



# THE DATASHEET OF ISQ1X



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



# ISOCOM

COMPONENTS

## HIGH DENSITY PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS



### APPROVALS

- UL recognised, File No. E91231  
 Package " FF "

### '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 :-  
 Nemko - Certificate No. P01102464

### 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.

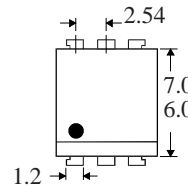
### FEATURES

- 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

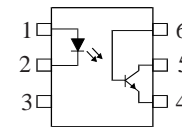
### APPLICATIONS

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

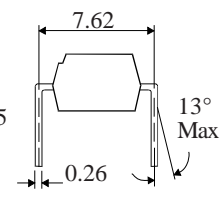
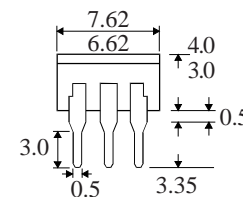
IS1  
 IS5  
 IS74



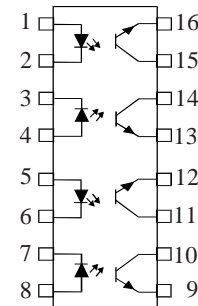
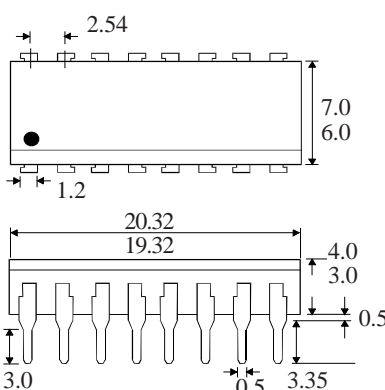
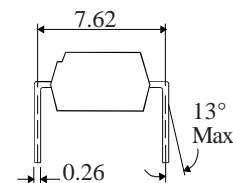
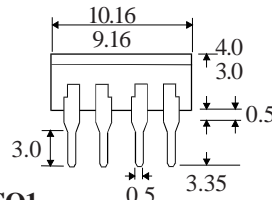
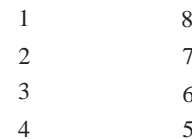
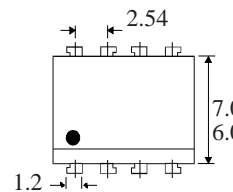
Dimensions in mm



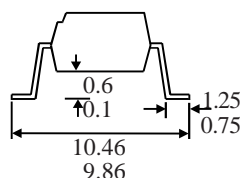
ISD1  
 ISD5  
 ISD74



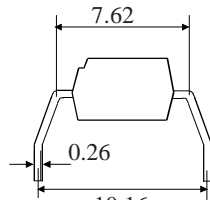
ISQ1  
 ISQ5  
 ISQ74



OPTION SM  
 SURFACE MOUNT



OPTION G



### ISOCOM COMPONENTS LTD

Unit 25B, Park View Road West,  
 Park View Industrial Estate, Brenda Road  
 Hartlepool, Cleveland, TS25 1UD  
 Tel: (01429) 863609 Fax: (01429) 863581

**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  
 Collector Current \_\_\_\_\_ 50mA  
 Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

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

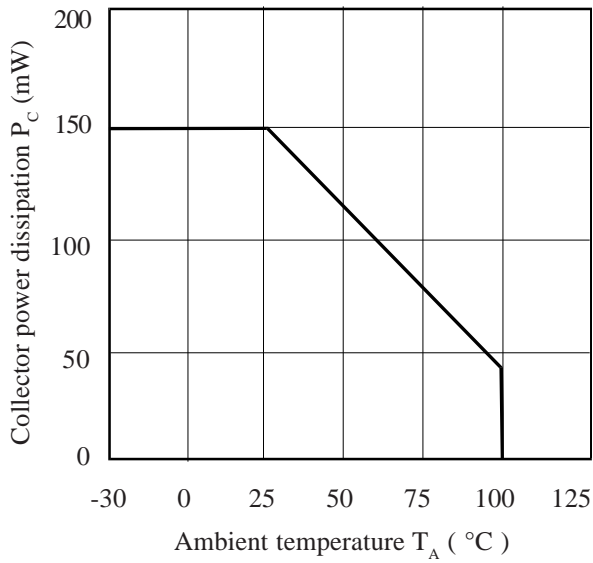
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

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	$\mu\text{A}$	$V_R = 4\text{V}$
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					
	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		$\mu\text{s}$	$V_{CC} = 5\text{V}, R_L = 75\Omega$	

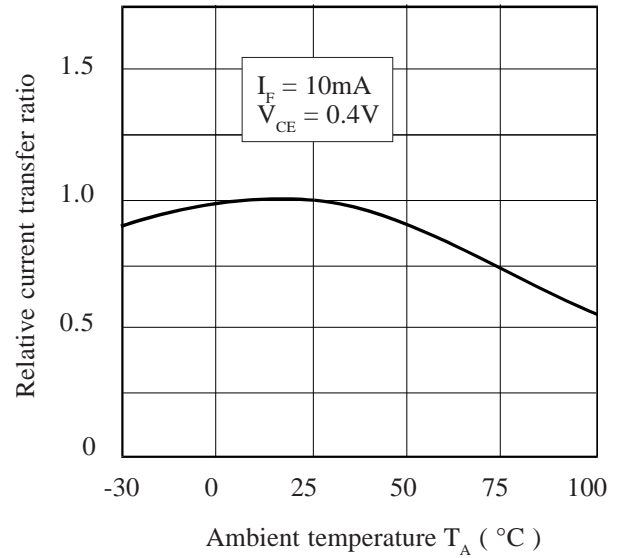
Note 1 Measured with input leads shorted together and output leads shorted together.

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

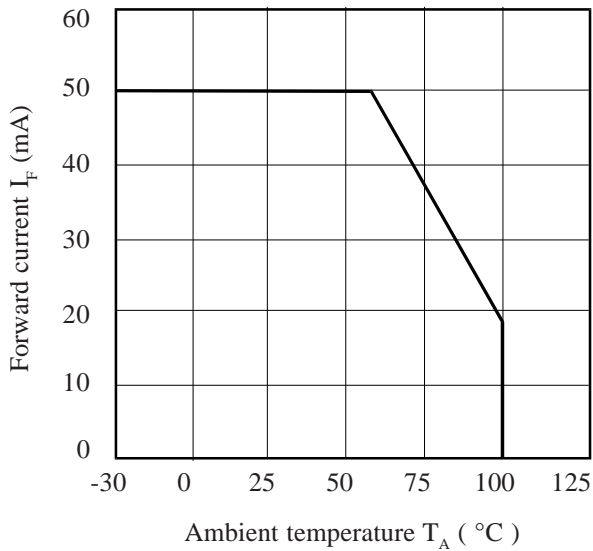
**Collector Power Dissipation vs. Ambient Temperature**



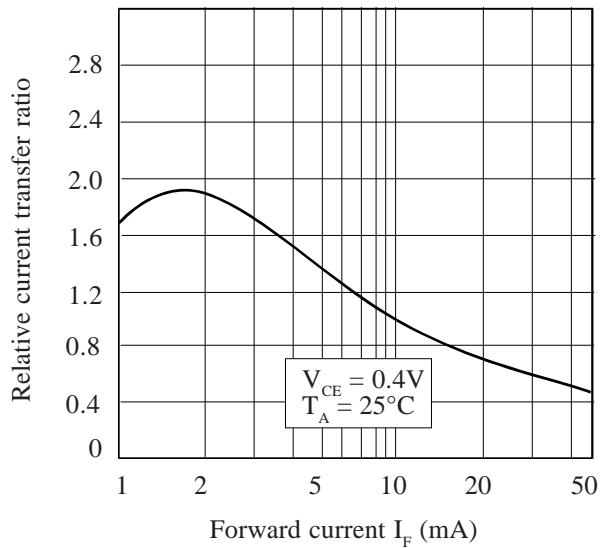
**Relative Current Transfer Ratio vs. Ambient Temperature**



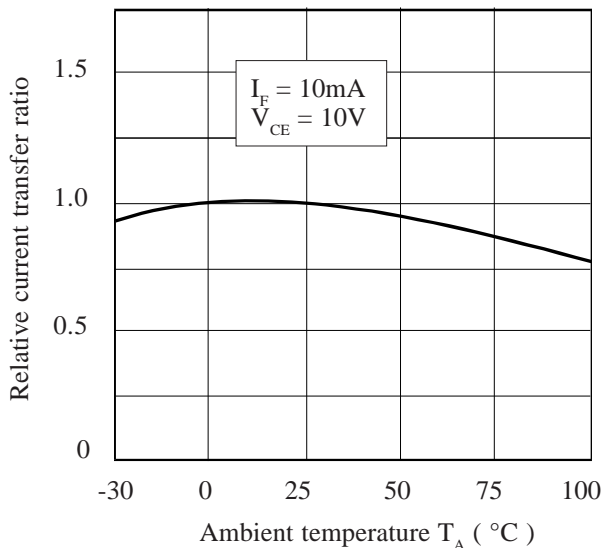
**Forward Current vs. Ambient Temperature**



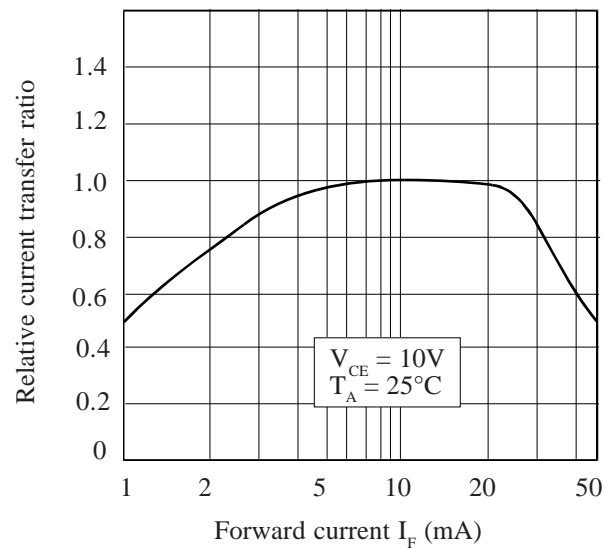
**Relative Current Transfer Ratio vs. Forward Current**



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




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







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-  Excess Inventory Management