

ISP815X, ISP825X, ISP845X  
ISP815, ISP825, ISP845



**HIGH DENSITY MOUNTING  
PHOTODARLINGTON OPTICALLY  
COUPLED ISOLATORS**

**APPROVALS**

- UL recognised, File No. E91231

**'X' SPECIFICATION APPROVALS**

- VDE 0884 approval pending
- 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**

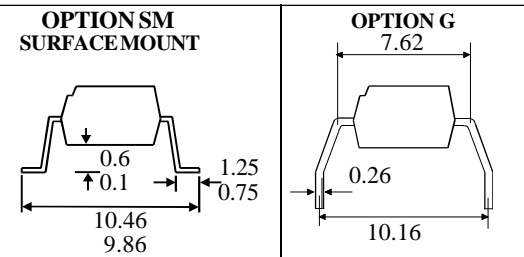
The ISP815, ISP825, ISP845 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photodarlington transistors in space efficient dual in line plastic packages.

**FEATURES**

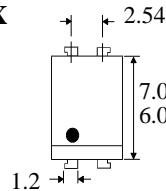
- Options :-  
10mm lead spread - add G after part no.  
Surface mount - add SM after part no.  
Tape&reel - add SMT&R after part no.
- High Current Transfer Ratio (600%min)
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- All electrical parameters 100% tested
- Custom electrical selections available

**APPLICATIONS**

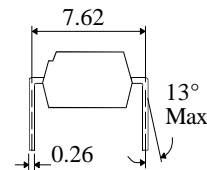
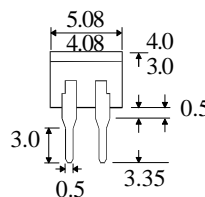
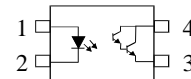
- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances



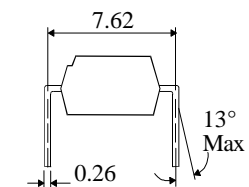
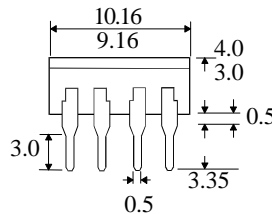
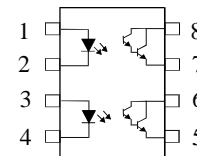
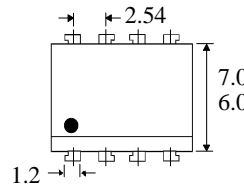
**ISP815X  
ISP815**



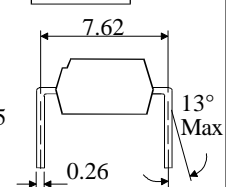
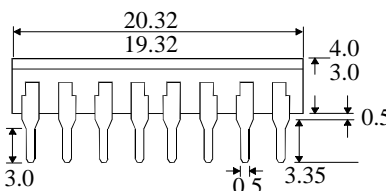
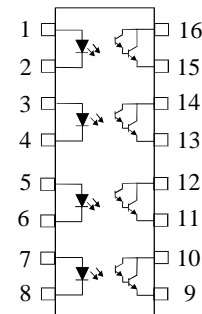
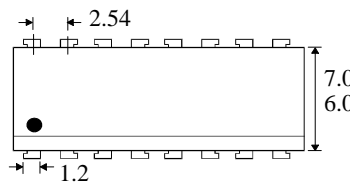
Dimensions in mm



**ISP825X  
ISP825**



**ISP845X  
ISP845**



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**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  $BV_{CEO}$  \_\_\_\_\_ 35V  
 Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
 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 Voltage ( $V_R$ )                                | 6                  |          |            | V                              | $I_R = 10\mu\text{A}$  |
|           | Reverse Current ( $I_R$ )                                |                    |          | 10         | $\mu\text{A}$                  | $V_R = 6\text{V}$  |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )<br>( Note 2 ) | 35                 |          |            | 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)                    | 600                |          | 7500       | %                              | $1\text{mA } I_F, 2\text{V } V_{CE}$                           |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$       |                    |          | 1.0        | V                              | $20\text{mA } I_F, 5\text{mA } I_C$                            |
|           | 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)                                |
|           | Output Rise Time tr<br>Output Fall Time tf               |                    | 60<br>53 | 300<br>250 | $\mu\text{s}$<br>$\mu\text{s}$ | $V_{CE} = 2\text{V}$ ,<br>$I_C = 10\text{mA}, R_L = 100\Omega$ |

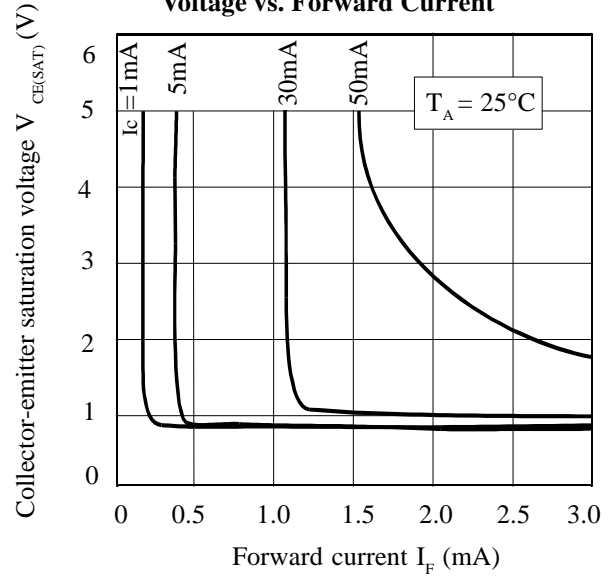
Note 1 Measured with input leads shorted together and output leads shorted together.

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

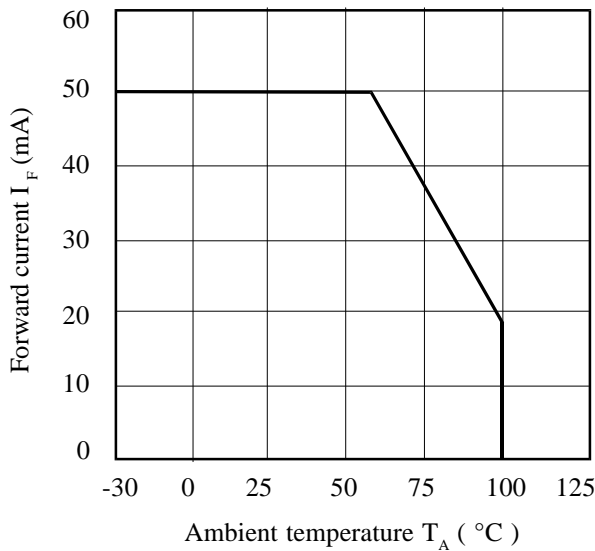
**Collector Power Dissipation vs. Ambient Temperature**



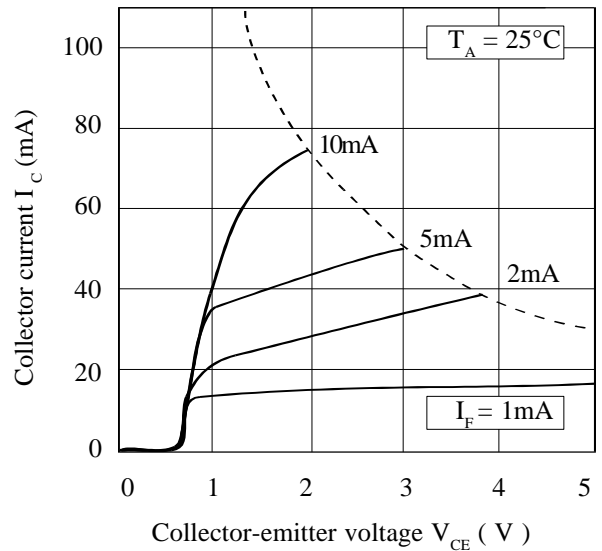
**Collector-emitter Saturation Voltage vs. Forward Current**



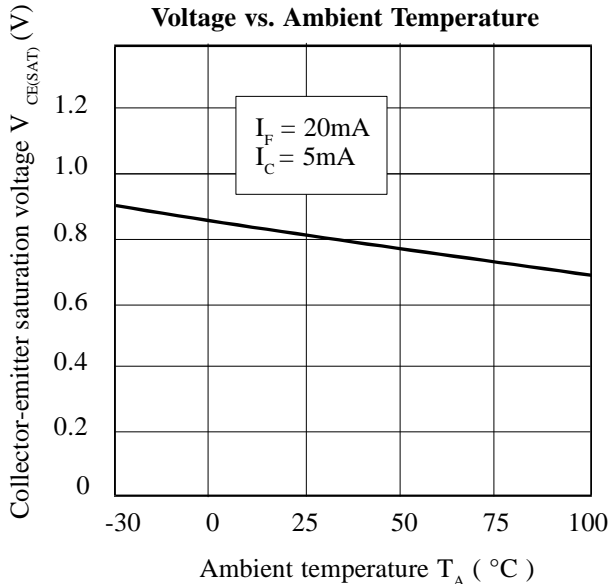
**Forward Current vs. Ambient Temperature**



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



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



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

