

**HIGH DENSITY MOUNTING  
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**

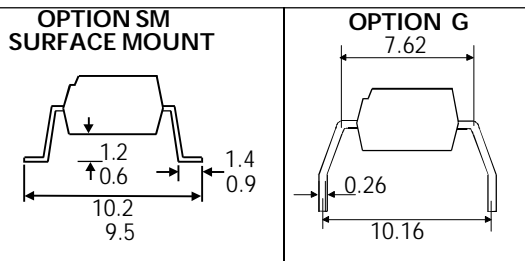
The ISP817, ISP827, ISP847 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

**FEATURES**

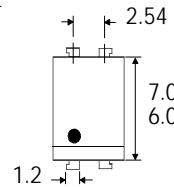
- Options :-  
10mm lead spread - add G after part no.  
Surface mount - add SM after part no.  
Tape&reel - add SMT&R after part no.
- High Current Transfer Ratio (50% min)
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High BV<sub>CEO</sub> ( 35Vmin )
- All electrical parameters 100% tested
- Custom electrical selections available

**APPLICATIONS**

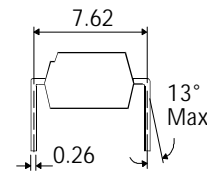
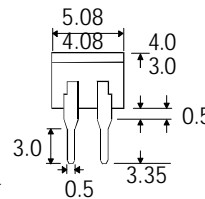
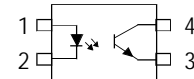
- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances



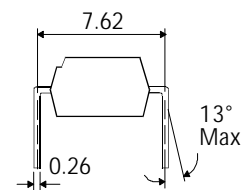
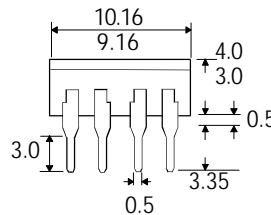
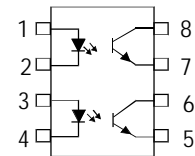
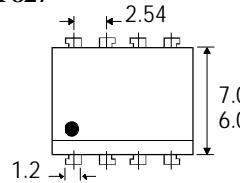
**ISP817X  
ISP817**



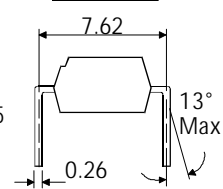
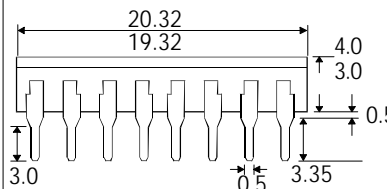
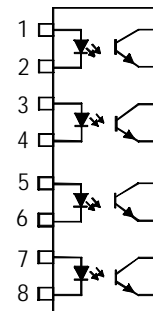
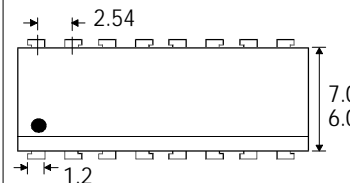
**Dimensions in mm**



**ISP827X  
ISP827**



**ISP847X  
ISP847**



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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)

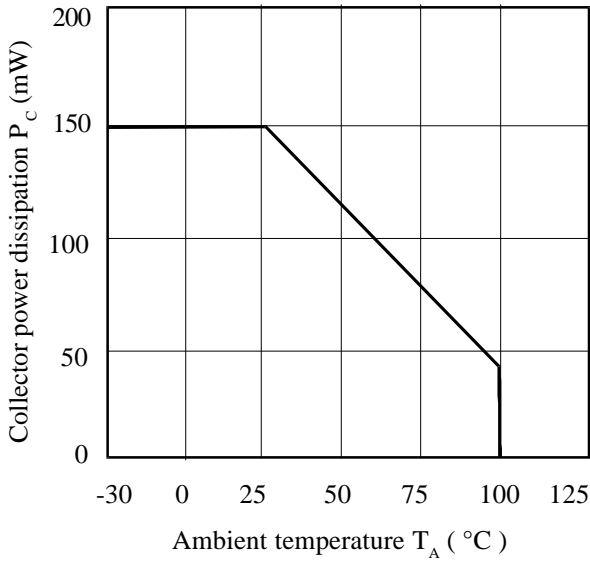
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )		1.2	1.4	V	$I_F = 20\text{mA}$ $I_R = 10\mu\text{A}$ $V_R = 6\text{V}$
	Reverse Voltage ( $V_R$ )	6			V	
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	
Output	Collector-emitter Breakdown ( $BV_{CEO}$ ) ( Note 2 )	35			V	$I_C = 1\text{mA}$ $I_E = 100\mu\text{A}$ $V_{CE} = 20\text{V}$
	Emitter-collector Breakdown ( $BV_{ECO}$ )	6			V	
	Collector-emitter Dark Current ( $I_{CEO}$ )			100	nA	
Coupled	Current Transfer Ratio (CTR) (Note 2)					
	ISP817, ISP827, ISP847	50		600	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	ISP817A,ISP827A,ISP847A	80		160	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	ISP817B,ISP827B,ISP847B	130		260	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	ISP817C,ISP827C,ISP847C	200		400	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	ISP817D,ISP827D,ISP847D	300		600	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	ISP817GB, ISP827GB, ISP847GB	100		600	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	ISP817BL, ISP827BL, ISP847BL	200		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			$V_{RMS}$	See note 1
	7500			$V_{PK}$	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	$\mu\text{s}$	$I_C = 2\text{mA}, R_L = 100\Omega$	

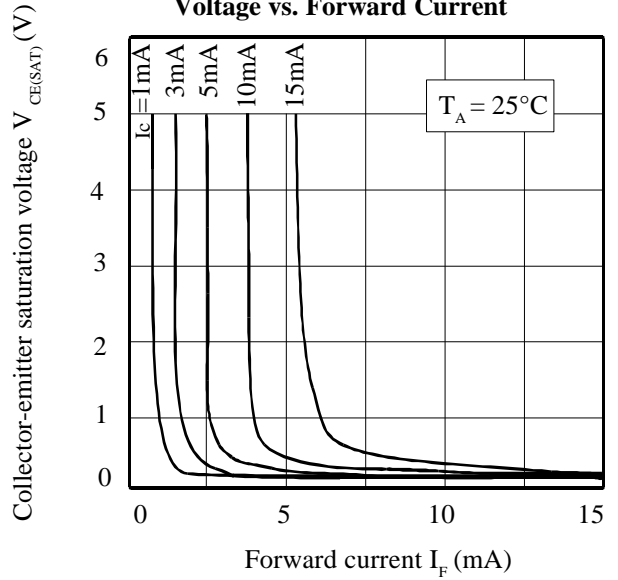
Note 1 Measured with input leads shorted together and output leads shorted together.

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

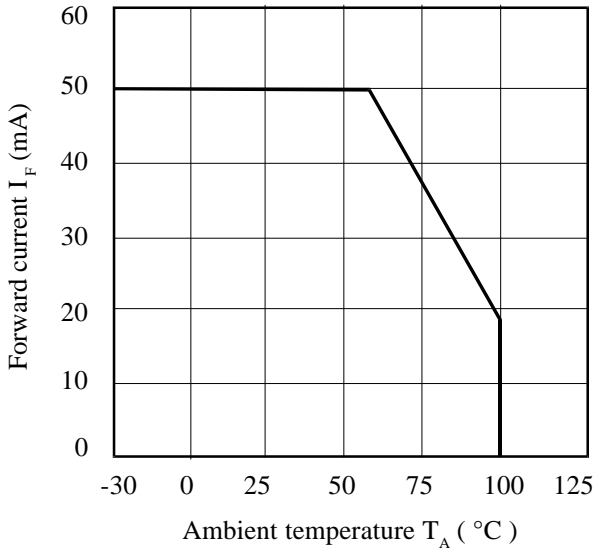
**Collector Power Dissipation vs. Ambient Temperature**



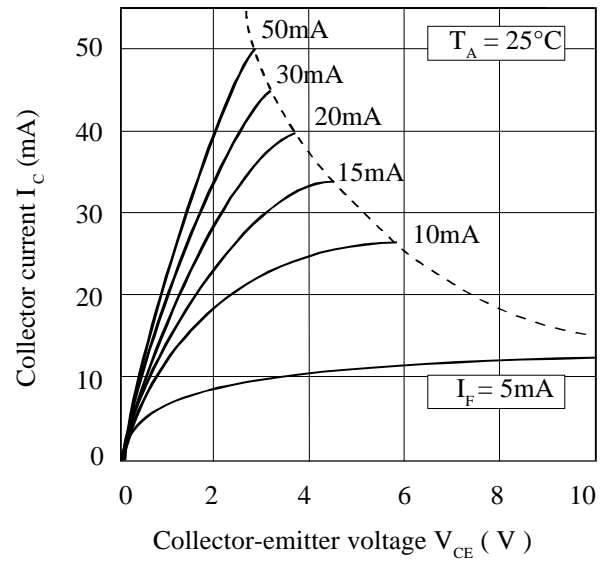
**Collector-emitter Saturation Voltage vs. Forward Current**



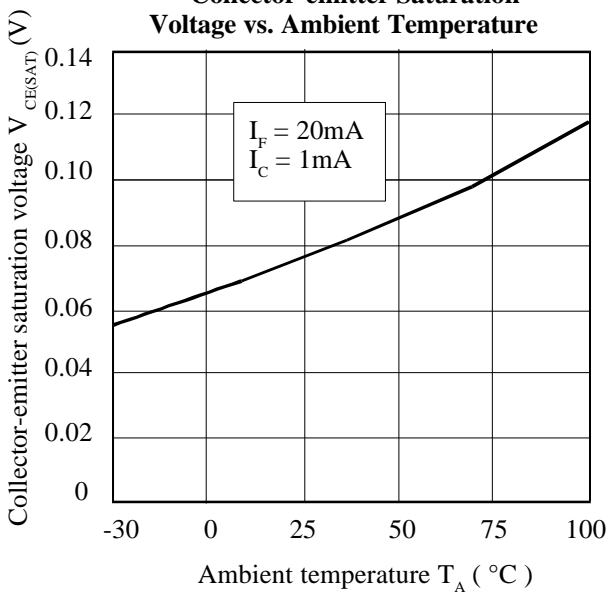
**Forward Current vs. Ambient Temperature**



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



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



**Current Transfer Ratio vs. Forward Current**

