

LOW INPUT CURRENT A.C. INPUT 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 ISP814-3,-2,-1, ISP824-3,-2,-1, ISP844-3,-2,-1 series of optically coupled isolators consist of two infrared light emitting diodes connected in inverse parallel and NPN silicon photo transistors in space efficient dual in line plastic packages.

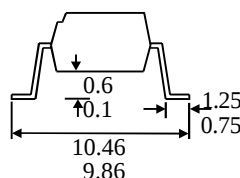
FEATURES

- Options :-
10mm lead spread - add G after part no.
Surface mount - add SM after part no.
Tape&reel - add SMT&R after part no.
- Low input current $\pm 0.25\text{mA } I_F$
- High Isolation Voltage ($5.3\text{kV}_{\text{RMS}}, 7.5\text{kV}_{\text{PK}}$)
- All electrical parameters 100% tested
- Custom electrical selections available

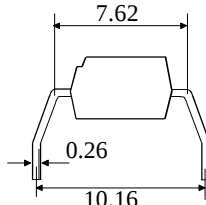
APPLICATIONS

- Industrial systems controllers
- Signal transmission between systems of different potentials and impedances

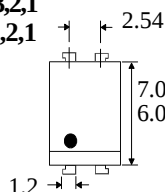
**OPTION SM
SURFACE MOUNT**



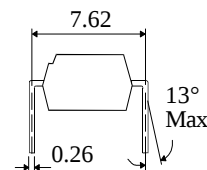
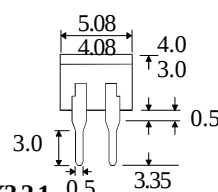
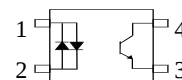
OPTION G



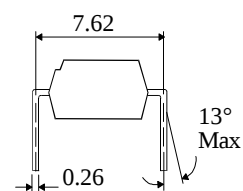
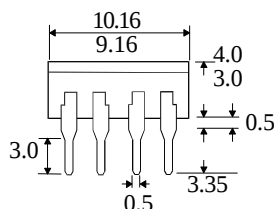
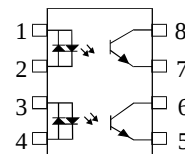
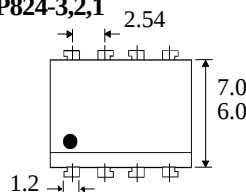
**ISP814X3,2,1
ISP814-3,2,1**



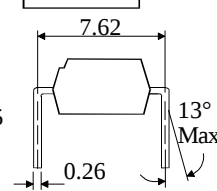
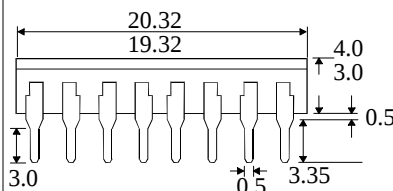
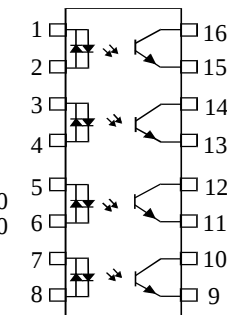
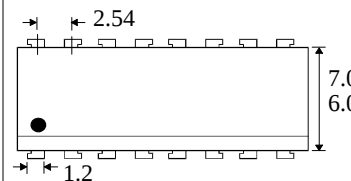
Dimensions in mm



**ISP824X3,2,1
ISP824-3,2,1**



**ISP844X3,2,1
ISP844-3,2,1**



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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
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)

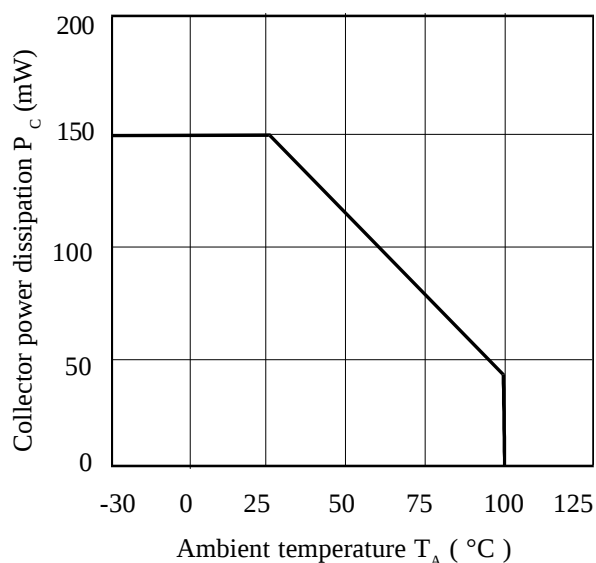
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.4	V	$I_F = \pm 20\text{mA}$
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})			100	nA	$V_{CE} = 20\text{V}$
Coupled	Current Transfer Ratio (CTR) (Note 2) ISP814-3, ISP824-3, ISP844-3	20			%	$\pm 0.25\text{mA } I_F, 0.4\text{V } V_{CE}$
		40			%	$\pm 0.5\text{mA } I_F, 0.4\text{V } V_{CE}$
		80			%	$\pm 1.0\text{mA } I_F, 0.4\text{V } V_{CE}$
	ISP814-2, ISP824-2, ISP844-2	40			%	$\pm 0.5\text{mA } I_F, 0.4\text{V } V_{CE}$
		80			%	$\pm 1.0\text{mA } I_F, 0.4\text{V } V_{CE}$
	ISP814-1, ISP824-1, ISP844-1	80			%	$\pm 1.0\text{mA } I_F, 0.4\text{V } V_{CE}$
	Collector-Emitter Saturation Voltage-3			0.4	V	$\pm 0.25\text{mA } I_F, 0.05\text{mA } I_C$
		-2		0.4	V	$\pm 0.5\text{mA } I_F, 0.2\text{mA } I_C$
		-1		0.4	V	$\pm 1.0\text{mA } I_F, 0.8\text{mA } I_C$
	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)
	Output Rise Time t_r		4	18	μs	$V_{CE} = 2\text{V}$,
	Output Fall Time t_f		3	18	μs	$I_C = 0.05\text{mA}, R_L = 100\Omega$

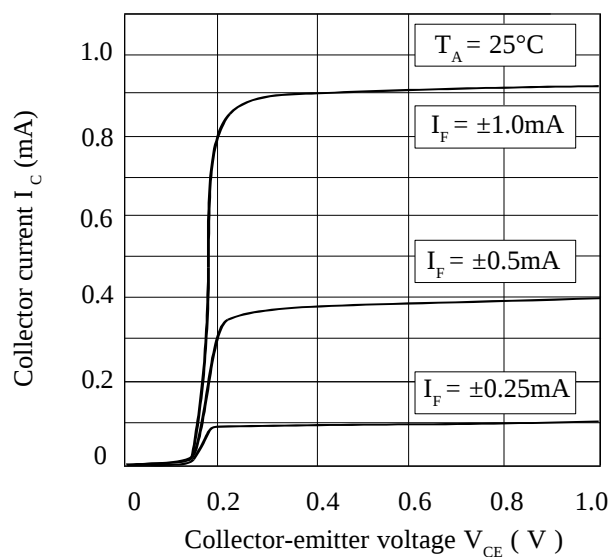
Note 1 Measured with input leads shorted together and output leads shorted together.

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

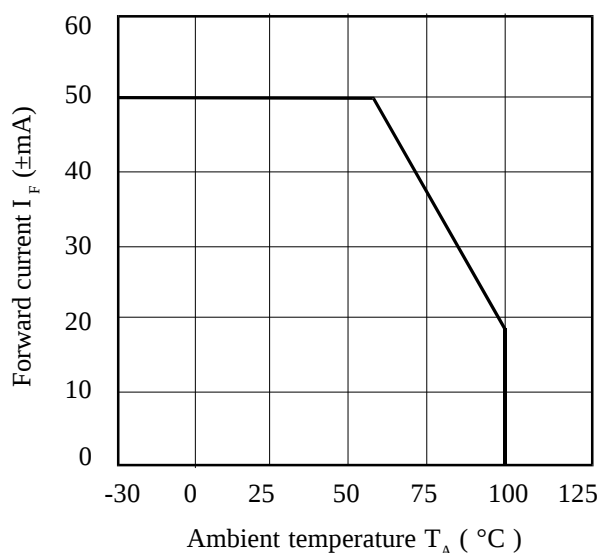
Collector Power Dissipation vs. Ambient Temperature



Collector Current vs. Low Collector-emitter Voltage



Forward Current vs. Ambient Temperature



Relative Current Transfer Ratio vs. Ambient Temperature

