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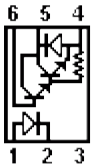
IS660, IS661, IS662
High Voltage Photodarlington Isolators

Circuit



Features

High CTR - 1000% Min
5000 V Isolation
High Collector-Emitter Breakdown Voltage of 200 V, 300 V or 400 V Min
Low Input Current Requirement - 1 mA

Description

The IS660, IS661 and IS662 are optically coupled isolators consisting of a Gallium Arsenide infrared emitting diode and NPN silicon photodarlington transistor connected with diffusion resistor between the base and emitter at the output to minimise dark current, mounted in a standard 6-pin dual-in-line package.
Surface Mount Option Available.
All electrical parameters are 100% tested. Specifications are guaranteed to a cumulative 0.65% AQL.

Absolute Maximum Ratings (Ta=25°C)

Storage Temperature:	-55°C to +150°C
Operating Temperature:	-55°C to +100°C
Lead Soldering:	260°C for 10s, 1.6mm from case
Input-to-Output Isolation Voltage:	±5000V

Input Diode

Forward DC Current:	60mA
Forward Current Peak:	1A (1µs p.w. 300pps)
Reverse DC Voltage:	6V
Power Dissipation:	70mW
Derate Linearly:	0.93mW/°C above 25°C

Output Transistor

Collector-Emitter Voltage, BVceo:	200V (IS660)
	300V (IS661)
	400V (IS662)
Collector-Base Voltage, BVcbo:	200V (IS660)
	300V (IS661)
	400V (IS662)
Emitter-Base Voltage:	6V
Power Dissipation:	300mW
Derate Linearly:	4.0mW/°C above 25°C

Package

Total Power Dissipation:	350mW
Derate Linearly:	4.67mW/°C above 25°C

Electro-optical Characteristics (Ta=25°C)

INPUT	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F=10mA		1.2	1.5	V
I_R	Reverse Current	V_R=6.0V			10	µA
V_R	Reverse Breakdown Voltage	I_R=10µA	6.0			V
OUTPUT	**PARAMETER**	**CONDITIONS**	**MIN**	**TYP**	**MAX**	**UNIT**
BV_{CEO}	Collector-Emitter Voltage					
	IS660	I_C=1mA, I_F=0	200	260		V
	IS661		300	350		V
	IS662		400	440		V
BV_{CBO}	Collector-Base Voltage					
	IS660	I_C=0.1mA, I_F=0	200			V
	IS661		300			V
	IS662		400			V
BV_{EBO}	Emitter-Base Voltage	I_E=0.1mA, I_F=0	6			V
I_{CEO}	Collector-Emitter Dark Current	I_F=0, V_{CE}=100V			100	nA
COUPLED	**PARAMETER**	**CONDITIONS**	**MIN**	**TYP**	**MAX**	**UNIT**
CTR	DC Current Transfer Ratio I_C/I_F, note 2	I_F=1mA, V_{CE}=2V, I_B=0	1000	5000		%
R_{IO}	Input-to-Output Isolation Resistance	V_{IO}=500V, note 1	100			Gohm
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	I_C=100mA, I_F=10mA			1.2	V
C_{IO}	Capacitance Input to Output	V=0, f=1MHz		0.6		pF
T_R	Output Rise Time	I_C=20mA, V_{CE}=2V, R_L=100ohm		130	250	µs
T_F	Output Rise Time			30	70	µs
f_C	Cut-Off Frequency		1	4		kHz
	Input-to-Output Isolation Voltage	Note 1	5000			V

Notes

1. Measured with input leads shorted together and output leads shorted together.
2. Current Transfer Ratio can be selected up to 15000% depending on quantity.

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