

TLP572

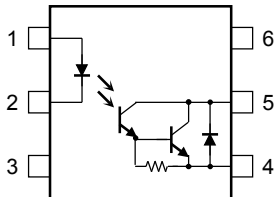
Programmable Controllers
 AC/DC-Input Module
 Solid State Relay

The TOSHIBA TLP572 consists of a Darlington connected photo-transistor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

TLP572 has no-base internal connection for high-EMI environments.

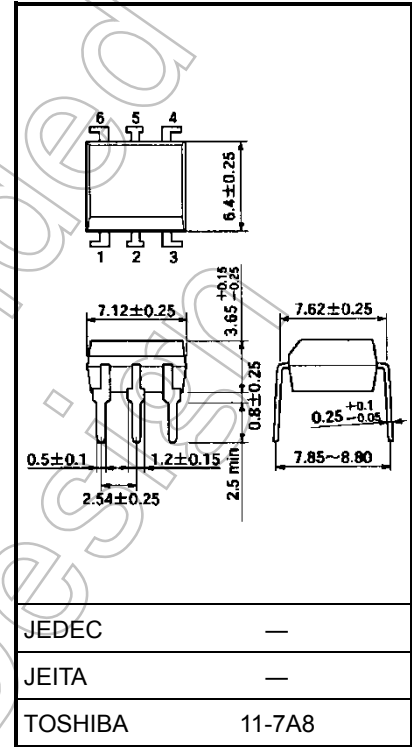
- Collector-emitter voltage: 55 V (min)
- Current transfer ratio: 1000% (min)
- Isolation voltage: 2500 Vrms (min)
- UL recognized: UL1577, file No. E67349

Pin Configurations (top view)



- 1: Anode
- 2: Cathode
- 3: N.C.
- 4: Emitter
- 5: Collector
- 6: N.C.

Unit: mm



Weight: 0.4 g (typ.)

Not Recommended for New Design

Start of commercial production
 1984-03

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | | Symbol | Rating | Unit |
|--|--|---------------------|------------|------------------|
| LED | Forward current | I _F | 50 | mA |
| | Forward current derating (Ta ≥ 53°C) | ΔI _F /°C | -0.7 | mA/°C |
| | Peak forward current (100 μs pulse, 100 pps) | I _{FP} | 1 | A |
| | Reverse voltage | V _R | 5 | V |
| | Diode power dissipation | P _D | 100 | mW |
| | Diode power dissipation derating (Ta ≥ 53°C) | ΔP _D /°C | -1.4 | mW/°C |
| | Junction temperature | T _j | 125 | °C |
| Detector | Collector-emitter voltage | V _{CEO} | 55 | V |
| | Emitter-collector voltage | V _{ECO} | 0.3 | V |
| | Collector current | I _C | 150/-10 | mA |
| | Power dissipation | P _C | 150 | mW |
| | Power dissipation derating (Ta ≥ 25°C) | ΔP _C /°C | -1.5 | mW/°C |
| | Junction temperature | T _j | 125 | °C |
| Storage temperature range | | T _{stg} | -55 to 125 | °C |
| Operating temperature range | | T _{opr} | -30 to 85 | °C |
| Lead soldering temperature (10 s) | | T _{sol} | 260 | °C |
| Total package power dissipation | | P _T | 200 | mW |
| Total package power dissipation derating (Ta ≥ 25°C) | | ΔP _T /°C | -2.6 | mW/°C |
| Isolation voltage (AC, 60 s, R.H. ≤ 60%) (Note 1) | | BV _S | 2500 | V _{rms} |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Device considered a two terminal device: Pins 1, 2 and 3 shorted together and pins 4, 5 and 6 shorted together.

Recommended Operating Conditions

| Characteristics | Symbol | Min | Typ. | Max | Unit |
|-----------------------|------------------|-----|------|-----|------|
| Supply voltage | V _{CC} | — | 12 | 24 | V |
| Forward current | I _F | — | — | 25 | mA |
| Collector current | I _C | — | — | 40 | mA |
| Operating temperature | T _{opr} | -30 | — | 85 | °C |

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|------------------------------------|-------------------------------------|----------------------|--|-----|------|-----|------|
| LED | Forward voltage | V _F | I _F = 10 mA | 1.0 | 1.15 | 1.3 | V |
| | Reverse current | I _R | V _R = 5 V | — | — | 10 | μA |
| | Capacitance | C _T | V = 0 V, f = 1 MHz | — | 30 | — | pF |
| Detector | Collector-emitter breakdown voltage | V _{(BR)CEO} | I _C = 1 mA | 55 | — | — | V |
| | Emitter-collector breakdown voltage | V _{(BR)ECO} | I _E = 0.1 mA | 0.3 | — | — | V |
| | Collector dark current | I _{CEO} | I _F = 0 mA, V _{CE} = 24 V | — | 10 | 200 | nA |
| | | | I _F = 0 mA, V _{CE} = 24 V, Ta = 85°C | — | 0.5 | 10 | μA |
| Capacitance (collector to emitter) | C _{CE} | V = 0 V, f = 1 MHz | — | 10 | — | pF | |

Coupled Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------------------------|---|------|------|-----|------|
| Current transfer ratio | I _C /I _F | I _F = 1 mA, V _{CE} = 1.2 V | 1000 | 2000 | — | % |
| Collector-emitter saturation voltage | V _{CE(sat)} | I _C = 100 mA, I _F = 10 mA | 0.3 | — | 1.2 | V |

Isolation Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|-------------------------------|-----------------|------------------------------------|----------------------|------------------|-----|------------------|
| Capacitance (input to output) | C _S | V _S = 0 V, f = 1 MHz | — | 0.8 | — | pF |
| Isolation resistance | R _S | V _S = 500 V, R.H. ≤ 60% | 5 × 10 ¹⁰ | 10 ¹⁴ | — | Ω |
| AC isolation voltage | BV _S | AC, 60 s | 2500 | — | — | V _{rms} |

Switching Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|-----------------|------------------|---|-----|------|-----|------|
| Turn-on time | t _{ON} | R _L = 180 Ω (Figure 1) V _{CC} = 10 V, I _F = 10 mA | — | 3 | — | μs |
| Turn-off time | t _{OFF} | | — | 30 | — | μs |

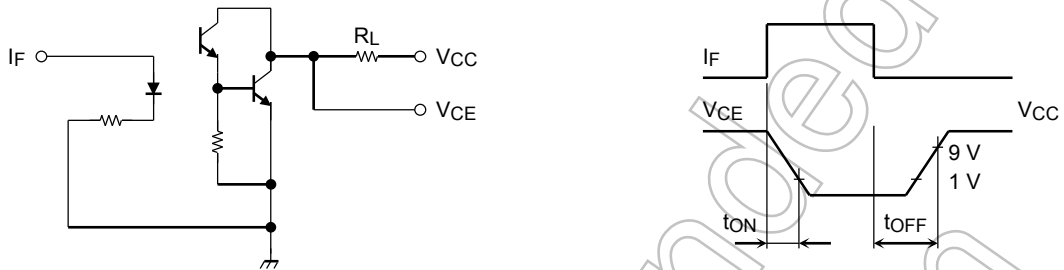
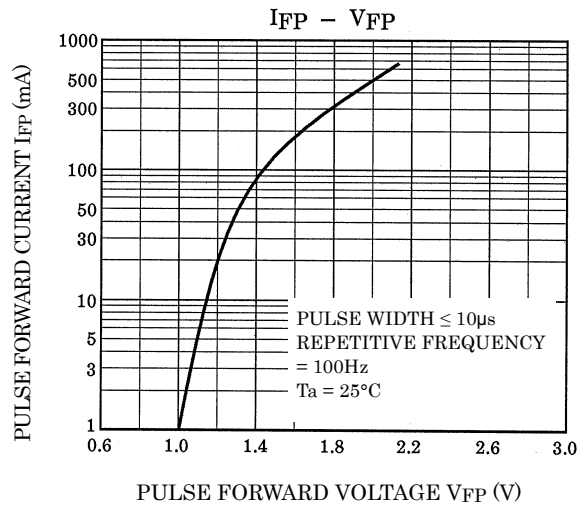
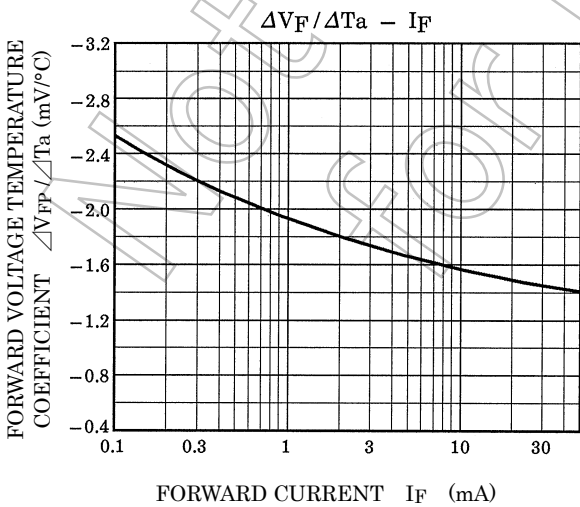
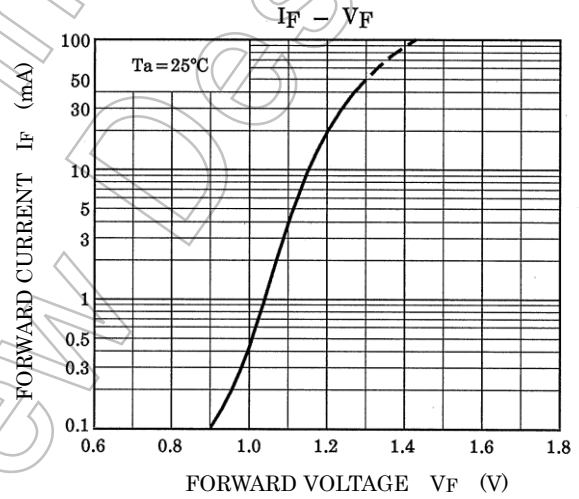
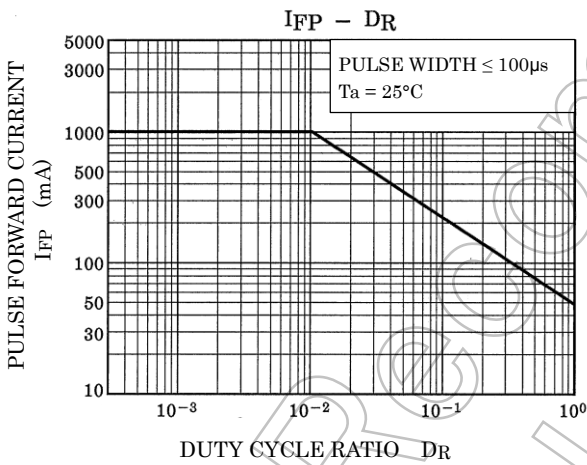
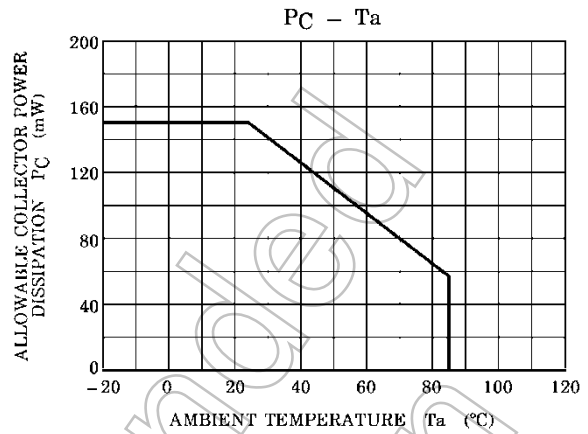
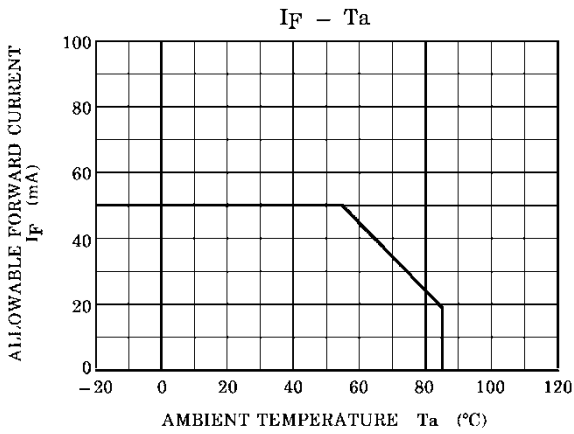
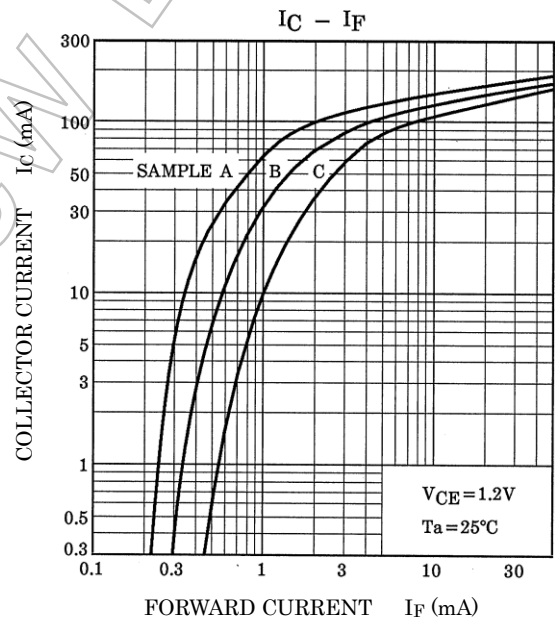
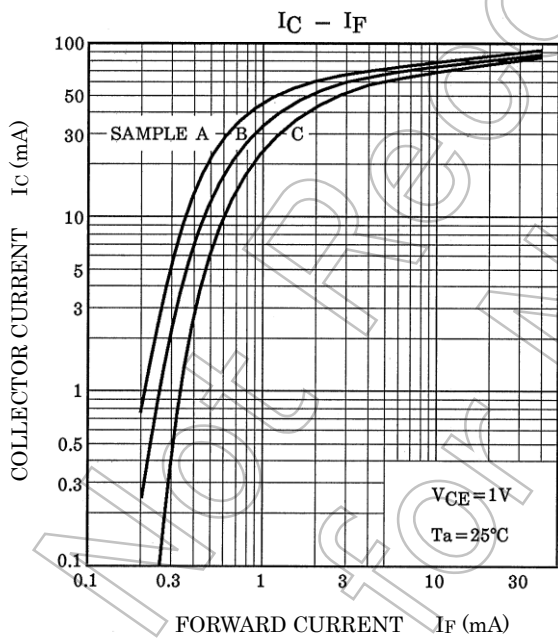
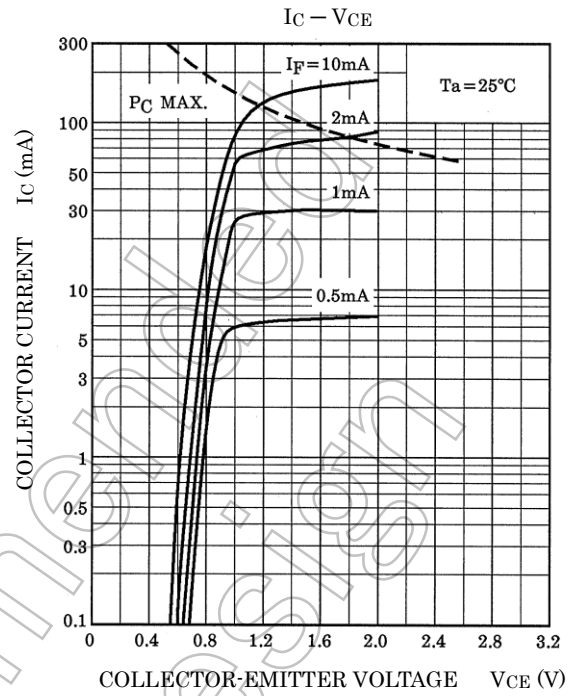
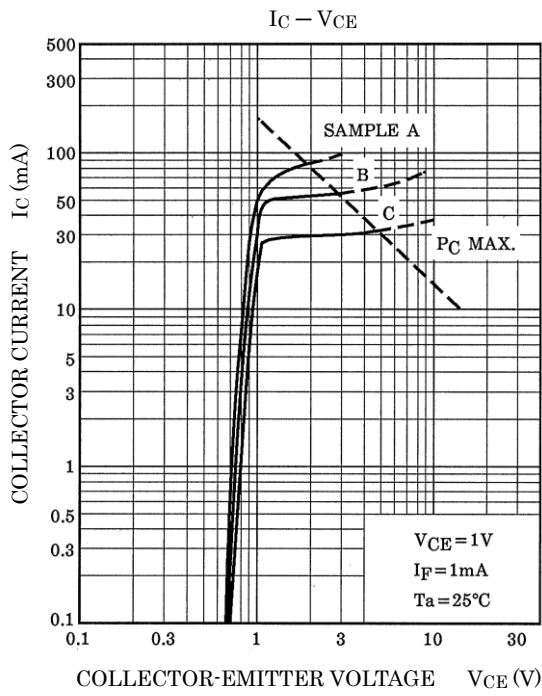
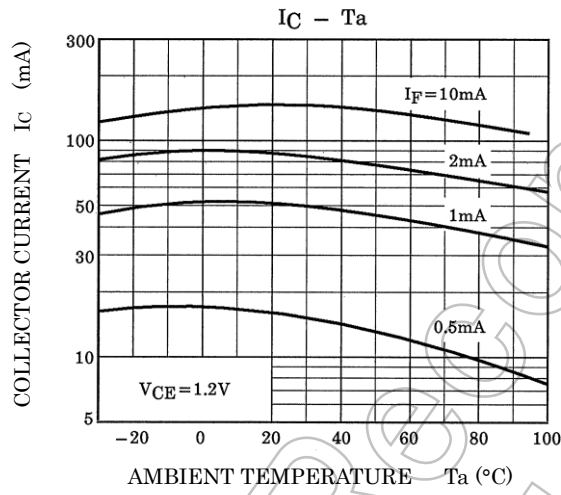
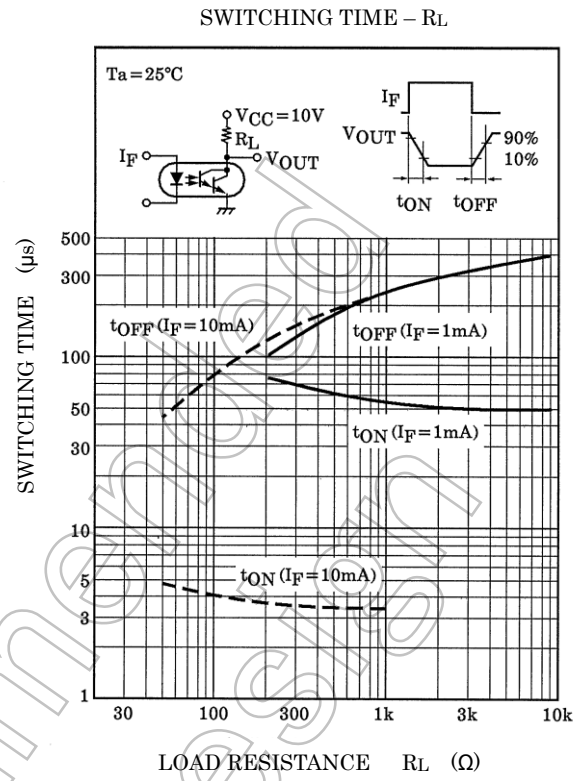
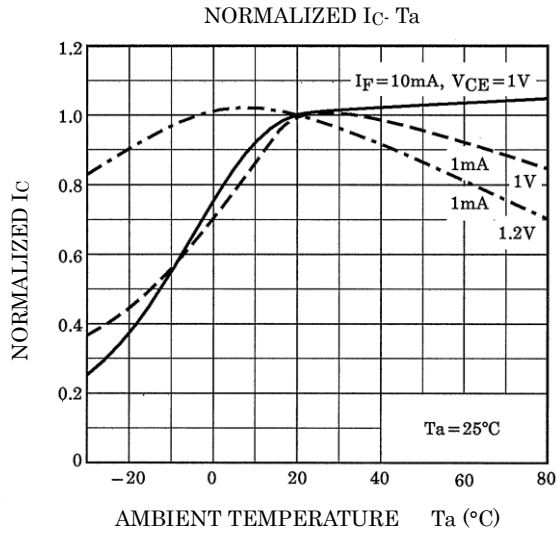


Figure 1 Switching Time Test Circuit

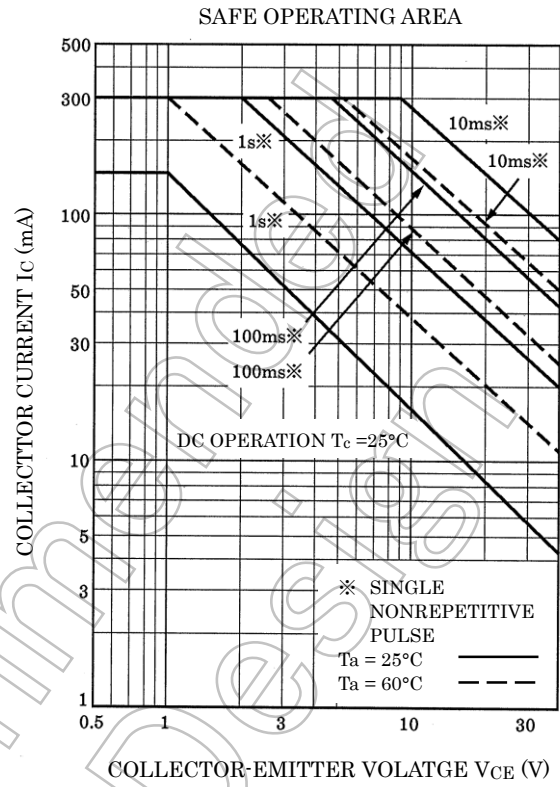
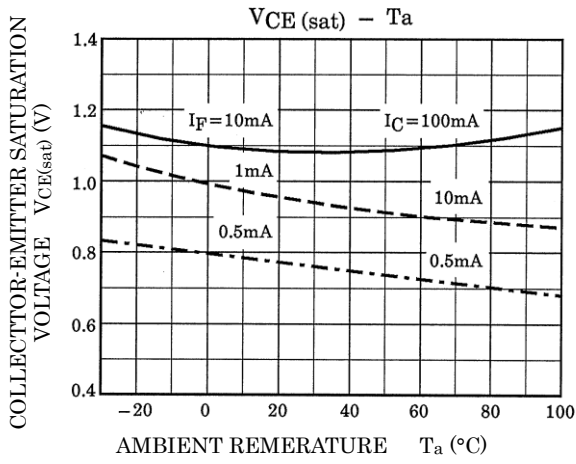
Not Recommended for New Design







Not for New Design



Not Recommended for New Design

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