

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. P96102022
  - Fimko - Registration No. 192313-01..25
  - Semko - Reference No. 9639052 01
  - Demko - Reference No. 305969
  - ISD1X, ISD5X, ISD74X - EN60950 pending
  - ISQ1X, ISQ5X, ISQ74X - EN60950 pending

**DESCRIPTION**

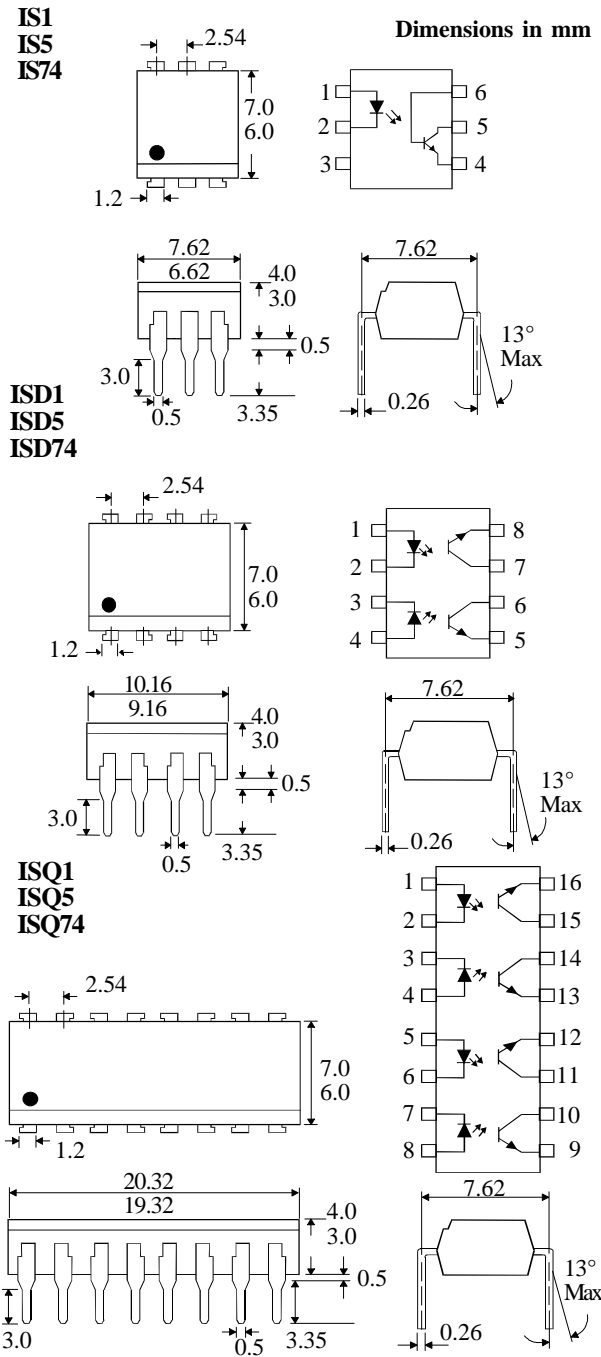
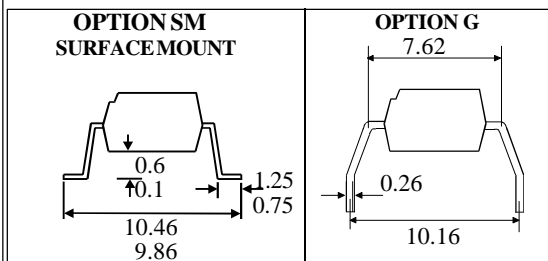
The IS\*, ISD\*, ISQ\* series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

**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<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High BV<sub>CEO</sub> (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 \_\_\_\_\_ -55°C to + 125°C  
 Operating Temperature \_\_\_\_\_ -55°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 \_\_\_\_\_ 200mW  
 (derate linearly 2.67mW/°C above 25°C)

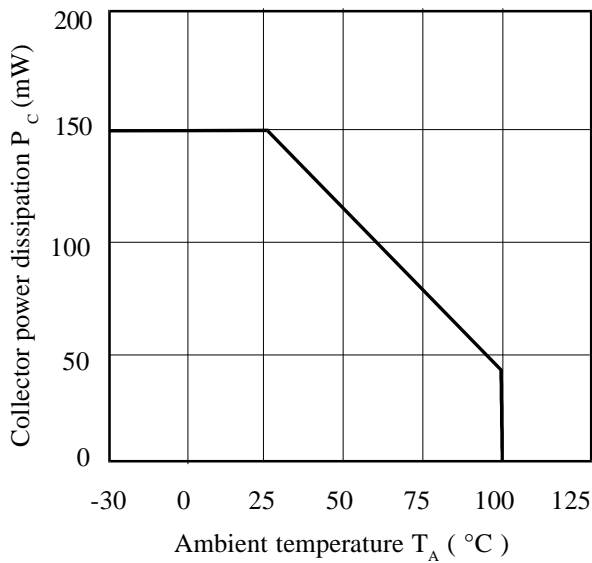
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )		1.2	1.65	V	$I_F = 50\text{mA}$ $I_R = 10\mu\text{A}$ $V_R = 6\text{V}$
	Reverse Voltage ( $V_R$ )	6			V	
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	
Output	Collector-emitter Breakdown ( $BV_{CEO}$ ) IS5, ISD5, ISQ5	70			V	$I_C = 1\text{mA}$ ( Note 2 ) $I_E = 100\mu\text{A}$ $V_{CE} = 10\text{V}$
	IS1, ISD1, ISQ1, IS74, ISD74, ISQ74	50			V	
	Emitter-collector Breakdown ( $BV_{ECO}$ )	6			V	
	Collector-emitter Dark Current ( $I_{CEO}$ )			50	nA	
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					
	IS1, ISD1, ISQ1		75		%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	IS5, ISD5, ISQ5		100		%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	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 $R_{ISO}$	$5 \times 10^{10}$				$\Omega$ $V_{IO} = 500\text{V}$ (note 1)	
Output Rise Time tr		2.6			$\mu\text{s}$ $I_F = 5\text{mA}$	
Output Fall Time tf		2.2			$\mu\text{s}$ $V_{CC} = 5\text{V}, R_L = 75\Omega$	

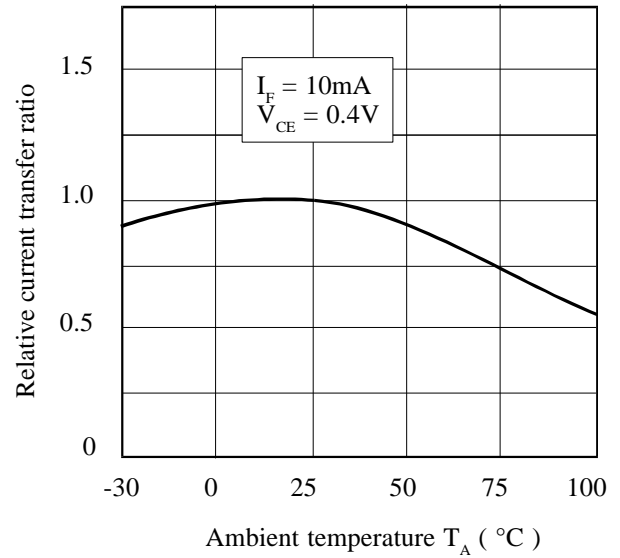
Note 1 Measured with input leads shorted together and output leads shorted together.

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

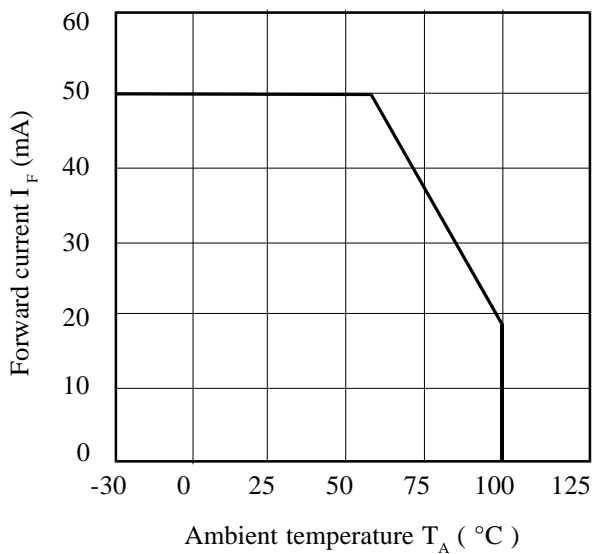
**Collector Power Dissipation vs. Ambient Temperature**



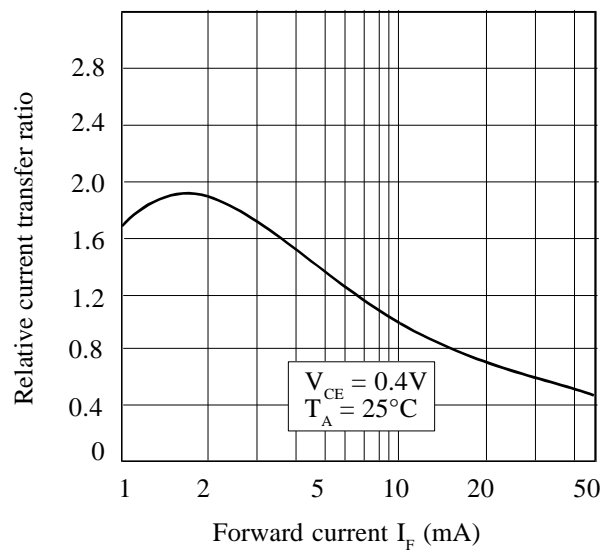
**Relative Current Transfer Ratio vs. Ambient Temperature**



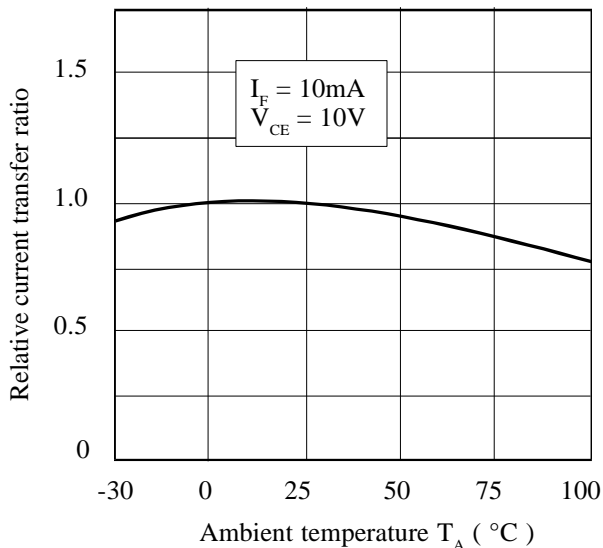
**Forward Current vs. Ambient Temperature**



**Relative Current Transfer Ratio vs. Forward Current**



**Relative Current Transfer Ratio vs. Ambient Temperature**



**Relative Current Transfer Ratio vs. Forward Current**

