SFH610-2X, SFH610-3X, SFH610-4X
SFH610-2, SFH610-3, SFH610-4

LOW INPUT CURRENT 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 00802

DESCRIPTION

The SFH610 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

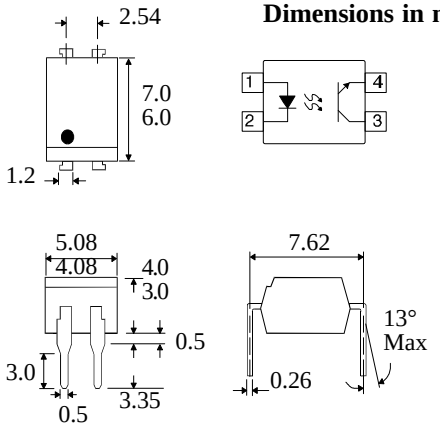
FEATURES

- Options :-
  10mm lead spread - add G after part no.
  Surface mount - add SM after part no.
  Tape&reel - add SMT&R after part no.
- Low input current 1mA I_F
- High Current Transfer Ratios
  (63-320% at 10mA, 22% min at 1mA)
- High Isolation Voltage ($5.3kV_{RMS}$, $7.5kV_{PK}$)
- High BV_{CEO} (70V min)
- All electrical parameters 100% tested
- Custom electrical selections available

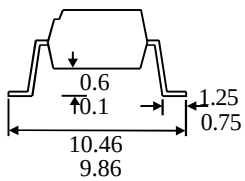
APPLICATIONS

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

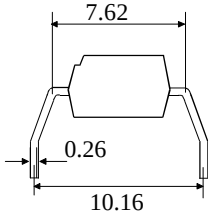
Dimensions in mm



OPTION SM
SURFACE MOUNT



OPTION G



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}	70V
Emitter-collector Voltage BV_{ECO}	6V
Power Dissipation	150mW

POWER DISSIPATION

Total Power Dissipation	200mW
(derate linearly 2.67mW/°C above 25°C)	

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

ISOCOM INC
1024 S. Greenville Ave, Suite 240,
Allen, TX 75002 USA
Tel: (214) 495-0755 Fax: (214) 495-0901
e-mail info@isocom.com
http://www.isocom.com

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)			1.65	V	I_F = 50mA
	Reverse Voltage (V_R)	6			V	I_R = 10µA
	Reverse Current (I_R)			10	µA	V_R = 6V
Output	Collector-emitter Breakdown (BV_{CEO}) (Note 2)	70			V	I_C = 1mA
	Emitter-collector Breakdown (BV_{ECO})	6			V	I_E = 100 µA
	Collector-emitter Dark Current (I_{CEO})					
	SFH6102			50	nA	V_{CE} = 10V
	SFH610-3,4			100	nA	
Coupled	Current Transfer Ratio (CTR) (Note 2)					
	SFH610-2	63		125	%	10mA I_F, 5V V_{CE}
	SFH6103	100		200	%	
	SFH6104	160		320	%	
	SFH6102	22			%	1mA I_F, 5V V_{CE}
	SFH6103	34			%	
	SFH6104	56			%	
	Collector-emitter Saturation Voltage V_{CESAT}			0.4	V	10mA I_F , 2.5mA I_C
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
		7500			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)

Note 1 Measured with input leads shorted together and output leads shorted togethe r.
Note 2 Special Selections are available on request. Please consult the factor y.

SWITCHING CHARACTERISTICS

1. Linear Operation (without saturation) Fig 1.
I_F = 10mA, V_{CC} = 5V, R_L = 75Ω

			UNITS
Turn-on Time	t_{on}	3.0	µs
Rise Time	t_r	2.0	µs
Turn-off Time	t_{off}	2.3	µs
Fall Time	t_f	2.0	µs
Cut-off Frequency	F_{CO}	250	kHz

2. Switching Operation (with saturation) Fig 2
V_{CC} = 5V, R_L = 1kΩ

GROUP		-1 (I_F=20mA)	-2 and -3 (I_F=10mA)	- 4 (I_F=5mA)	UNITS
Turn-on Time	t_{on}	3.0	4.2	6.0	µs
Rise Time	t_r	2.0	3.0	4.6	µs
Turn-off Time	t_{off}	18	23	25	µs
Fall Time	t_f	11	14	15	µs
	V_{CESAT}	≤ 0.4			V

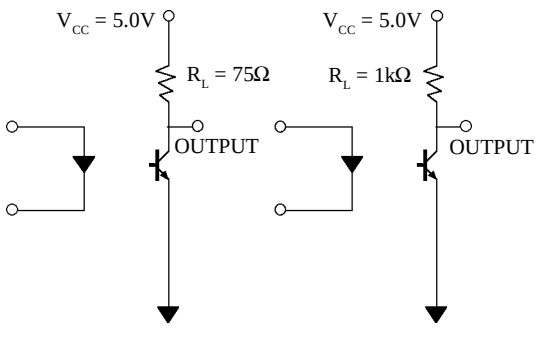
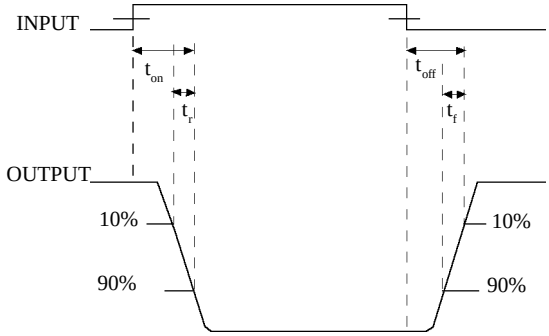
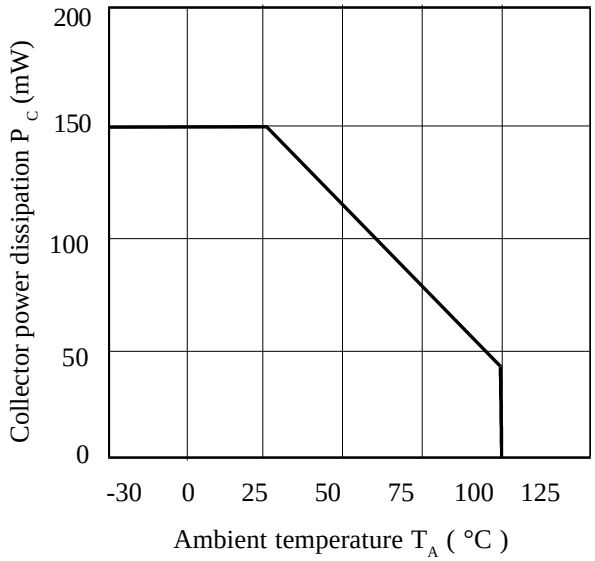


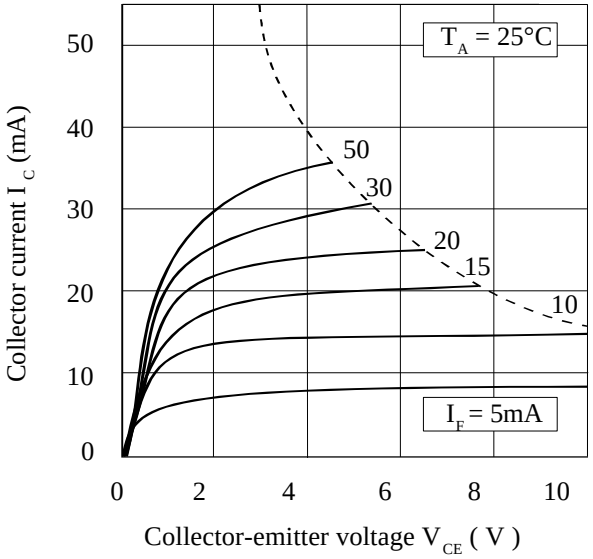
FIG 1 FIG 2



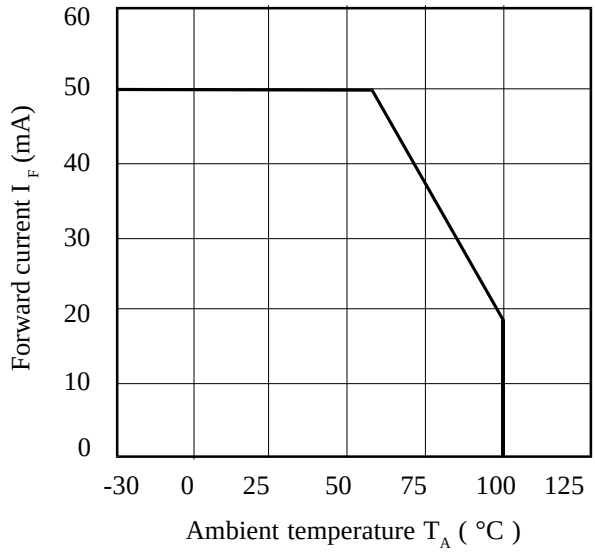
Collector Power Dissipation vs. Ambient Temperature



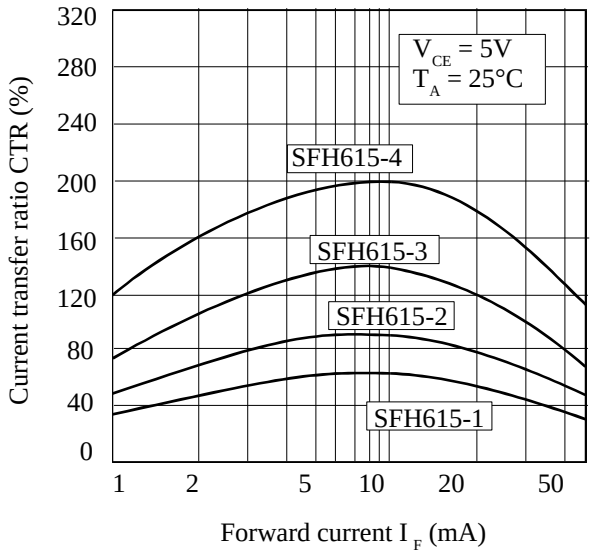
Collector Current vs. Collector-emitter Voltage
(normalised to SFH615-3)



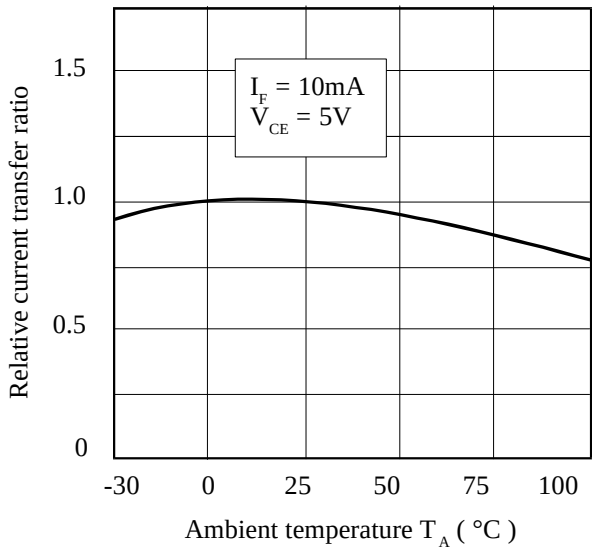
Forward Current vs. Ambient Temperature



Current Transfer Ratio vs. Forward Current



Relative Current Transfer Ratio vs. Ambient Temperature



Collector-emitter Saturation Voltage vs. Ambient Temperature