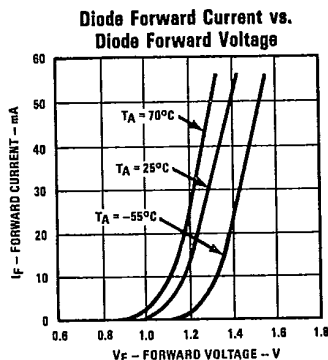
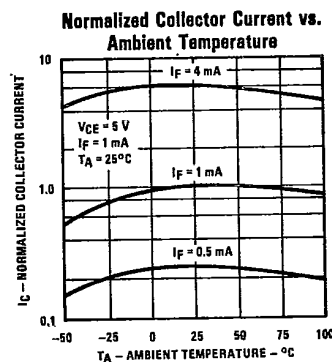
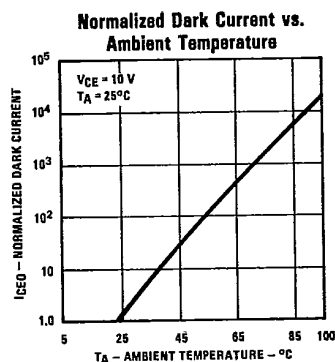
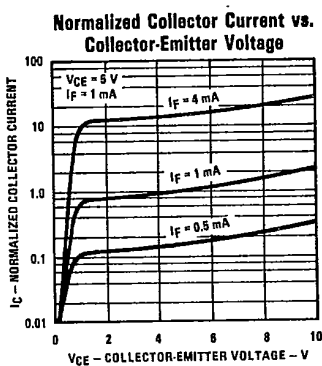
Types OPI3152, OPI3252

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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	$I_F = 10.0\text{ mA}$
I_R	Reverse Current			100	μA	$V_R = 3.0\text{ V}$
Output Photodarlington						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	55			V	$I_C = 100\text{ }\mu\text{A}$, $I_B = 0$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	65			V	$I_C = 100\text{ }\mu\text{A}$, $I_E = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0			V	$I_E = 100\text{ }\mu\text{A}$, $I_B = 0$
I_{CEO}	Collector-Emitter Dark Current			100	nA	$V_{CE} = 10.0\text{ V}$, $I_B = 0$
Coupled						
I_C/I_F	DC Current Transfer Ratio	300			%	$I_F = 10.0\text{ mA}$, $V_{CE} = 5.0\text{ V}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			1.20	V	$I_F = 50\text{ mA}$, $I_C = 50\text{ mA}$, $I_B = 0$
t_r	Output Rise Time		3.0		μs	$V_{CC} = 10.0\text{ V}$, $I_C = 10.0\text{ mA}$, $R_L = 100\Omega$
t_f	Output Fall Time		25		μs	See Test Circuit

Typical Performance Curves



NOTE: Rise Time (t_r) is time required for collector current to increase from 10% to 90% of its final value. Fall Time (t_f) 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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