

SFH617G-1X, SFH617G-2X, SFH617G-3X, SFH617G-4X
 SFH617G-1, SFH617G-2, SFH617G-3, SFH617G-4



**LOW INPUT CURRENT
 PHOTOTRANSISTOR
 OPTICALLY COUPLED ISOLATORS**

APPROVALS

- UL recognised, File No. E91231
- 'X' SPECIFICATION APPROVALS**
- VDE0884
 - Certified to EN60950 by the following Test Bodies :-
 Nemko - Certificate No. P01102465
 Fimko - Certificate No. FI18162
 Semko - Reference No. 0202041/01-25
 Demko - Certificate No. 311161-01

DESCRIPTION

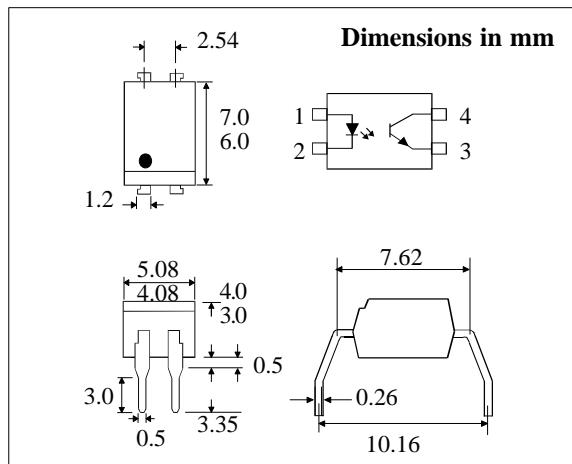
The SFH617G series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

FEATURES

- 10mm lead spread
- 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



**ABSOLUTE MAXIMUM RATINGS
 (25°C unless otherwise specified)**

Storage Temperature _____ -55°C to + 125°C
 Operating Temperature _____ -30°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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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)			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	μA	
Output	Collector-emitter Breakdown (BV_{CEO}) (Note 2)	70			V	$I_C = 1\text{mA}$
	Emitter-collector Breakdown (BV_{ECO})	6			V	$I_E = 100\mu\text{A}$
	Collector-emitter Dark Current (I_{CEO}) SFH617G-1,2			50	nA	$V_{CE} = 10\text{V}$
	SFH617G-3,4			100	nA	
Coupled	Current Transfer Ratio (CTR) (Note 2)	SFH617G-1	40	80	%	$10\text{mA } I_F, 5\text{V } V_{CE}$
		SFH617G-2	63	125	%	
		SFH617G-3	100	200	%	
		SFH617G-4	160	320	%	
	SFH617G-1	13		%	$1\text{mA } I_F, 5\text{V } V_{CE}$	
	SFH617G-2	22		%		
	SFH617G-3	34		%		
	SFH617G-4	56		%		
	Collector-emitter Saturation Voltage V_{CESAT}			0.4	V	$10\text{mA } I_F, 2.5\text{mA } I_C$
	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}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)	

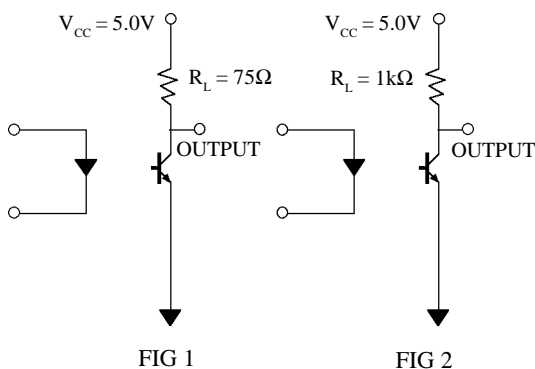
Note 1 Measured with input leads shorted together and output leads shorted together.

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

SWITCHING CHARACTERISTICS

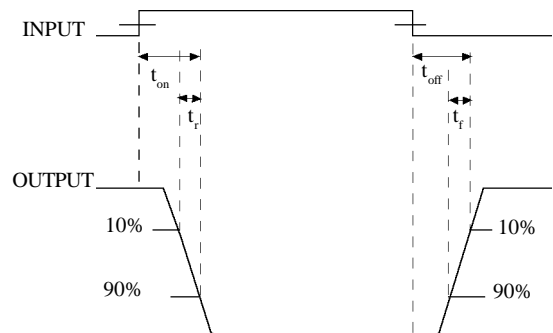
1. Linear Operation (without saturation) Fig 1.
 $I_F = 10\text{mA}, V_{CC} = 5\text{V}, R_L = 75\Omega$

			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

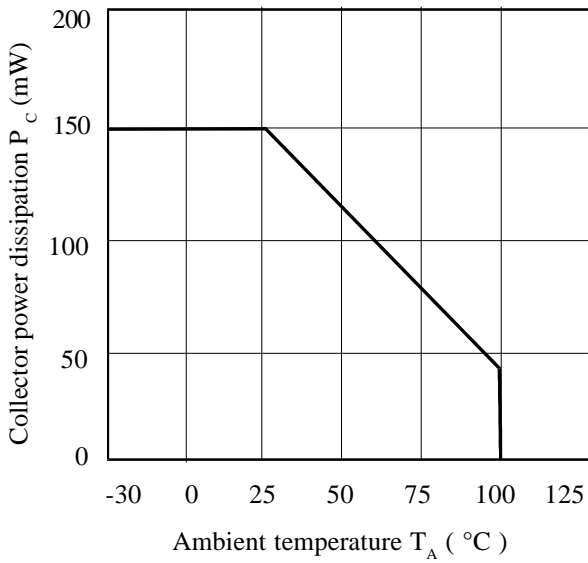


2. Switching Operation (with saturation) Fig 2
 $V_{CC} = 5\text{V}, R_L = 1\text{k}\Omega$

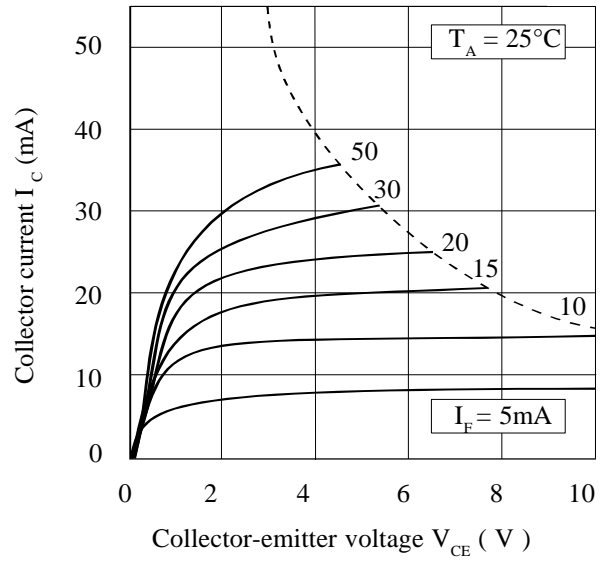
GROUP	-1 ($I_F=20\text{mA}$)	-2 and -3 ($I_F=10\text{mA}$)	-4 ($I_F=5\text{mA}$)	UNITS	
Turn-on Time	t_{on}	3.0	4.2	6.0	μs
Rise Time	t_r	2.0	3.0	4.6	μs
Turn-off Time	t_{off}	18	23	25	μs
Fall Time	t_f	11	14	15	μs
V_{CESAT}				≤ 0.4	V



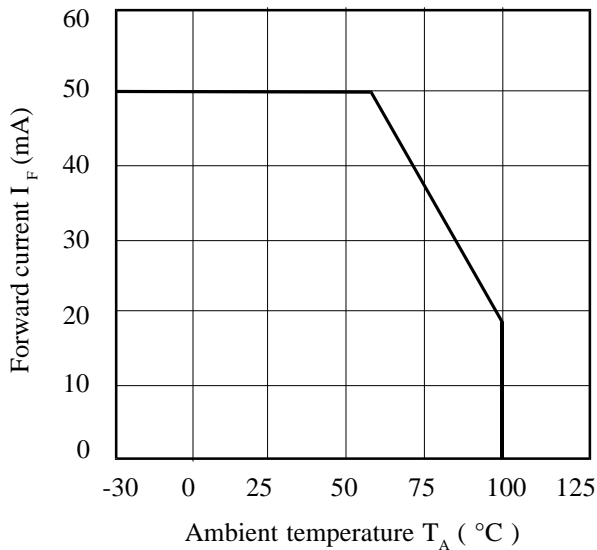
Collector Power Dissipation vs. Ambient Temperature



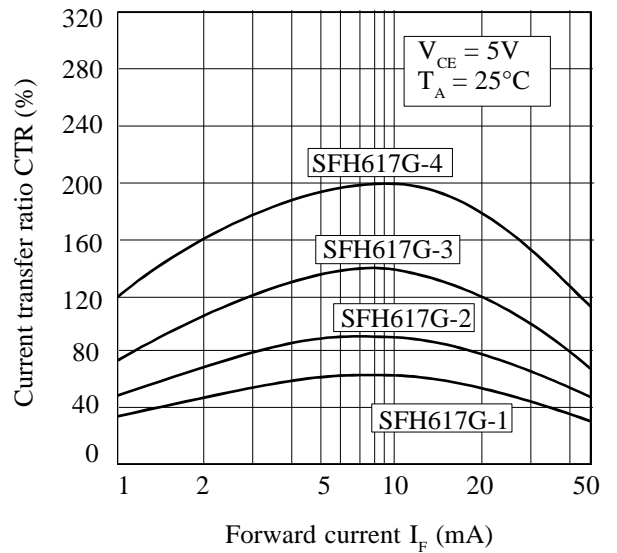
Collector Current vs. Collector-emitter Voltage (normalised to SFH617G-3)



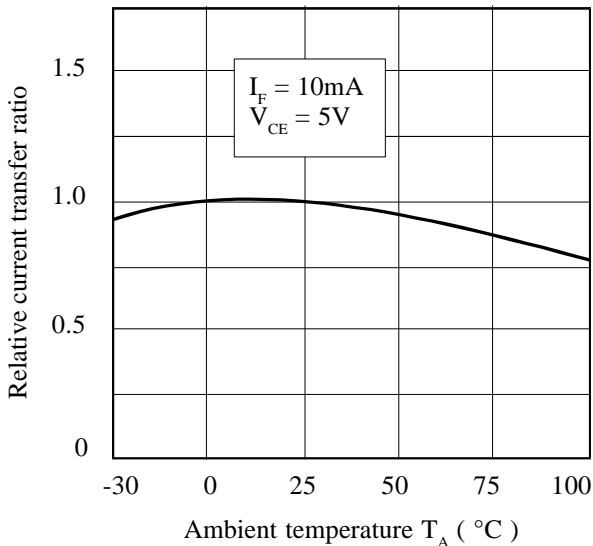
Forward Current vs. Ambient Temperature



Current Transfer Ratio vs. Forward Current



Relative Current Transfer Ratio vs. Ambient Temperature



Collector-emitter Saturation Voltage vs. Ambient Temperature

