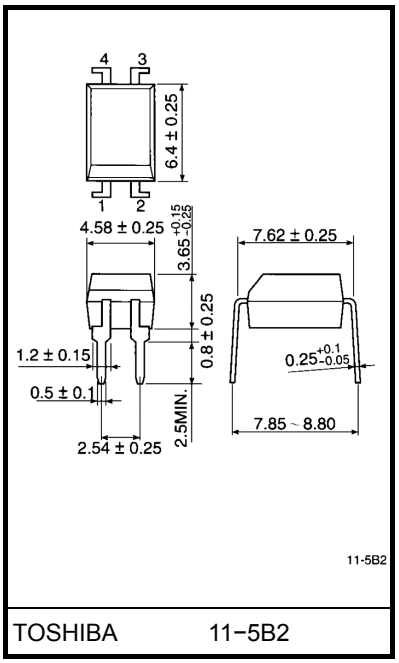
TOSHIBA Photocoupler Photo−Diode

TLP722

Unit in mm



TOSHIBA 11−5B2

Weight: 0.28 g

The TOSHIBA TLP722 consists of a photo−diode optically coupled to a gallium arsenide infrared emitting diode in a four lead plastic DIP (DIP4).

TLP722: Single circuit

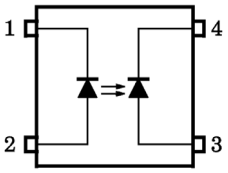
- Cathode−anode voltage: 30V (max)
- Current transfer ratio: 0.1% (min)
- Input / output isolation voltage: 4000V_{rms} (min)
- Operating temperature range: −55~100°C
- Storage temperature range: −55~125°C
- UL recognized: UL1577, E67349
- VDE approved: EN60747-5-2
  Maximum operating insulation voltage: 890V_{PK}
  Maximum permissible over voltage: 8000V_{PK}

(Note): When an EN60747-5-2 approved type is needed, please designate the " Option (D4) "

- SEMKO approved product: SS EN60950,
  approved No. 9808324 / 01
- Construction mechanical rating

	TLP722 type	TLP722F type
Creepage distance	7.0 mm	8.0 mm
Clearance	7.0 mm	8.0 mm
Insulation thickness	0.4 mm	0.4 mm

Pin Configuration (top view)



1 : LED CATHODE
2 : LED ANODE
3 : DETECTOR ANODE
4 : DETECTOR CATHODE

Absolute Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
LED	Forward current	I_F	25	mA
	Forward current derating	ΔI_F / °C	−0.45 (Ta ≥ 70°C)	mA / °C
	Pulse forward current	I_{FP}	1 (1μs pulse, 1000 pps)	mA
	Pulse forward current	I_{FTP}	1 (100μs pulse, 1000 pps)	A
	Reverse voltage	V_R	5	V
Detector	Cathode−anode voltage	V_{KAO}	30	V
	Anode−cathode voltage	V_{AKO}	0.5	V
	Photodiode output current	I_{PB}	100	μA
	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 (10 s)		T_{sol}	260 (10s)	°C
Isolation voltage		BV_S	4000 (AC, 1min., R.H. 60%)	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).

Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
LED	Forward voltage	V_F	I_F = 16 mA	—	1.65	1.85	V
	Reverse current	I_R	V_R = 5 V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1 MHz	—	30	—	pF
Detector	Cathode−anode breakdown voltage	$V_{(BR)KAO}$	I_{KA} = 0.1 mA	30	—	—	V
	Anode−cathode breakdown voltage	$V_{(BR)AKO}$	I_{AK} = 0.1 mA	0.5	—	—	V
	Dark current	I_{leak}	V_{KA} = 10 V	—	—	50	nA
			V_{KA} = 10 V, Ta = 85°C	—	—	1	μA
	Photodiode output current	I_{PB}	V = 10 mA, V_{KA} = 5 V	10	—	50	μA
	Capacitance	C_{AK}	V = 0, f = 1 MHz	—	10	—	pF

Isolation Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance (input to output)	C_S	V_S = 0, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S = 500 V	1×10^{12}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	4000	—	—	V_{rms}
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	V_{dc}

RESTRICTIONS ON PRODUCT USE

20070701-EN

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- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc.
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