

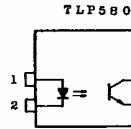
# TLP580, TLP581

GaAlAs Infrared Emitting Diode & NPN Silicon Photo-Transistor

The TOSHIBA TLP580 and TLP581 consists of a gallium aluminum arsenide, infrared emitting diode coupled with a silicon photo transistor in a dual in-line package. TLP580 is no-base internal connection for high-EMI environments.

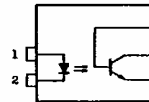
- AC Isolation Voltage : 5kV
- Nominal Isolation Operating Voltage (Note 1) : 1000Vac or 1200Vdc for Isolation Group B  
750Vac or 900Vdc for Isolation Group C
- Climatic Test Class : 25/100/21 DIN40045
- Internal Isolation Thickness Between Metal Parts : 2mm (Min.) (Note 2)
- External Creepage Distance and Airgaps : 14.5mm (Min.) (Note 3)
- Housing : Epoxy Molded
- TOSHIBA Unique Double Molded Construction
- High Efficiency Low Degradation Liquid Epitaxial IRED
- Low Coupling Capacity : 0.3pF (Typ.)
- Current Transfer Ratio : 60% (Typ.)
- UL Recognized : File No. E67349
- VDE Approved : Certificate No. 37411

PIN CONFIGURATION (TOP VIEW)



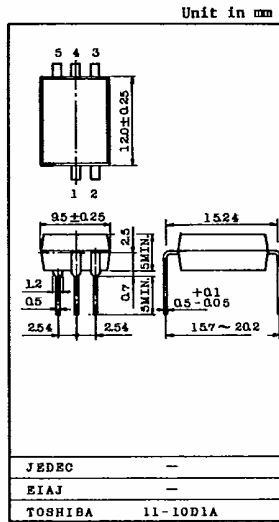
1. ANODE
2. CATHODE
3. EMITTER
4. COLLECTOR
5. NC

TLP581



1. ANODE
2. CATHODE
3. EMITTER
4. COLLECTOR
5. BASE

- Note 1. According to VDE0110b/2.79  
 2. According to VDE0730-2P  
 3. Creeping current resistance : Group I (KB>100-KC>100) According to VDE011b/2.79 Table 3.



## ABSOLUTE MAXIMUM RATINGS

(Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT	
LED	Reverse Voltage	V <sub>R</sub>	5 V	
	Forward Current	I <sub>F</sub>	50 mA	
	Forward Surge Current (t <sub>p</sub> ≤ 100µs)	I <sub>FSM</sub>	1 A	
	Power Dissipation	P <sub>D</sub>	100 mW	
Junction Temperature	T <sub>J</sub>	100	°C	
PHOTO-TRANSISTOR	Collector-Emitter Voltage	V <sub>CE0</sub>	35 V	
	Collector-Base Voltage (TLP581)	V <sub>CB0</sub>	50 V	
	Emitter-Collector Voltage	V <sub>EC0</sub>	5 V	
	Collector Current	I <sub>C</sub>	50 mA	
	Peak Collector Current (t <sub>p</sub> /I <sub>C</sub> = 0.5, t <sub>p</sub> ≤ 10ms)	I <sub>CH</sub>	100 mA	
	Power Dissipation	P <sub>C</sub>	150 mW	
Junction Temperature	T <sub>J</sub>	125	°C	
COUPLED	AC Isolation Voltage	BV <sub>G</sub>	5 kV	
	Storage Temperature	T <sub>stg</sub>	-55 ~ 125	°C
	Operating Temperature	T <sub>opr</sub>	-55 ~ 100	°C
	Lead Soldering Temperature (at 10 sec.)	T <sub>sold</sub>	260	°C
Total Power Dissipation	P <sub>T</sub>	250	mW	

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V <sub>F</sub> I <sub>F</sub> =10mA	-	1.65	1.8	V
	Reverse Current	I <sub>R</sub> V <sub>R</sub> =5V	-	-	10	µA
	Capacitance	C <sub>D</sub> V=0, f=1MHz	-	45	-	pF
PHOTO-TRANSISTOR	Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub> I <sub>C</sub> =0.5mA, I <sub>F</sub> =0	35	-	-	V
	Collector-Base Breakdown Voltage (TLP581)	V <sub>(BR)CBO</sub> I <sub>C</sub> =100mA, I <sub>F</sub> =0	50	-	-	V
	Emitter-Collector Breakdown Voltage	V <sub>(BR)ECO</sub> I <sub>E</sub> =100mA, I <sub>F</sub> =0	5	-	-	V
	Collector Dark Current	I <sub>CEO</sub> V <sub>CE</sub> =10V, I <sub>F</sub> =0	-	1	30	nA
	Collector-Emitter Capacitance	C <sub>CE</sub> V=0, f=1MHz	-	15	-	pF
	Current Transfer Ratio	I <sub>C</sub> /I <sub>F</sub> I <sub>F</sub> =10mA, V <sub>CE</sub> =5V	25	60	-	%
COUPLED	Saturation Voltage	V <sub>CE(sat)</sub> I <sub>F</sub> =10mA, I <sub>C</sub> =2.4mA	-	0.1	0.4	V
	Capacitance Input to Output	C <sub>S</sub> V=0, f=1MHz	-	0.3	-	pF
	Isolation Resistance	R <sub>S</sub> V=1000V, 50% R.H.	-	10 <sup>12</sup>	-	Ω
	AC Isolation Voltage	BV <sub>G</sub> t=1 minute	5	-	-	kV
	Turn-On Time	t <sub>on</sub> V <sub>CE</sub> =10V, I <sub>C</sub> =2mA R <sub>L</sub> =100Ω	-	6	-	µs
Turn-Off Time	t <sub>off</sub> V <sub>CE</sub> =10V, I <sub>C</sub> =2mA R <sub>L</sub> =100Ω	-	6	-	µs	

