

SFH615A-1X, SFH615A-2X, SFH615A-3X,  
SFH615A-4X, SFH615A-1, SFH615A-2,  
SFH615A-3, SFH615A-4



# ISOCOM

COMPONENTS

## LOW INPUT CURRENT PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS



### APPROVALS

- UL recognised, File No. E91231  
Package Code " EE "

### 'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead form : -  
- STD  
- G form  
- SMD approved to CECC 00802
- Certified to EN60950 by Nemko  
Certificate No. P01102465

### DESCRIPTION

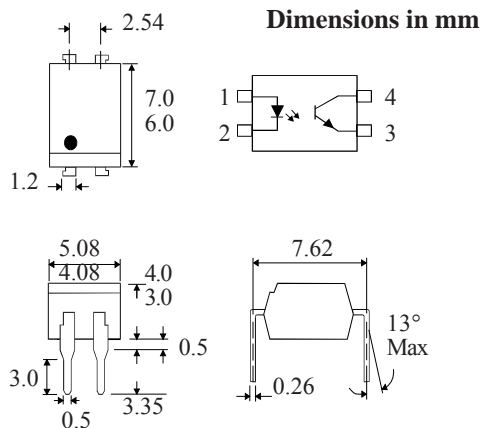
The SFH615A series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

### FEATURES

- Options :-  
10mm lead spread - add G after part no.  
Surface mount - add SM after part no.  
Taper & reel - add SMT&R after part no.
- Low input current 1mA  $I_F$
- High Current Transfer Ratios
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High BV<sub>CEO</sub> (70V min)
- All electrical parameters 100% tested

### APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments



### 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

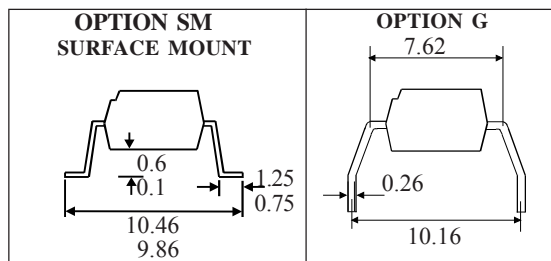
Forward Current \_\_\_\_\_ 50mA  
Reverse Voltage \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 70mW

### OUTPUT TRANSISTOR

Collector-emitter Voltage BV<sub>CEO</sub> \_\_\_\_\_ 70V  
Emitter-collector Voltage BV<sub>ECO</sub> \_\_\_\_\_ 6V  
Collector Current \_\_\_\_\_ 50mA  
Power Dissipation \_\_\_\_\_ 150mW

### POWER DISSIPATION

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



### ISOCOM COMPONENTS 2004 LTD

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

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

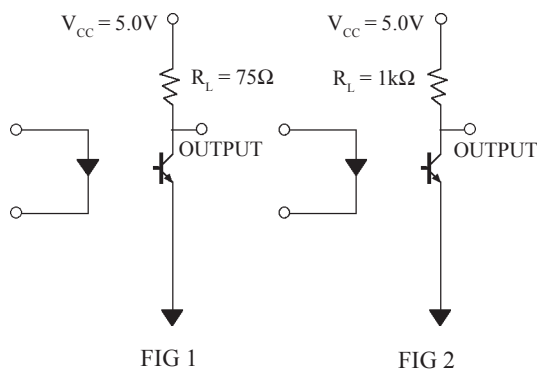
| PARAMETER |  | MIN                | TYP | MAX       | UNITS                 | TEST CONDITION                        |
|-----------|--|--------------------|-----|-----------|-----------------------|---------------------------------------|
| Input     | Forward Voltage ( $V_F$ )  |                    |     | 1.65      | V                     | $I_F = 50\text{mA}$                   |
|           | Reverse Current ( $I_R$ )  |                    |     | 10        | $\mu\text{A}$         | $V_R = 6\text{V}$                     |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )<br>( 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 ( $I_{CEO}$ )<br>SFH615A-1,2<br>SFH615A-3,4 |                    |     | 50<br>100 | nA<br>nA              | $V_{CE} = 10\text{V}$                 |
| Coupled   | Current Transfer Ratio (CTR) (Note 2)                                      |                    |     |           |                       |                                       |
|           | SFH615A-1  | 40                 |     | 80        | %                     | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | SFH615A-2  | 63                 |     | 125       | %                     |                                       |
|           | SFH615A-3  | 100                |     | 200       | %                     |                                       |
|           | SFH615A-4  | 160                |     | 320       | %                     |                                       |
|           | SFH615A-1  | 13                 |     |           | %                     | $1\text{mA } I_F, 5\text{V } V_{CE}$  |
|           | SFH615A-2  | 22                 |     |           | %                     |                                       |
|           | SFH615A-3  | 34                 |     |           | %                     |                                       |
| SFH615A-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<br>7500       |     |           | $V_{RMS}$<br>$V_{PK}$ | See note 1<br>See note 1              |
|           | Input-output Isolation Resistance $R_{ISO}$                                | $5 \times 10^{10}$ |     |           | $\Omega$              | $V_{IO} = 500\text{V}$ (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.

**TYPICAL SWITCHING CHARACTERISTICS**

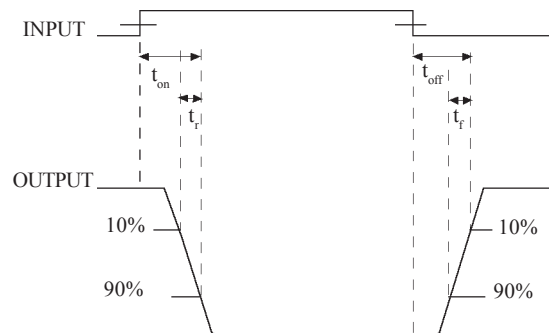
1. Linear Operation (without saturation) Fig 1.  
 $I_F = 10\text{mA}, V_{CC} = 5\text{V}, R_L = 75\Omega$

|                   |           |     | UNITS         |
|-------------------|-----------|-----|---------------|
| Turn-on Time      | $t_{on}$  | 3.0 | $\mu\text{s}$ |
| Rise Time         | $t_r$     | 2.0 | $\mu\text{s}$ |
| Turn-off Time     | $t_{off}$ | 2.3 | $\mu\text{s}$ |
| Fall Time         | $t_f$     | 2.0 | $\mu\text{s}$ |
| Cut-off Frequency | $F_{CO}$  | 250 | kHz           |

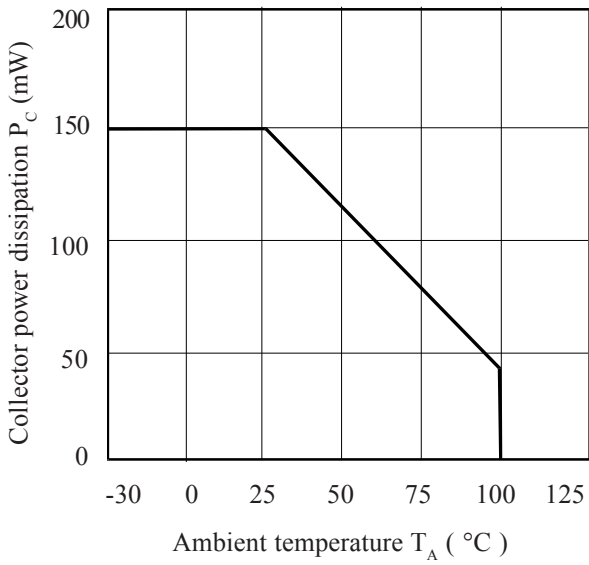


2. Switching Operation (with saturation) Fig 2  
 $V_{CC} = 5\text{V}, R_L = 1\text{k}\Omega$

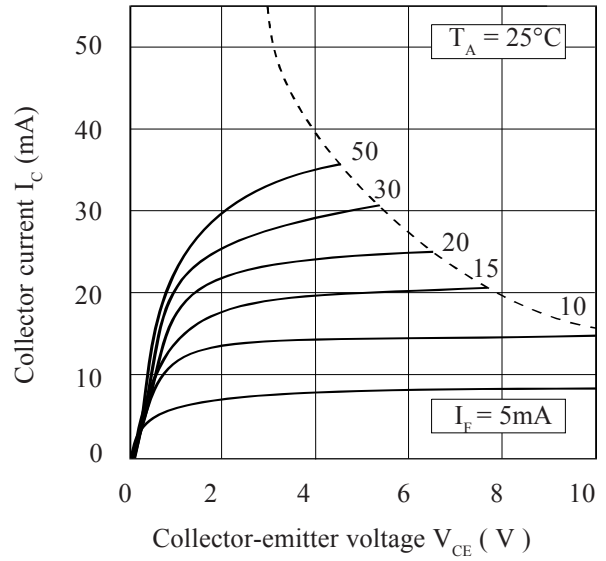
| GROUP         | -1<br>( $I_F = 20\text{mA}$ ) | -2 and -3<br>( $I_F = 10\text{mA}$ ) | -4<br>( $I_F = 5\text{mA}$ ) | UNITS      |               |
|---------------|-------------------------------|--------------------------------------|------------------------------|------------|---------------|
| Turn-on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



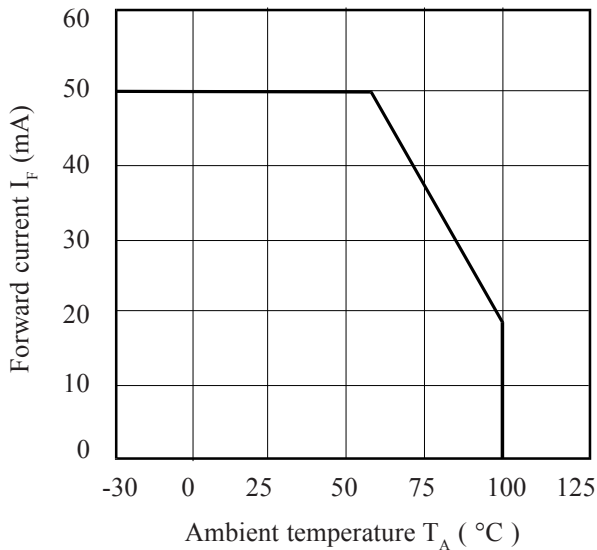
**Collector Power Dissipation vs. Ambient Temperature**



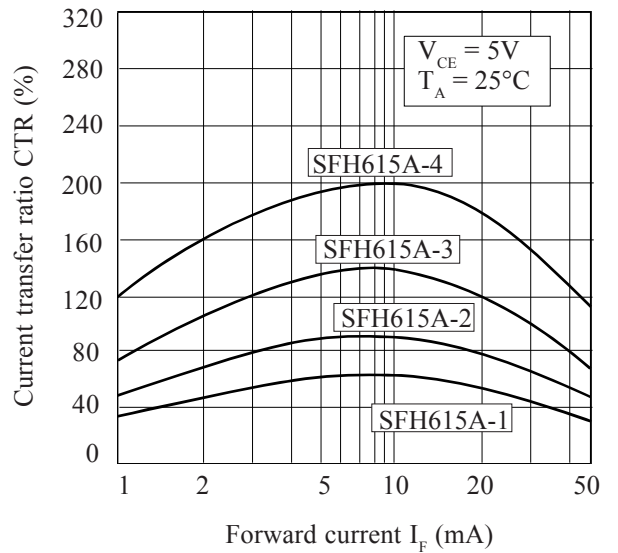
**Collector Current vs. Collector-emitter Voltage (normalised to SFH615A-3)**



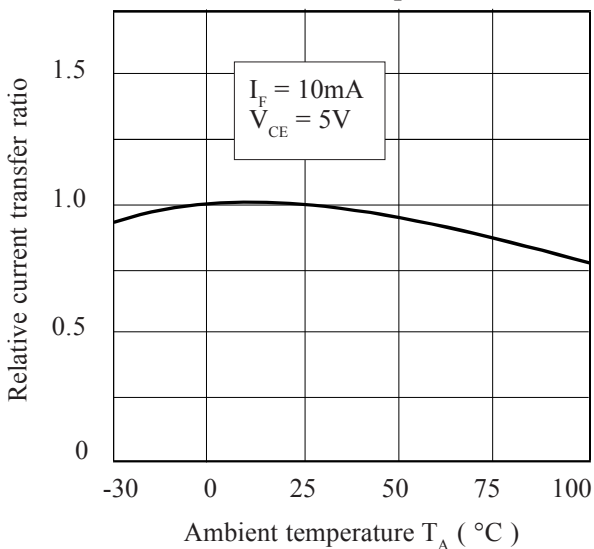
**Forward Current vs. Ambient Temperature**



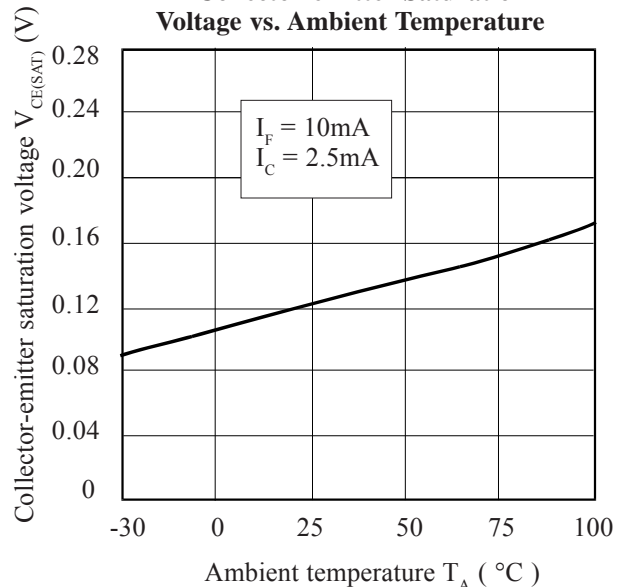
**Current Transfer Ratio vs. Forward Current**



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



**Collector-emitter Saturation Voltage vs. Ambient Temperature**



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Transistor Output Optocouplers](#) category:*

*Click to view products by [Isocom](#) manufacturer:*

Other Similar products are found below :

[LTV-814S-TA](#) [LTV-852S](#) [66095-001](#) [PS2561-1-A](#) [PS2561A-1-W-A](#) [PS2561L1-1-A](#) [PS2561L-1-V-A](#) [PS2706-1-A](#) [PS2815-1-A](#) [MRF658](#)  
[ILD2-X006](#) [ILQ615-3X016](#) [LDA102S](#) [SFH615A-4XSM TR](#) [PS2561DL-1Y-F3-A](#) [PS2561L1-1-L-A](#) [PS2562-1-V-A](#) [PS2565L-1-A](#)  
[PS2581L2-A](#) [PS2701A-1-F3-P-A](#) [PS2711-1-A](#) [PS2801-1-F3-P-A](#) [PS2833-4-A](#) [PS2841-4A-AX](#) [LTV-702FS](#) [LTV-702V](#) [LTV-702VB](#) [LTV-](#)  
[816S-TA](#) [LTV-825S](#) [TCET2100](#) [TLP290-4\(E\(T](#) [IL215AT](#) [WPPC-A11066AA](#) [WPPC-A11066AD](#) [WPPC-A11084ASS](#) [WPPC-A21068AA](#)  
[WPPC-D11066AA](#) [WPPC-D21068ED](#) [WPPC-D410616EA](#) [WPPC-D410616ED](#) [X4IAC24A](#) [4N26-X001](#) [EL1010\(TA\)-VG](#) [SFH600-2X007](#)  
[TCMT1118](#) [VO206AT](#) [WPPC-D21068EA](#) [WPPC-D11064AD](#) [WPPC-A410616AD](#) [WPPC-A21068AD](#)