

IS1, IS5, IS74
ISD1, ISD5, ISD74
ISQ1, ISQ5, ISQ74



**HIGH DENSITY
 PHOTOTRANSISTOR OPTICALLY
 COUPLED ISOLATORS**

APPROVALS

- UL recognised, File No. E91231
- 'X' SPECIFICATION APPROVALS
 - VDE 0884 in 3 available lead form :-
 - STD
 - G form
 - SMD approved to CECC 0080
 - IS1X, IS5X, IS74X are certified to EN60950 by the following Test Bodies :-
 - Nemko - Certificate No. P01102464
 - Fimko - Certificate No. FI18166
 - Semko - Reference No. 0202037/01-22
 - Demko - Certificate No. 311158-01
 - BSI approved - Certificate No. 8001

DESCRIPTION

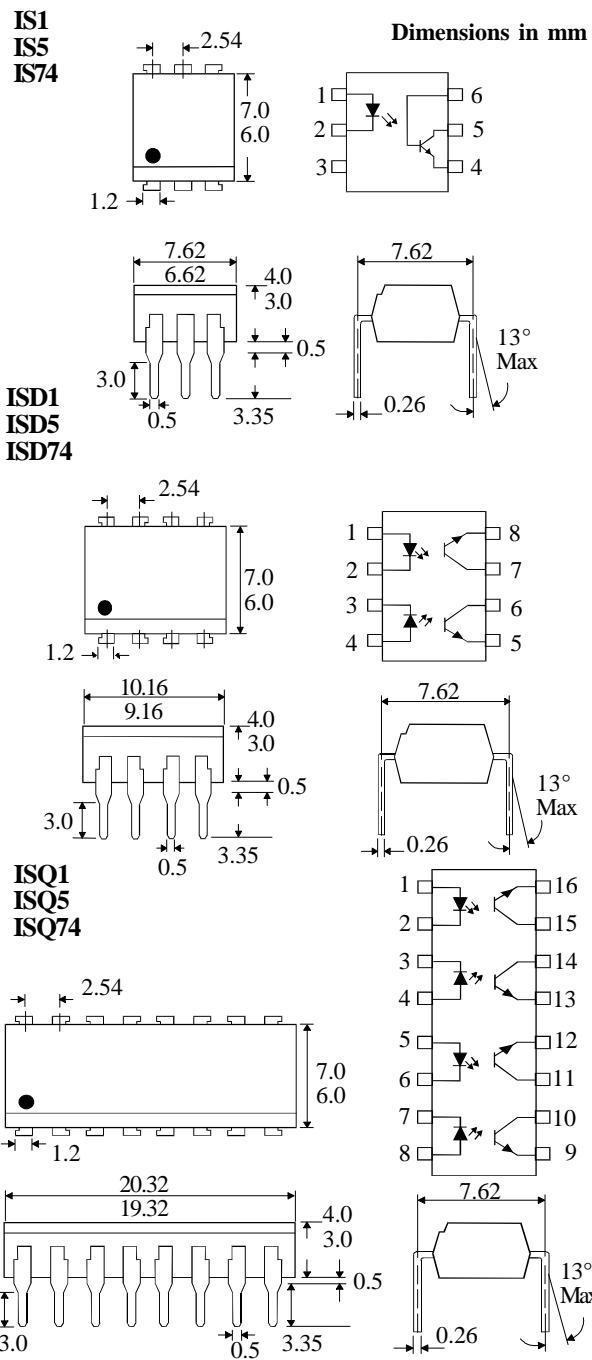
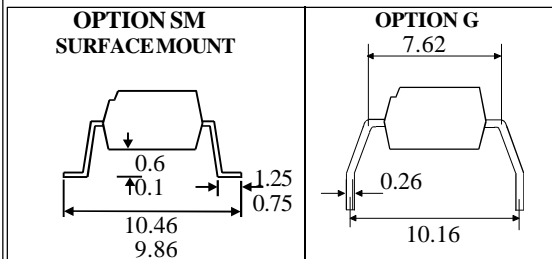
The IS*, ISD*, ISQ* series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

FEATURES

- Options :-
 - 10mm lead spread - add G after part no.
 - Surface mount - add SM after part no.
 - Tape&reel - add SMT&R after part no.
- High Isolation Voltage (5.3kV_{RMS}, 7.5kV_{PK})
- High BV_{CEO} (70V min) IS5, ISD5, ISQ5

APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Signal transmission between systems of different potentials and impedances



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ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature _____ -40°C to +125°C
 Operating Temperature _____ -25°C to +100°C
 Lead Soldering Temperature
 (1/16 inch (1.6mm) from case for 10 secs) 260°C

INPUT DIODE

Forward Current _____ 50mA
 Reverse Voltage _____ 6V
 Power Dissipation _____ 70mW

OUTPUT TRANSISTOR

Collector-emitter Voltage BV_{CEO}
 IS5, ISD5, ISQ5 _____ 70V
 IS1, ISD1, ISQ1, IS74, ISD74, ISQ74 _____ 50V
 Emitter-collector Voltage BV_{ECO} _____ 6V
 Power Dissipation _____ 150mW

POWER DISSIPATION

Total Power Dissipation _____ 170mW
 (derate linearly 2.67mW/°C above 25°C)

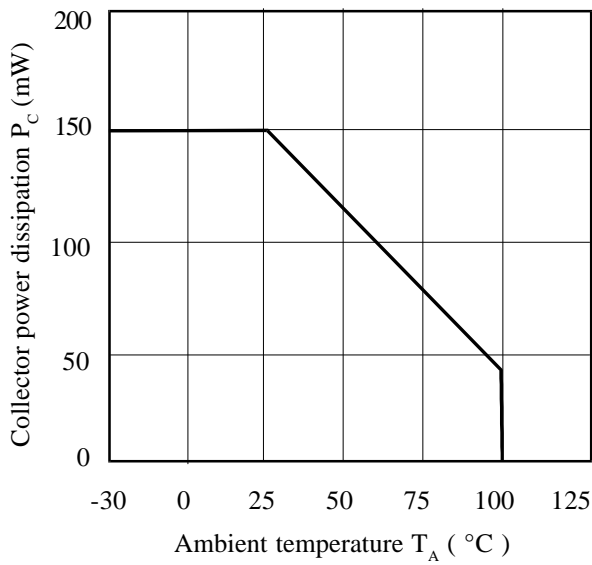
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.65	V	$I_F = 50\text{mA}$
	Reverse Current (I_R)			10	μA	$V_R = 4\text{V}$
Output	Collector-emitter Breakdown (BV_{CEO}) IS5, ISD5, ISQ5	70			V	$I_C = 1\text{mA}$
	IS1, ISD1, ISQ1, IS74, ISD74, ISQ74	50			V	(Note 2)
	Emitter-collector Breakdown (BV_{ECO})	6			V	$I_E = 100\mu\text{A}$
	Collector-emitter Dark Current (I_{CEO})			50	nA	$V_{CE} = 10\text{V}$
Coupled	Current Transfer Ratio (CTR) (Note 2)					
	IS1, ISD1, ISQ1	20		300	%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	IS5, ISD5, ISQ5	50		400	%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	IS74, ISD74, ISQ74	12.5			%	$16\text{mA } I_F, 5\text{V } V_{CE}$
	Saturated Current Transfer Ratio		75		%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	IS1, ISD1, ISQ1		100		%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	IS5, ISD5, ISQ5				%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	IS74, ISD74, ISQ74	12.5			%	$16\text{mA } I_F, 0.5\text{V } V_{CE}$
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
	Input to Output Isolation Voltage V_{ISO}	7500			V_{PK}	See note 1
Input-output Isolation Resistance R_{ISO}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)	
Output Rise Time tr		2.6		μs	$I_F = 5\text{mA}$	
Output Fall Time tf		2.2		μs	$V_{CC} = 5\text{V}, R_L = 75\Omega$	

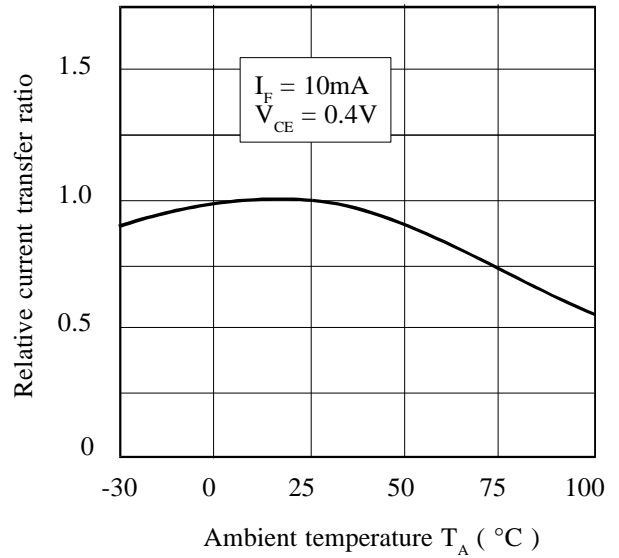
Note 1 Measured with input leads shorted together and output leads shorted together.

Note 2 Special Selections are available on request. Please consult the factory.

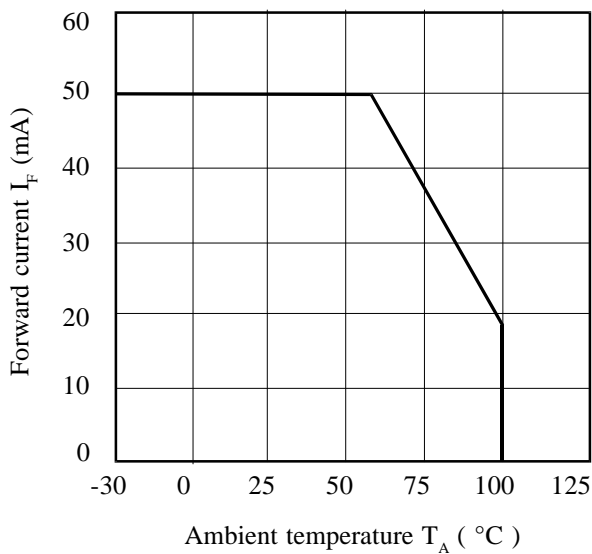
Collector Power Dissipation vs. Ambient Temperature



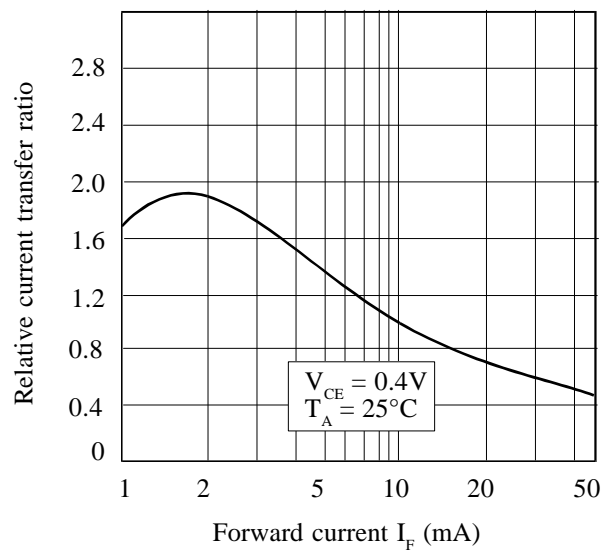
Relative Current Transfer Ratio vs. Ambient Temperature



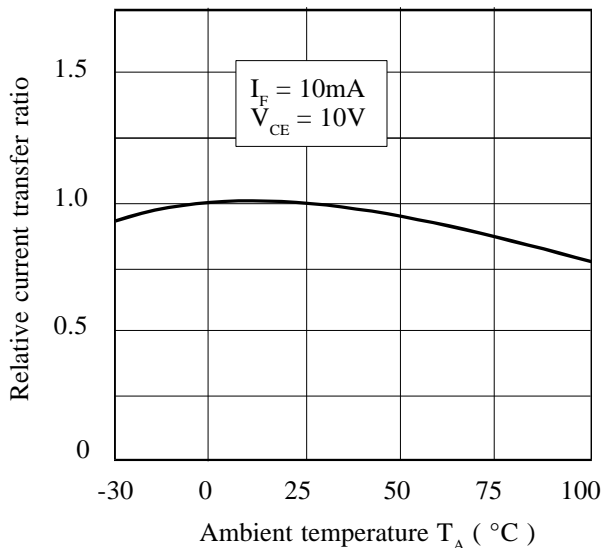
Forward Current vs. Ambient Temperature



Relative Current Transfer Ratio vs. Forward Current



Relative Current Transfer Ratio vs. Ambient Temperature



Relative Current Transfer Ratio vs. Forward Current

