

9097250 TOSHIBA (DISCRETE/OPTO)

99D 17452 D

T-41-87

TLP543J, TLP545J

GaAs IRED & PHOTO-THYRISTOR

The TOSHIBA TLP543J consists of a photothyristor optically coupled to a gallium arsenide infrared emitting diode in a seven lead plastic DIP package.

The TOSHIBA TLP545J consists of a photothyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

- Peak Off-State Voltage : 600V Min.
- Trigger LED Current : 10mA Max.
- On-State Current : 150mA Max.
- Isolation Voltage : 2500Vrms Min.
- UL Recognized : File No. E67349

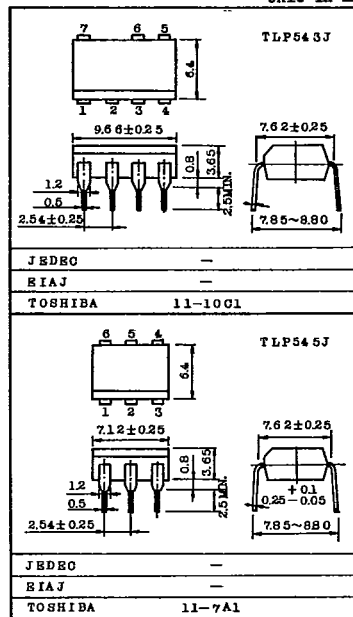
MAXIMUM RATINGS (Ta = 25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	60	mA
	Forward Current Derating (Ta≥25°C)	$\Delta I_F/^\circ\text{C}$	-0.7	mA/°C
	Peak Forward Current (100µs pulse, 100pps)	I_{FP}	1	A
	Power Dissipation	P_D	100	mW
	Power Dissipation Derating (Ta≥25°C)	$\Delta P_D/^\circ\text{C}$	-1.0	mW/°C
	Reverse Voltage	V_R	5	V
DETECTOR	Junction Temperature	T_j	125	°C
	Peak Forward Voltage (R _{GK} =27kΩ)	V_{DRM}	600	V
	Peak Reverse Voltage (R _{GK} =27kΩ)	V_{RRM}	600	V
	On-State Current	$I_T(\text{RMS})$	150	mA
	On-State Current Derating (Ta≥25°C)	$\Delta I_T/^\circ\text{C}$	-2.0	mA/°C
	Peak On-State Current (100µs pulse, 120pps)	I_{TP}	3	A
	Peak One Cycle Surge Current	I_{TSM}	2	A
	Peak Reverse Gate Voltage	V_{GM}	5	V
	Power Dissipation	P_D	150	mW
	Power Dissipation Derating (Ta≥25°C)	$\Delta P_D/^\circ\text{C}$	-2.0	mW/°C
	Junction Temperature	T_j	100	°C
Storage Temperature Range	T_{stg}	-55~150	°C	
Operating Temperature Range	T_{opr}	-55~100	°C	
Lead Soldering Temperature (10sec.)	T_{sold}	260	°C	
Total Package Power Dissipation	P_T	250	mW	
Total Package Power Dissipation Derating (Ta≥25°C)	$\Delta P_T/^\circ\text{C}$	-3.3	mW/°C	
Isolation Voltage (AC, 1 min, RH≤60%)	BVS	2500	Vrms	

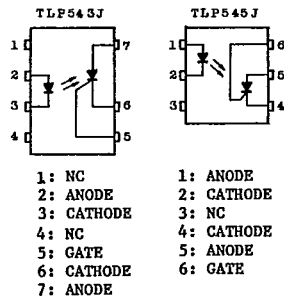
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	-	-	240	Vac
Forward Current	I_F	15	20	25	mA
Operating Temperature	T_{opr}	-25	-	85	°C
Gate to Cathode Resistance	R_{GK}	-	10	27	kΩ
Gate to Cathode Capacity	C_{GK}	-	0.01	0.1	µF

Unit in mm



PIN CONFIGURATIONS (TOP VIEW)



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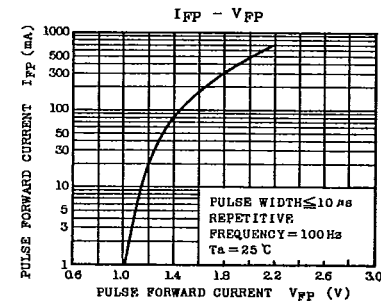
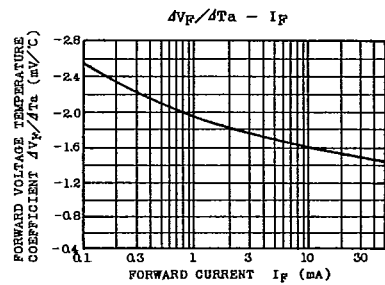
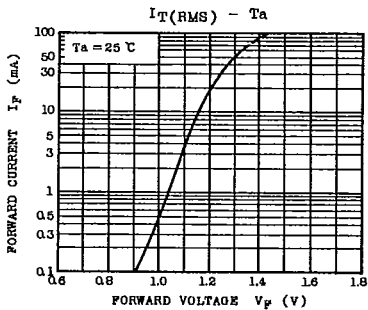
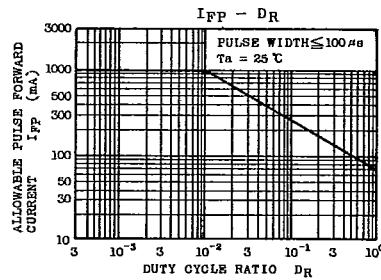
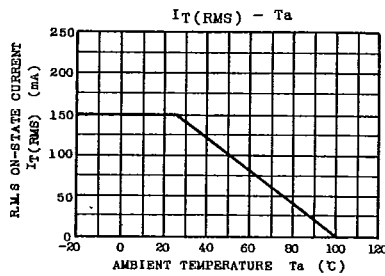
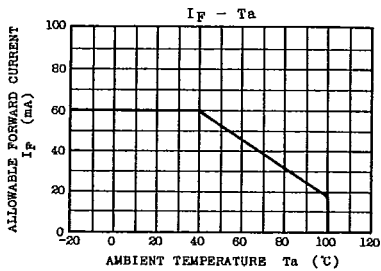
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INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
LED	Forward Voltage	V _F	I _F =10mA	1.0	1.15	1.3	V	
	Reverse Current	I _R	V _R =5V	-	-	10	μA	
	Capacitance	C _T	V=0, f=1MHz	-	30	-	pF	
DETECTOR	Off-State Current	I _{DRM}	V _{AK} =600V R _{GK} =27kΩ	Ta=25°C	-	10	5000	nA
				Ta=85°C	-	1	150	μA
	Reverse Current	I _{RRM}	V _{KA} =600V R _{GK} =27kΩ	Ta=25°C	-	10	5000	nA
				Ta=85°C	-	1	150	μA
	On-State Voltage	V _{TM}	I _{TM} =100mA	-	0.9	1.3	V	
	Holding Current	I _H	R _{GK} =27kΩ	-	0.2	-	mA	
	Off-State dv/dt	dv/dt	V _{AK} =420V, R _{GK} =27kΩ	-	10	-	V/μs	
Capacitance	C _j	V=0, f=1MHz Anode to Gate Gate to Cathode	-	20	-	-	pF	
			-	350	-	-	pF	

COUPLED CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I _{FT}	V _{AK} =6V, R _{GK} =27kΩ	-	5	10	mA
Turn-on Time	t _{on}	I _F =30mA, V _{AA} =50V R _{GK} =27kΩ	-	10	-	μs
Coupled dv/dt	dv/dt	V _S =500V, R _{GK} =27kΩ	500	-	-	V/μs
Capacitance Input to Output	C _S	V _S =0, f=1MHz	-	0.8	-	pF
Isolation Resistance	R _S	V _S =500V	5x10 ¹⁰	10 ¹⁴	-	Ω
Isolation Voltage	B _V	AC, 1 minute	2500	-	-	V _{rms}
		AC, 1 second	-	5000	-	V _{rms}
		DC, 1 minute	-	5000	-	V _{dc}



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