

TLP521GB, TLP521-2GB, TLP521-4GB, TLP521, TLP521-2, TLP521-4  
TLP521XGB, TLP521-2XGB, TLP521-4XGB  
TLP521X, TLP521-2X, TLP521-4X



## 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
  - BSI approved - Certificate No. 8001

### DESCRIPTION

The TLP521, TLP521-2, TLP521-4 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

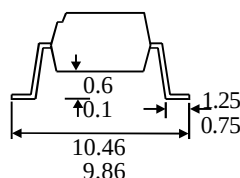
### FEATURES

- 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<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High BV<sub>CEO</sub> ( 55Vmin )
- All electrical parameters 100% tested
- Custom electrical selections available

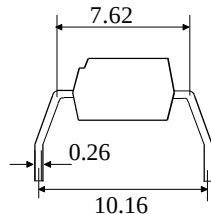
### APPLICATIONS

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

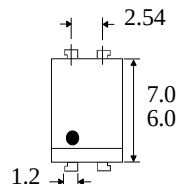
**OPTION SM  
SURFACE MOUNT**



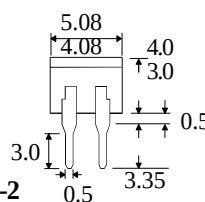
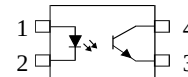
**OPTION G**



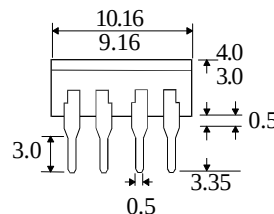
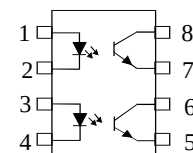
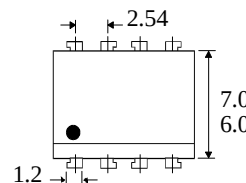
**TLP521**



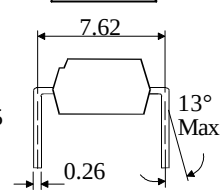
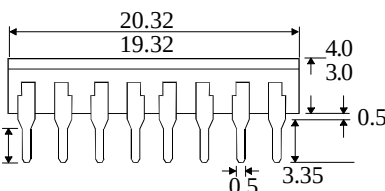
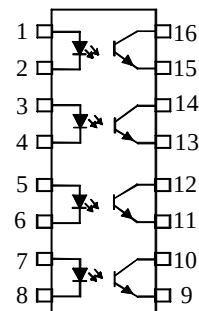
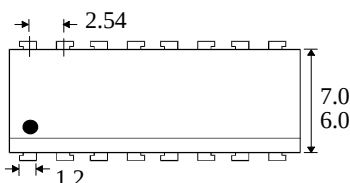
**Dimensions in mm**



**TLP521-2**



**TLP521-4**



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**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  $BV_{CEO}$  \_\_\_\_\_ 55V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

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

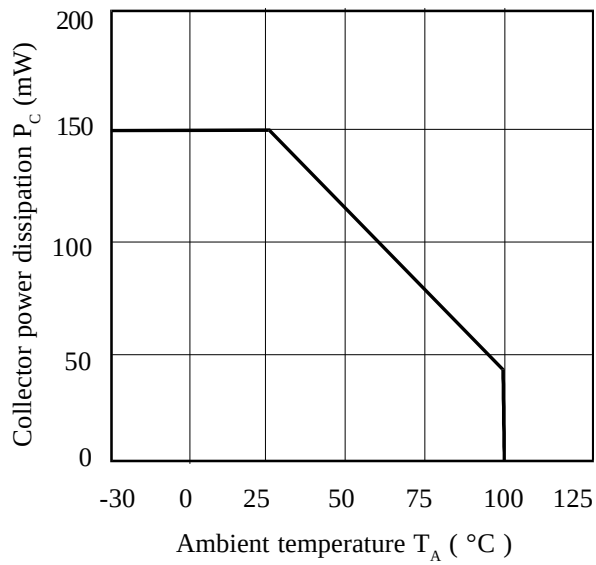
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

| 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 Current ( $I_R$ )                                |                    |      | 10  | $\mu\text{A}$ | $V_R = 4\text{V}$                      |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )<br>( 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            | $V_{CE} = 20\text{V}$                  |
| Coupled   | Current Transfer Ratio (CTR) (Note 2)                    |                    |      |     |               |                                        |
|           | TLP521, TLP521-2, TLP521-4                               | 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 $R_{ISO}$              | $5 \times 10^{10}$ |      |     | $\Omega$      | $V_{IO} = 500\text{V}$ (note 1)        |
|           | Response Time (Rise), tr                                 |                    | 4    |     | $\mu\text{s}$ | $V_{CE} = 2\text{V},$                  |
|           | Response Time (Fall), tf                                 |                    | 3    |     | $\mu\text{s}$ | $I_C = 2\text{mA}, R_L = 100\Omega$    |

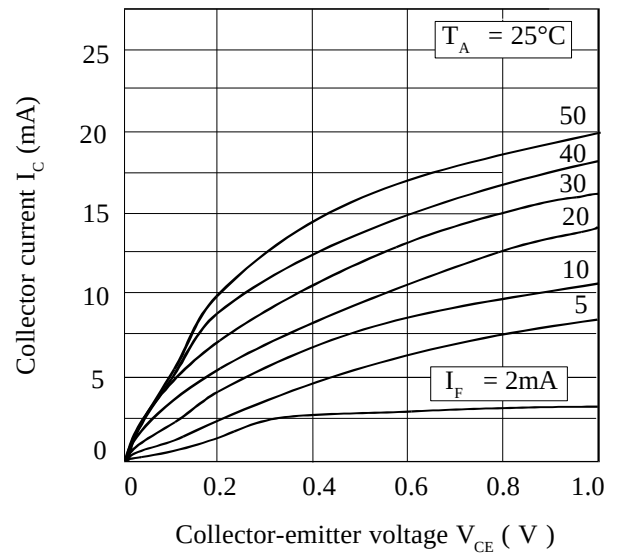
Note 1 Measured with input leads shorted together and output leads shorted together.

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

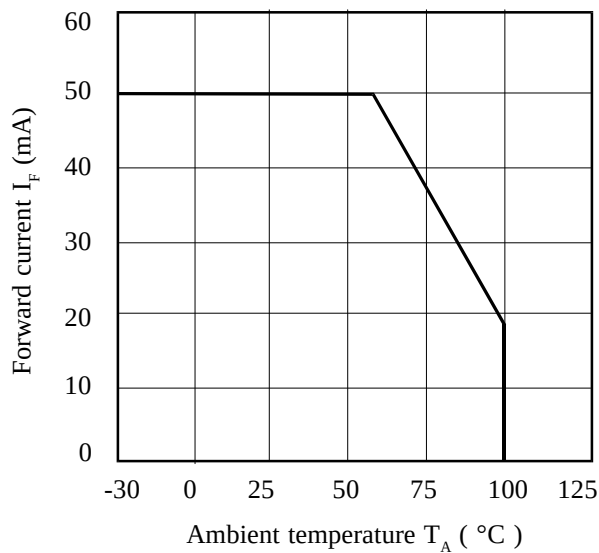
**Collector Power Dissipation vs. Ambient Temperature**



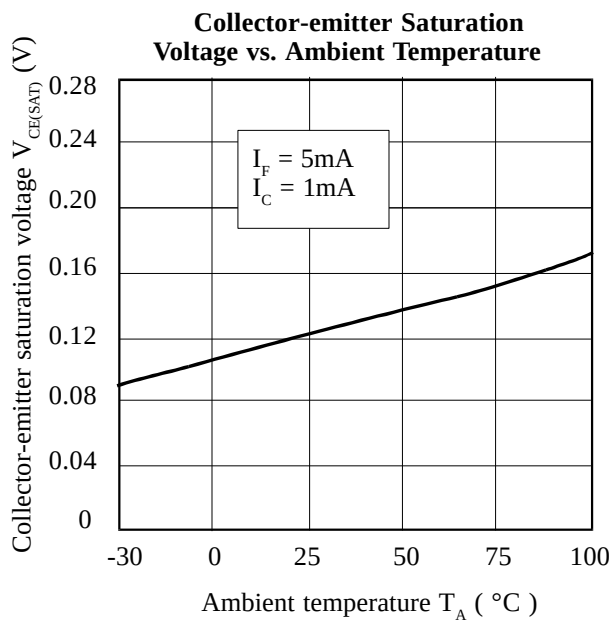
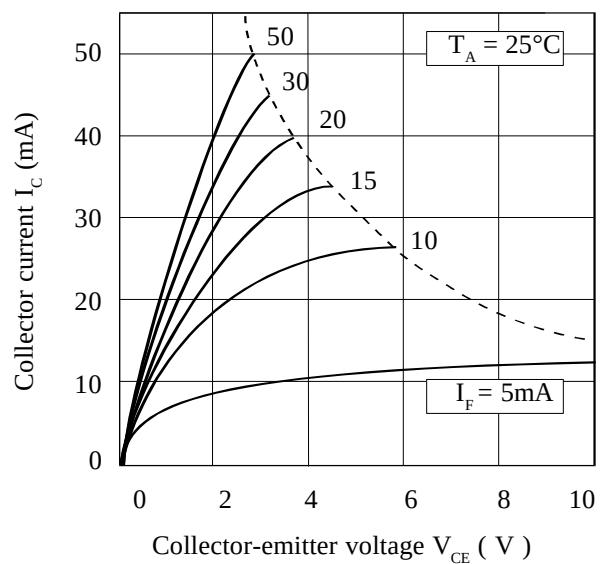
**Collector Current vs. Low Collector-emitter Voltage**



**Forward Current vs. Ambient Temperature**



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



**Current Transfer Ratio vs. Forward Current**

