



## HIGH DENSITY MOUNTING PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS



### APPROVALS

- UL recognised, File No. E91231 under Package System 'EE'

### 'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead form : -  
- STD  
- G form  
- SMD approved to CECC 00802

### DESCRIPTION

The ISP817 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

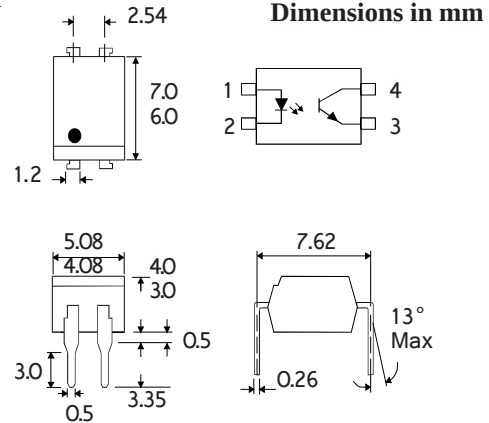
### FEATURES

- 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 Current Transfer Ratio (50% min)
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High BV<sub>CEO</sub> (80Vmin)
- All electrical parameters 100% tested
- Custom electrical selections available

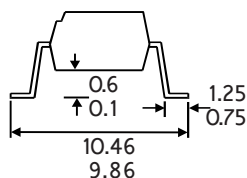
### APPLICATIONS

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

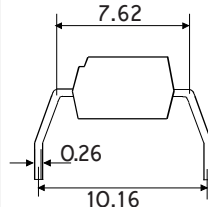
### ISP817X ISP817



### OPTION SM SURFACE MOUNT



### OPTION G



### ISOCOMCOMPONENTSLTD

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 \_\_\_\_\_ -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  $BV_{CEO}$  \_\_\_\_\_ 80V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Collector Current \_\_\_\_\_ 50mA  
Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

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

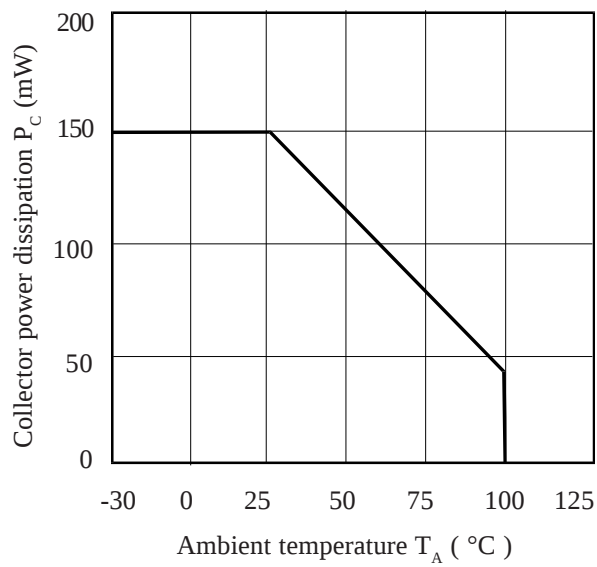
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

| PARAMETER |                                                    | MIN | TYP                | MAX  | UNITS           | TEST CONDITION                       |
|-----------|----------------------------------------------------|-----|--------------------|------|-----------------|--------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                          |     | 1.2                | 1.4  | V               | $I_F = 20\text{mA}$                  |
|           | Reverse Current ( $I_R$ )                          |     |                    | 10   | $\mu\text{A}$   | $V_R = 4\text{V}$                    |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )         | 80  |                    |      | V               | $I_C = 1\text{mA}$                   |
|           | Emitter-collector Breakdown ( $BV_{ECO}$ )         | 6   |                    |      | V               | $I_E = 100\mu\text{A}$               |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )       |     |                    | 100  | nA              | $V_{CE} = 20\text{V}$                |
| Coupled   | Current Transfer Ratio (CTR) (Note 2)              |     |                    |      |                 |                                      |
|           |                                                    | 50  |                    | 600  | %               | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | GB                                                 | 100 |                    | 600  | %               | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | BL                                                 | 200 |                    | 600  | %               | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | A                                                  | 80  |                    | 160  | %               | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | B                                                  | 130 |                    | 260  | %               | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | C                                                  | 200 |                    | 400  | %               | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | D                                                  | 300 |                    | 600  | %               | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ |     |                    | 0.2  | V               | $20\text{mA } I_F, 1\text{mA } I_C$  |
|           | Input to Output Isolation Voltage $V_{ISO}$        |     | 5300               | 7500 | $V_{RMS}$<br>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)      |
|           | Output Rise Time tr                                |     | 4                  | 18   | $\mu\text{s}$   | $V_{CE} = 2\text{V}$ ,               |
|           | Output Fall Time tf                                |     | 3                  | 18   | $\mu\text{s}$   | $I_C = 2\text{mA}, R_L = 100\Omega$  |

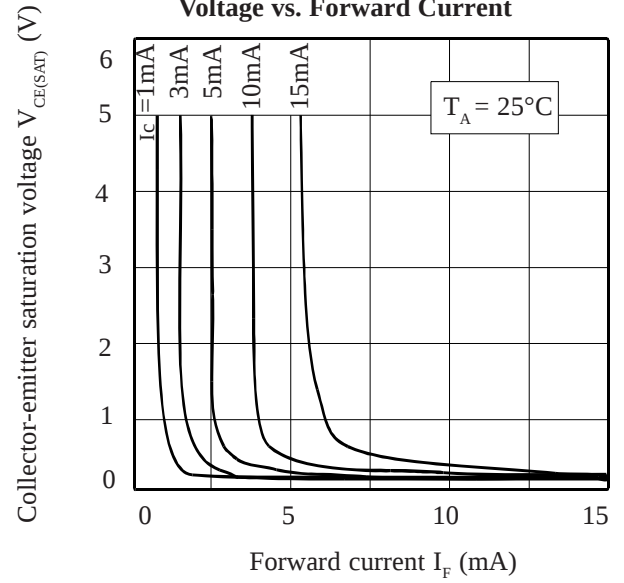
Note 1 Measured with input leads shorted together and output leads shorted together.

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

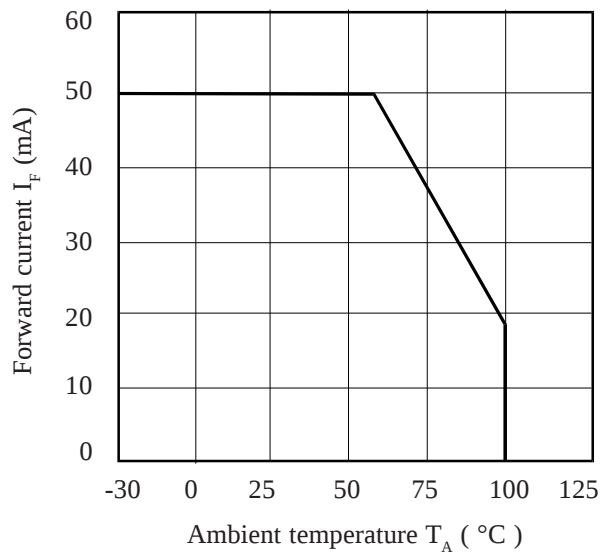
**Collector Power Dissipation vs. Ambient Temperature**



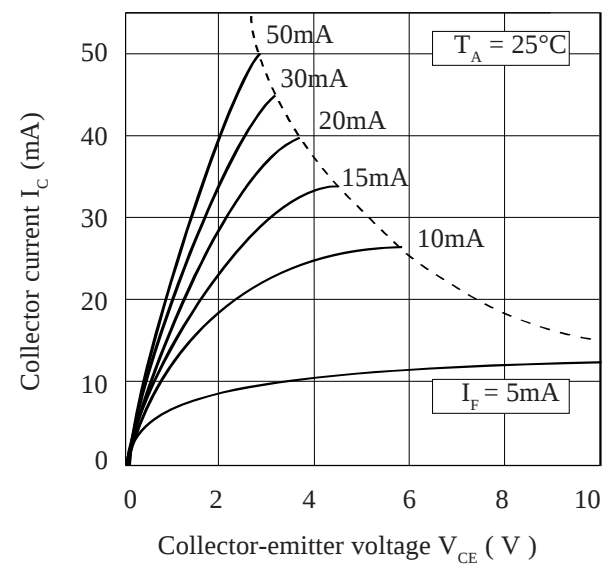
**Collector-emitter Saturation Voltage vs. Forward Current**



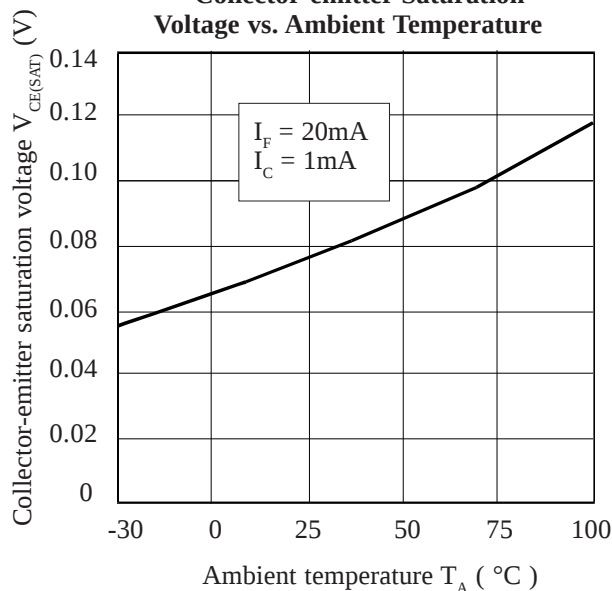
**Forward Current vs. Ambient Temperature**



**Collector Current vs. Collector-emitter Voltage**



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



**Current Transfer Ratio vs. Forward Current**

