SFH615-1X, SFH615-2X, SFH615-3X, SFH615-4X
SFH615-1, SFH615-2, SFH615-3, SFH615-4

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
- 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

DESCRIPTION

The SFH615 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

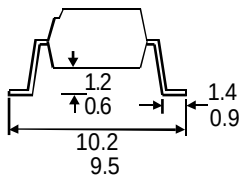
FEATURES

- 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 (40-320% at 10mA, 13% 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

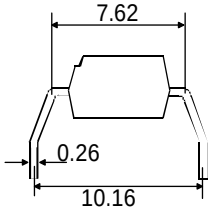
APPLICATIONS

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

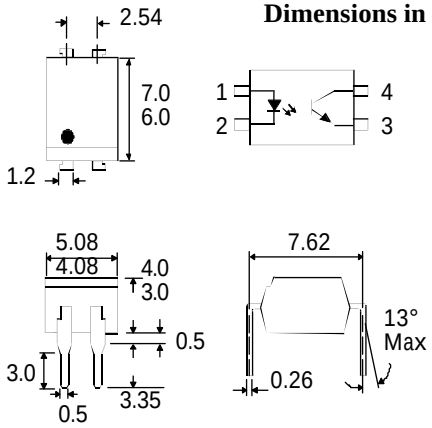
OPTION SM
SURFACE MOUNT



OPTION G



Dimensions in mm



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)	

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720 E., Park Boulevard, Suite 104,
Plano, TX 75074 USA
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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 = 100µA
	Collector-emitter Dark Current (I_{CEO})					
	SFH615-1,2			50	nA	V_{CE} = 10V
	SFH615-3,4			100	nA	
Coupled	Current Transfer Ratio (CTR) (Note 2)					
	SFH615-1	40		80	%	10mA I_F, 5V V_{CE}
	SFH615-2	63		125	%	
	SFH615-3	100		200	%	
	SFH615-4	160		320	%	
	SFH615-1	13			%	1mA I_F, 5V V_{CE}
	SFH615-2	22			%	
	SFH615-3	34			%	
	SFH615-4	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 together.
Note 2 Special Selections are available on request. Please consult the factory.

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

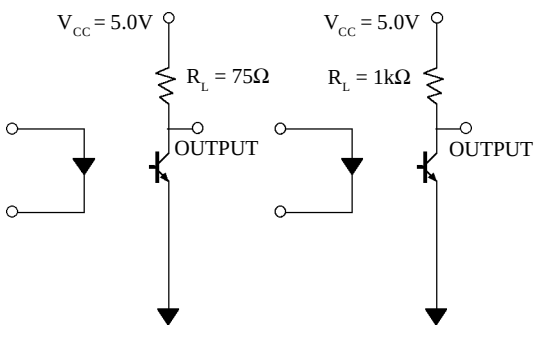
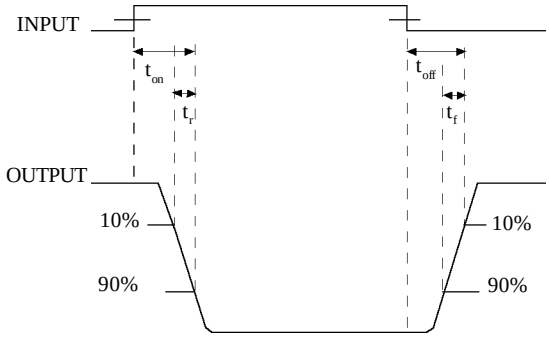
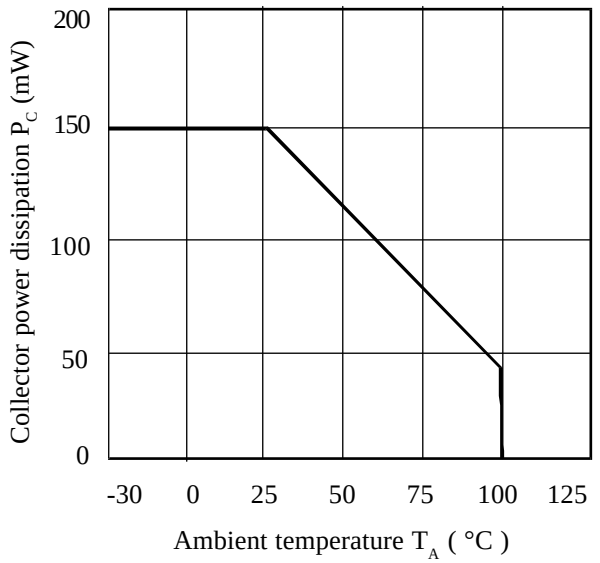


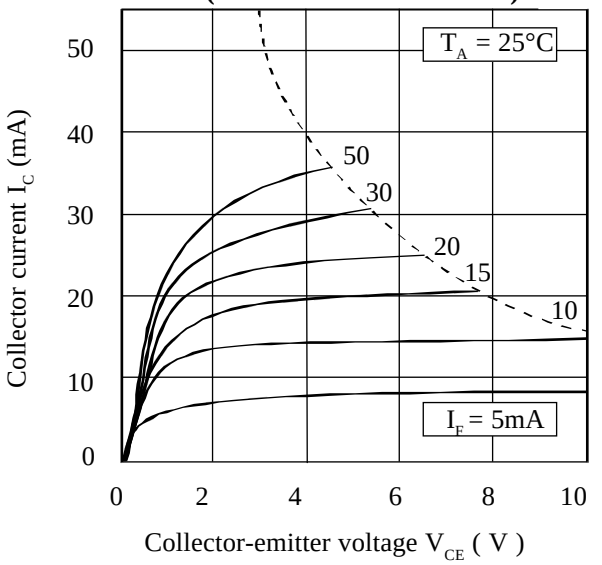
FIG 1 FIG 2



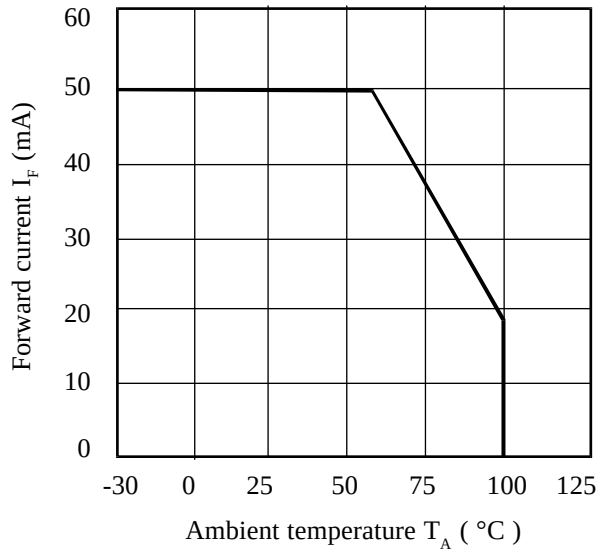
Collector Power Dissipation vs. Ambient Temperature



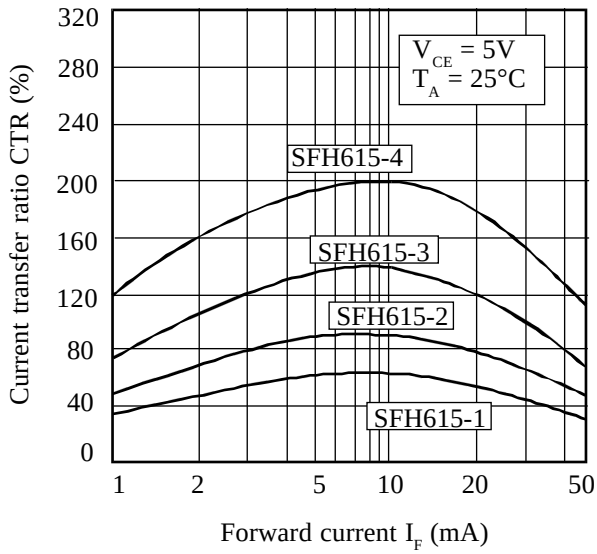
Collector Current vs. Collector-emitter Voltage
(normalised to SFH615-3)



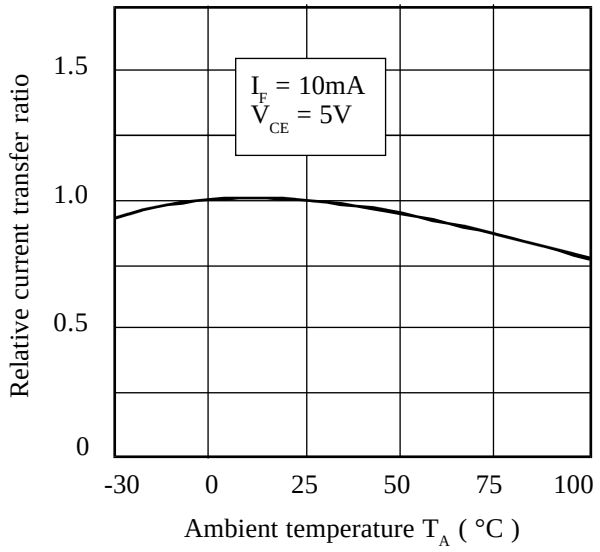
Forward Current vs. Ambient Temperature



Current Transfer Ratio vs. Forward Current



Relative Current Transfer Ratio
vs. Ambient Temperature



Collector-emitter Saturation
Voltage vs. Ambient Temperature