

TLP572

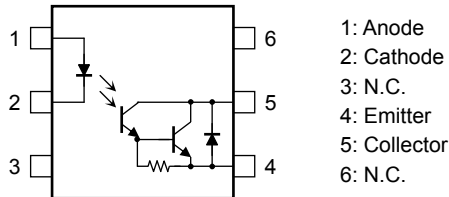
Programmable Controllers
 AC/DC-Input Module
 Solid State Relay

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.

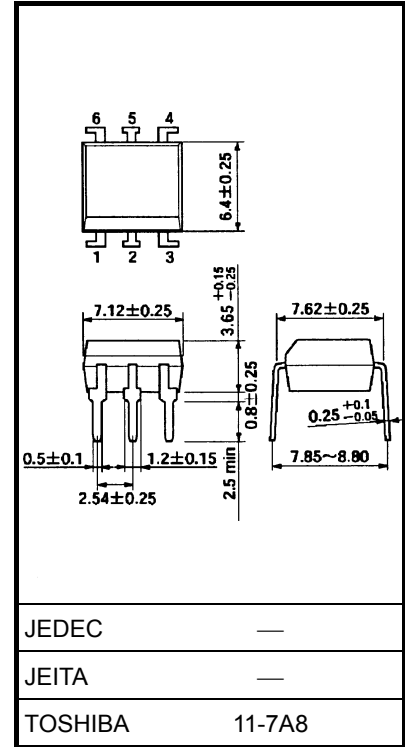
TLP572 is no-base internal connection for high-EMI environments.

- 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)



Unit: mm



Weight: 0.4 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
LED	Forward current	I_F	50	mA
	Forward current derating (Ta ≥ 53°C)	$I_F/^\circ\text{C}$	-0.7	mA/°C
	Peak forward current (100 μs pulse, 100 pps)	I_{FP}	1	A
	Reverse voltage	V_R	5	V
	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)	$P_C/^\circ\text{C}$	-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)		$P_D/^\circ\text{C}$	-2.6	mW/°C
Isolation voltage (AC, 1 min., R.H. ≤ 60%) (Note)		BV_S	2500	Vrms

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: 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.

Individual Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
LED	Forward voltage	V_F	$I_F = 10 \text{ mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5 \text{ V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
Detector	Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1 \text{ mA}$	55	—	—	V
	Emitter-collector breakdown voltage	$V_{(BR)ECO}$	$I_E = 0.1 \text{ mA}$	0.3	—	—	V
	Collector dark current	I_{CEO}	$V_{CE} = 24 \text{ V}$	—	10	200	nA
			$V_{CE} = 24 \text{ V}, T_a = 85^\circ\text{C}$	—	0.5	10	μA
Capacitance (collector to emitter)	C_{CE}	$V = 0, f = 1 \text{ MHz}$	—	10	—	pF	

Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Current transfer ratio	I_C/I_F	$I_F = 1 \text{ mA}, V_{CE} = 1.2 \text{ V}$	1000	2000	—	%
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 100 \text{ mA}, I_F = 10 \text{ mA}$	0.3	—	1.2	V

Isolation Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance (input to output)	C_S	$V_S = 0, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
AC isolation voltage	BV_S	AC, 1 minute	2500	—	—	Vrms

Switching Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Rise time	t_r	$R_L = 100 \Omega$ $V_{CC} = 10 V, I_C = 10 mA$	—	—	—	μs
Fall time	t_f		—	—	—	μs
Turn-on time	t_{on}		—	—	—	μs
Turn-off time	t_{off}		—	—	—	μs
Turn-on time	t_{ON}	$R_L = 180 \Omega$ (Figure 1) $V_{CC} = 10 V, I_F = 10 mA$	—	3	—	μs
Storage time	t_s		—	—	—	μs
Turn-off time	t_{OFF}		—	30	—	μs

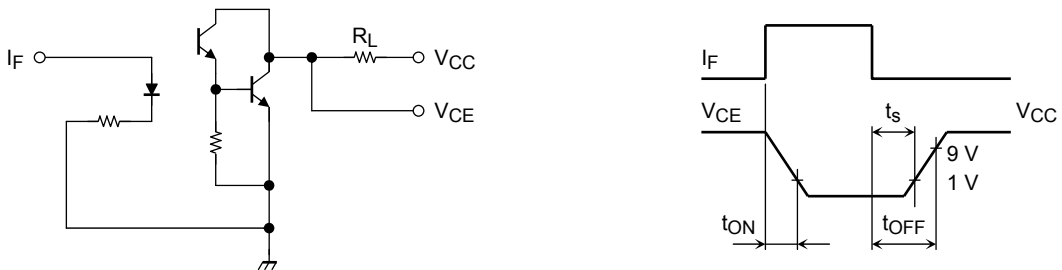
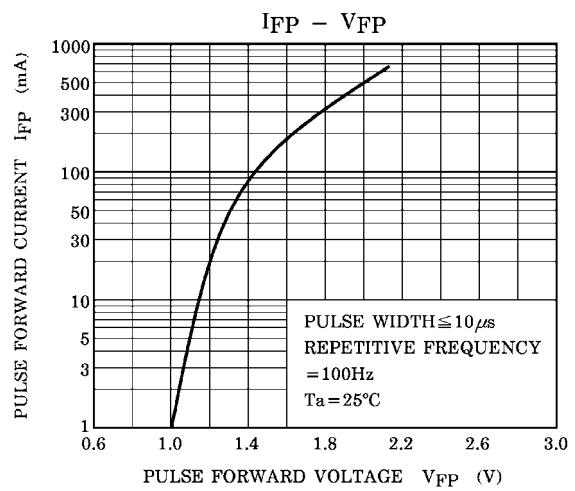
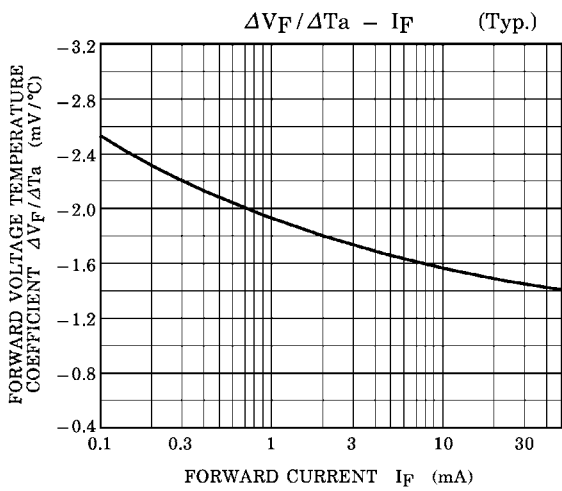
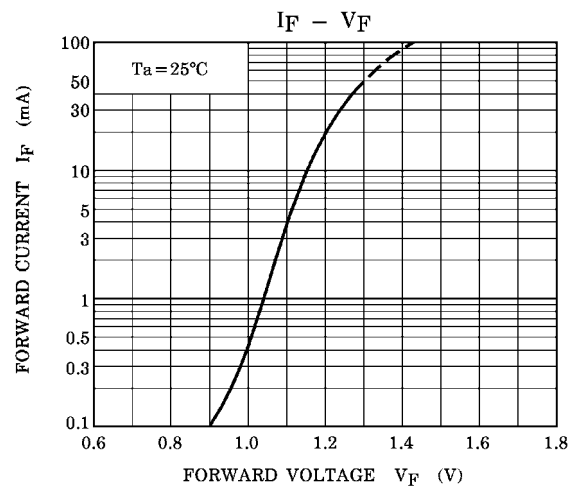
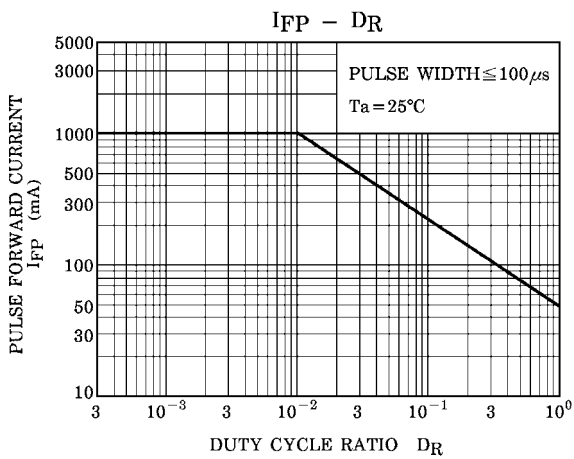
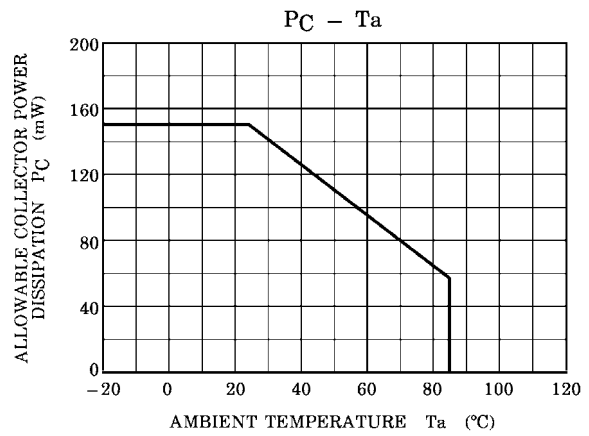
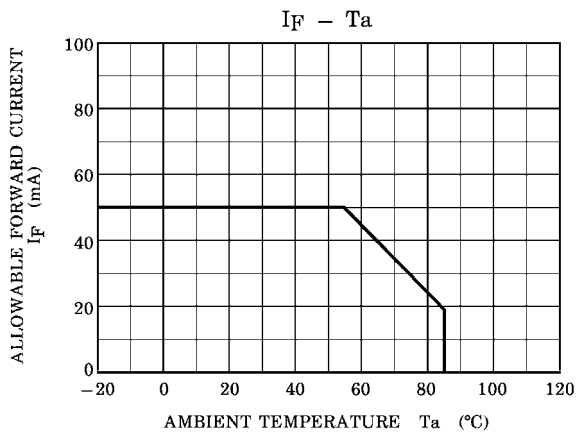
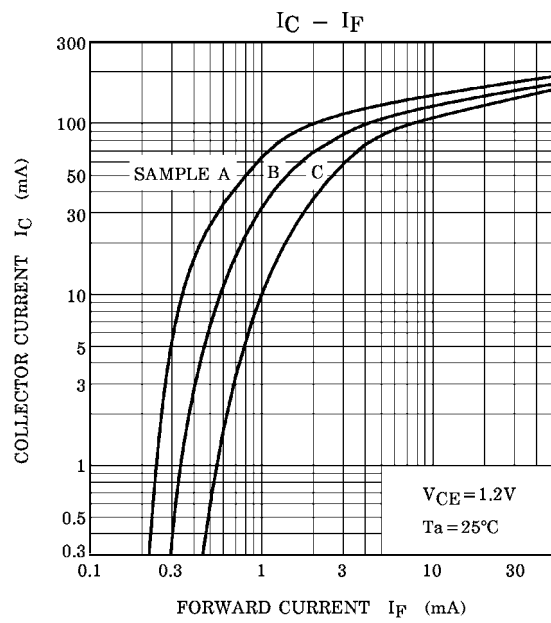
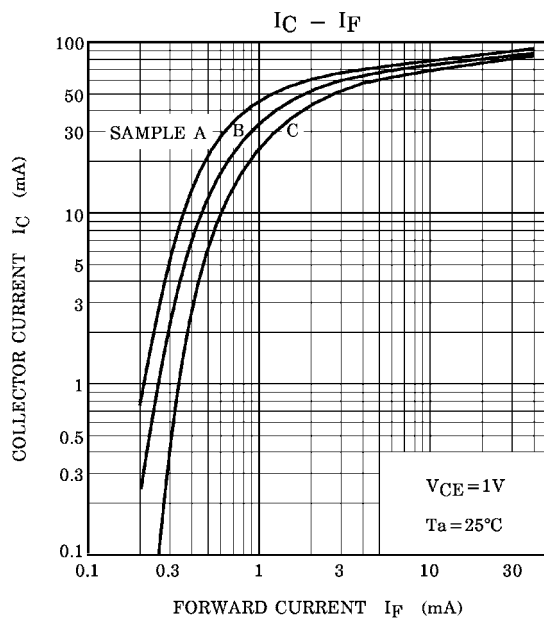
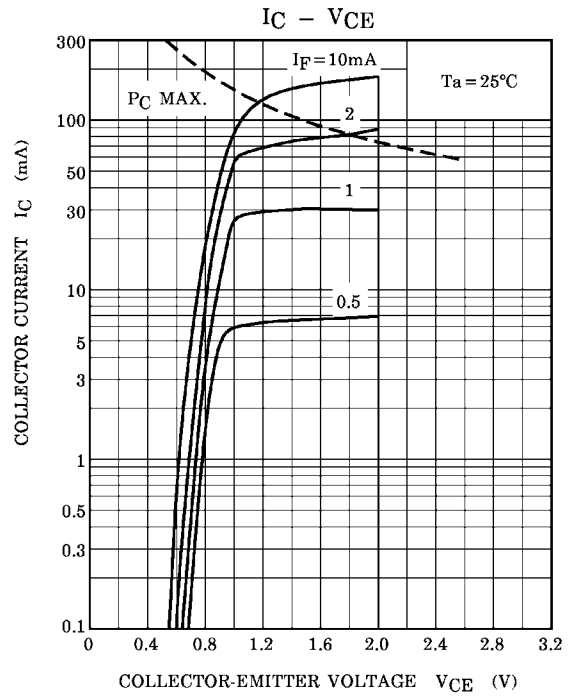
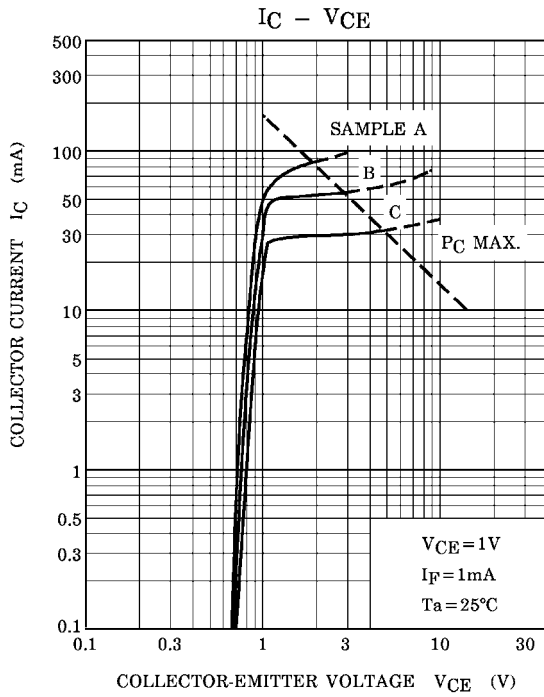
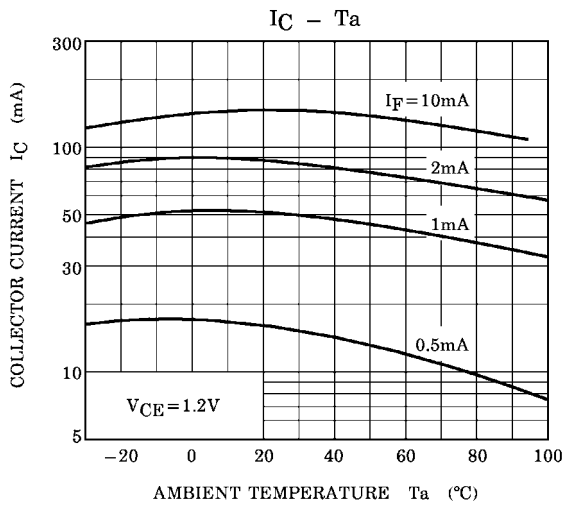
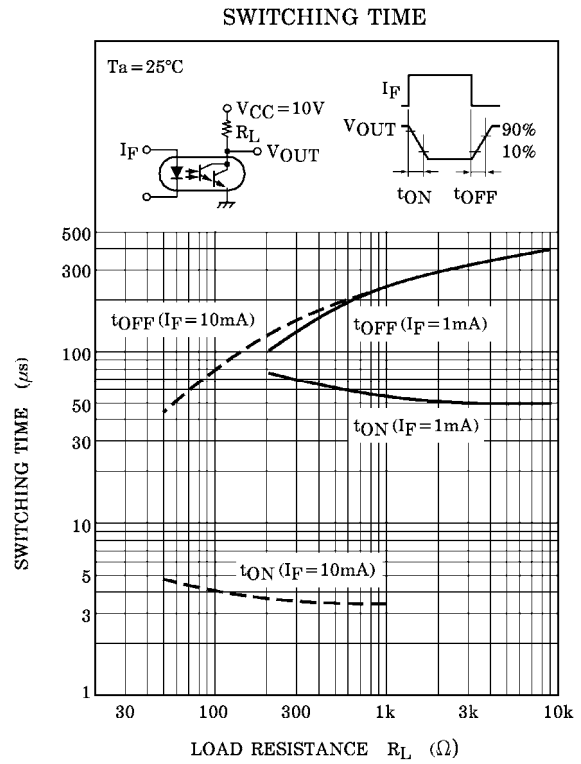
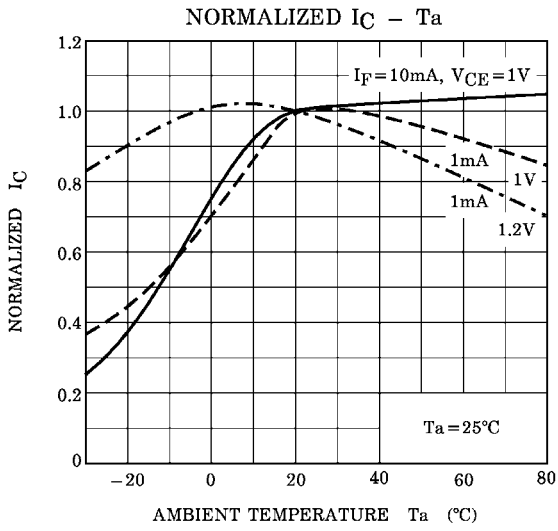
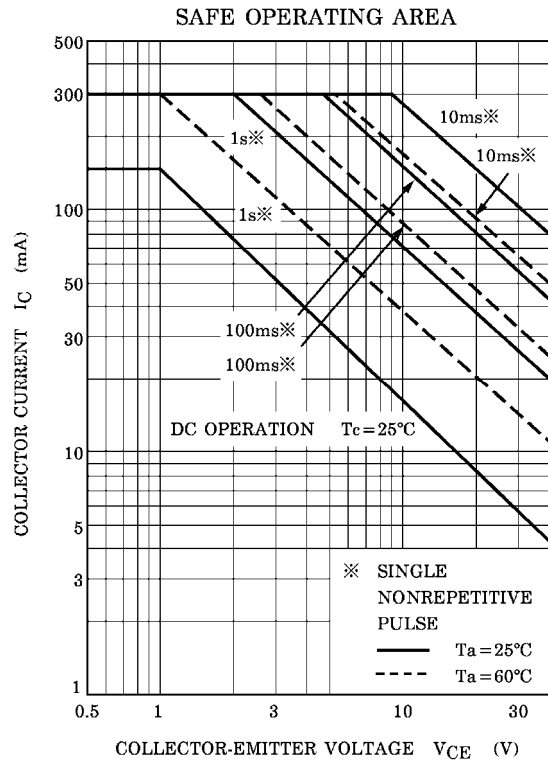
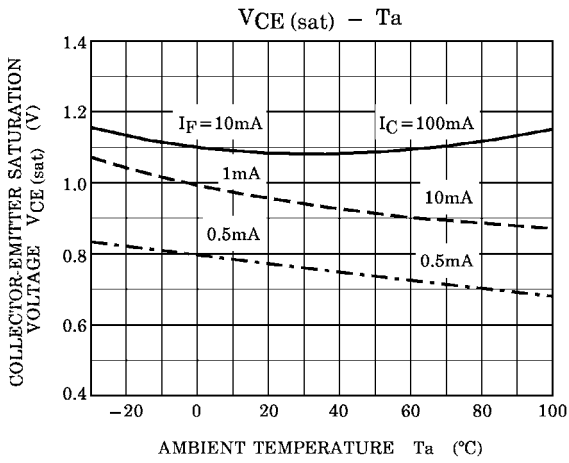


Figure 1 Switching Time Test Circuit









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