

ISP521-1X, ISP521-2X, ISP521-4X
 ISP521-1, ISP521-2, ISP521-4



**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 ISP521-1, ISP521-2, ISP521-4 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

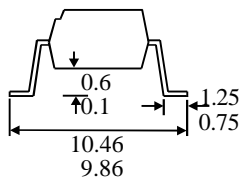
FEATURES

- 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_{RMS}, 7.5kV_{PK})
- High BV_{CEO} (55Vmin)
- All electrical parameters 100% tested
- Custom electrical selections available

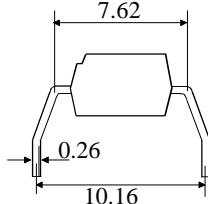
APPLICATIONS

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

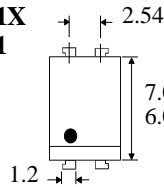
**OPTION SM
 SURFACE MOUNT**



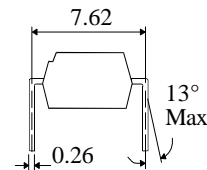
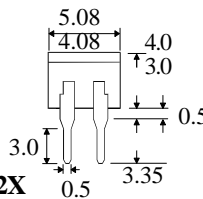
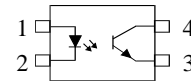
OPTION G



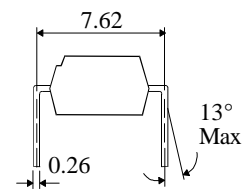
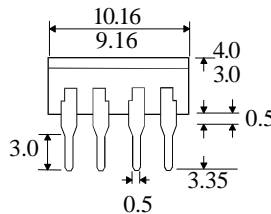
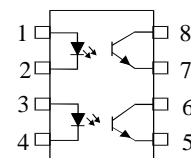
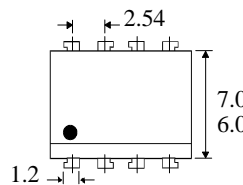
**ISP521-1X
 ISP521-1**



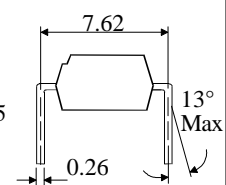
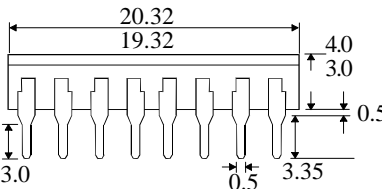
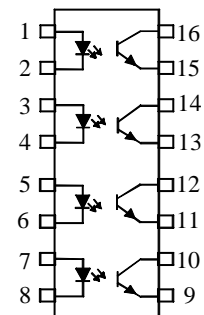
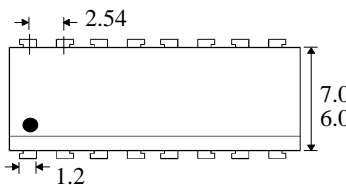
Dimensions in mm



**ISP521-2X
 ISP521-2**



**ISP521-4X
 ISP521-4**



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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 | _____ | 5V |
| Power Dissipation | _____ | 70mW |

OUTPUT TRANSISTOR

| | | |
|--------------------------------------|-------|-------|
| Collector-emitter Voltage BV_{CEO} | _____ | 55V |
| 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) | 1.0 | 1.15 | 1.3 | V | $I_F = 10\text{mA}$ |
| | Reverse Voltage (V_R) | 5 | | | V | $I_R = 10\mu\text{A}$ |
| | Reverse Current (I_R) | | | 10 | μA | $V_R = 5\text{V}$ |
| Output | Collector-emitter Breakdown (BV_{CEO}) (Note 2) | 55 | | | V | $I_C = 0.5\text{mA}$ |
| | Emitter-collector Breakdown (BV_{ECO}) | 6 | | | V | $I_E = 100\mu\text{A}$ |
| | Collector-emitter Dark Current (I_{CEO}) | | | 100 | nA | $V_{CE} = 24\text{V}$ |
| Coupled | Current Transfer Ratio (CTR) (Note 2) | | | | | |
| | ISP521-1, ISP521-2, ISP521-4 | 50 | | 600 | % | $5\text{mA } I_F, 5\text{V } V_{CE}$ |
| | CTR selection available BL | 200 | | 600 | % | |
| | GB | 100 | | 600 | % | |
| | GB | 30 | | | % | $1\text{mA } I_F, 0.4\text{V } V_{CE}$ |
| | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ | | | 0.4 | V | $8\text{mA } I_F, 2.4\text{mA } I_C$ |
| | -GB | | | 0.4 | V | $1\text{mA } I_F, 0.2\text{mA } I_C$ |
| | 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) |
| | Rise Time tr | | 2 | | μs | $V_{CC} = 10\text{V}$, |
| Fall Time tf | | 3 | | μs | $I_C = 2\text{mA}, R_L = 100\Omega$ | |
| Turn-on Time ton | | 3 | | μs | | |
| Turn-off Time toff | | 3 | | μs | | |

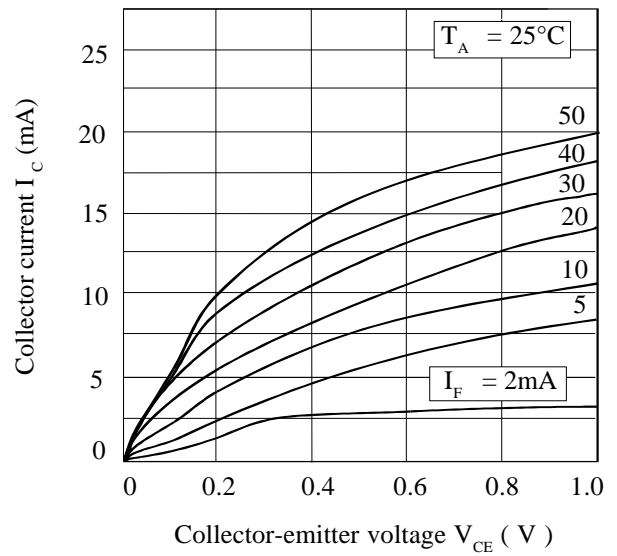
Note 1 Measured with input leads shorted together and output leads shorted together.

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

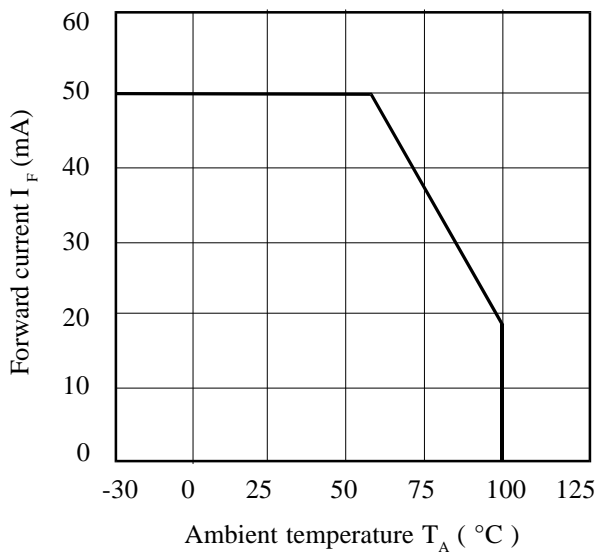
Collector Power Dissipation vs. Ambient Temperature



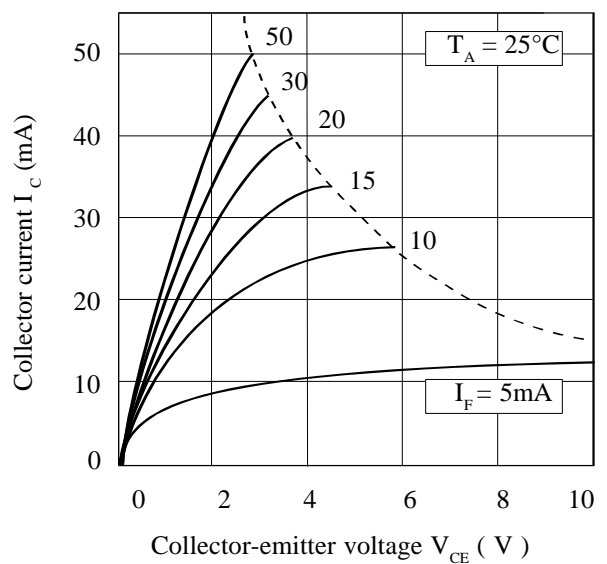
Collector Current vs. Low Collector-emitter Voltage



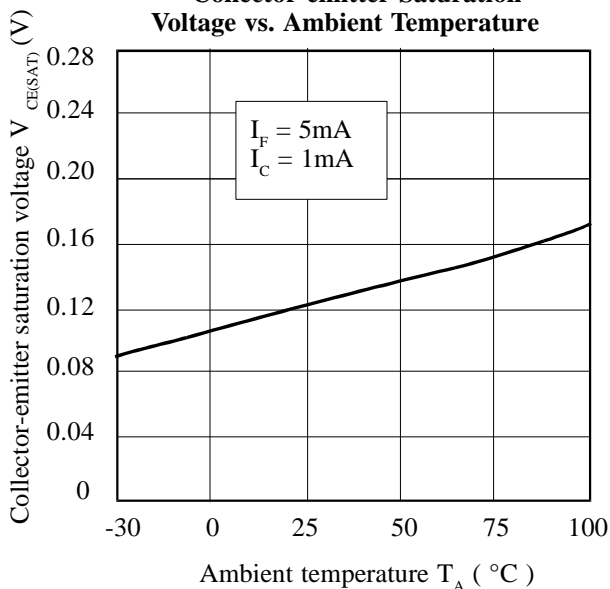
Forward Current vs. Ambient Temperature



Collector Current vs. Collector-emitter Voltage



Collector-emitter Saturation Voltage vs. Ambient Temperature



Current Transfer Ratio vs. Forward Current

