

TOSHIBA Photocoupler GaAs Ired & Photo-Transistor

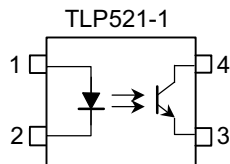
# TLP521-1, TLP521-2, TLP521-4

Programmable Controllers  
 AC/DC-Input Module  
 Solid State Relay

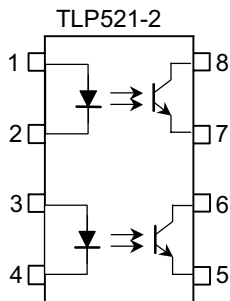
The TOSHIBA TLP521-1, -2 and -4 consist of a photo-transistor optically coupled to a gallium arsenide infrared emitting diode. The TLP521-2 offers two isolated channels in an eight lead plastic DIP package, while the TLP521-4 provides four isolated channels in a sixteen plastic DIP package.

- Collector-emitter voltage: 55 V (min)
- Current transfer ratio: 50% (min)  
 Rank GB: 100% (min)
- Isolation voltage: 2500 Vrms (min)
- UL recognized  
 made in Japan: UL1577, file No. E67349  
 made in Thailand: UL1577, file No. E152349

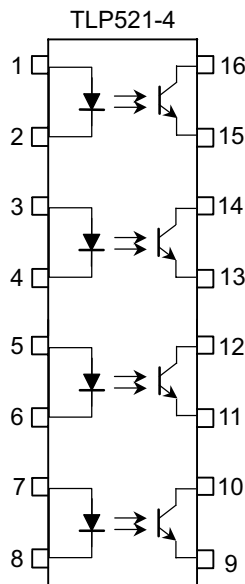
## Pin Configurations (top view)



1 : Anode  
 2 : Cathode  
 3 : Emitter  
 4 : Collector

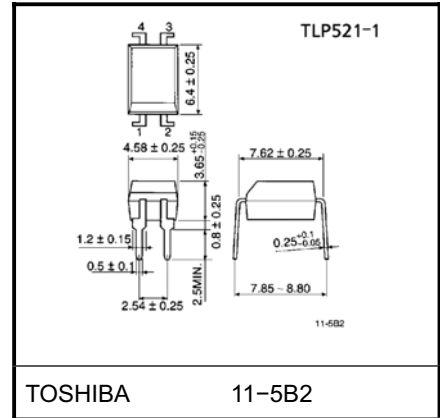


1, 3 : Anode  
 2, 4 : Cathode  
 5, 7 : Emitter  
 6, 8 : Collector

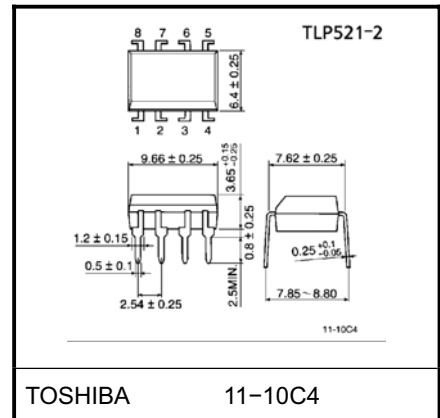


1, 3, 5, 7 : Anode  
 2, 4, 6, 8 : Cathode  
 9, 11, 13, 15 : Emitter  
 10, 12, 14, 16 : Collector

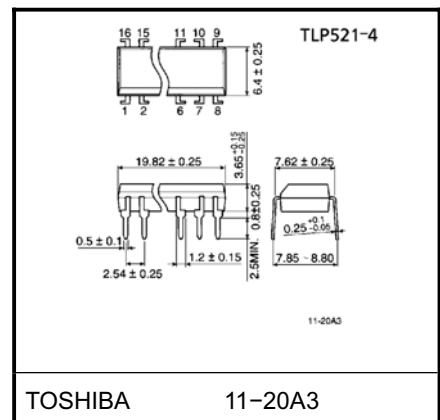
Unit in mm



Weight: 0.26 g



Weight: 0.54 g



Weight: 1.1 g

## Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating		Unit	
		TLP521-1	TLP521-2 TLP521-4		
LED	Forward current	$I_F$	70	50	mA
	Forward current derating	$\Delta I_F / ^\circ\text{C}$	-0.93 (Ta $\geq$ 50°C)	-0.5 (Ta $\geq$ 25°C)	mA / °C
	Pulse forward current	$I_{FP}$	1 (100 $\mu$ pulse, 100pps)		A
	Reverse voltage	$V_R$	5		V
	Junction temperature	$T_j$	125		°C
Detector	Collector-emitter voltage	$V_{CEO}$	55		V
	Emitter-collector voltage	$V_{ECO}$	7		V
	Collector current	$I_C$	50		mA
	Collector power dissipation (1 circuit)	$P_C$	150	100	mW
	Collector power dissipation derating (1 circuit Ta $\geq$ 25°C)	$\Delta P_C / ^\circ\text{C}$	-1.5	-1.0	mW / °C
	Junction temperature	$T_j$	125		°C
Storage temperature range	$T_{stg}$	-55~125		°C	
Operating temperature range	$T_{opr}$	-55~100		°C	
Lead soldering temperature	$T_{sol}$	260 (10 s)		°C	
Total package power dissipation	$P_T$	250	150	mW	
Total package power dissipation derating (Ta $\geq$ 25°C)	$\Delta P_T / ^\circ\text{C}$	-2.5	-1.5	mW / °C	
Isolation voltage	$BV_S$	2500 (AC, 1min., R.H. $\leq$ 60%) (Note 1)		Vrms	

(Note 1): Device considered a two terminal device: LED side pins shorted together and detector side pins shorted together.

## Recommended Operating Conditions

Characteristic	Symbol	Min	Typ.	Max	Unit
Supply voltage	$V_{CC}$	—	5	24	V
Forward current	$I_F$	—	16	25	mA
Collector current	$I_C$	—	1	10	mA
Operating temperature	$T_{opr}$	-25	—	85	°C

Type	Classi- fication (*1)	Current Transfer Ratio (%) ( $I_C / I_F$ )		Marking Of Classification
		$I_F = 5\text{mA}, V_{CE} = 5\text{V}, T_a = 25^\circ\text{C}$		
		Min	Max	
TLP521	A	50	600	Blank, Y, Y <sup>■</sup> , G, G <sup>■</sup> , B, B <sup>■</sup> , GB
	Rank Y	50	150	Y, Y <sup>■</sup>
	Rank GR	100	300	G, G <sup>■</sup>
	Rank BL	200	600	B, B <sup>■</sup>
	Rank GB	100	600	G, G <sup>■</sup> , B, B <sup>■</sup> , GB
TLP521-2 TLP521-4	A	50	600	Blank, GR, BL, GB
	Rank GB	100	600	GR, BL, GB

\*1: Ex. rank GB: TLP521-1 (GB)

(Note): Application type name for certification test, please use standard product type name, i.e.

TLP521-1 (GB): TLP521-1, TLP521-2 (GB): TLP521-2