

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-THYRISTOR

TLP543J, TLP545J

PROGRAMMABLE CONTROLLERS

AC-OUTPUT MODULE

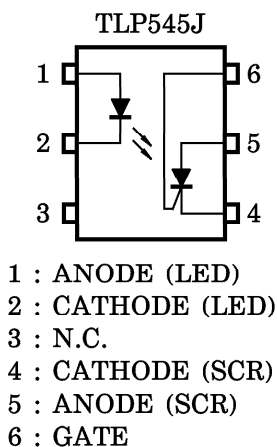
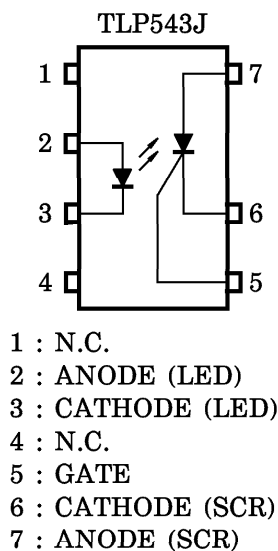
SOLID STATE RELAY

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

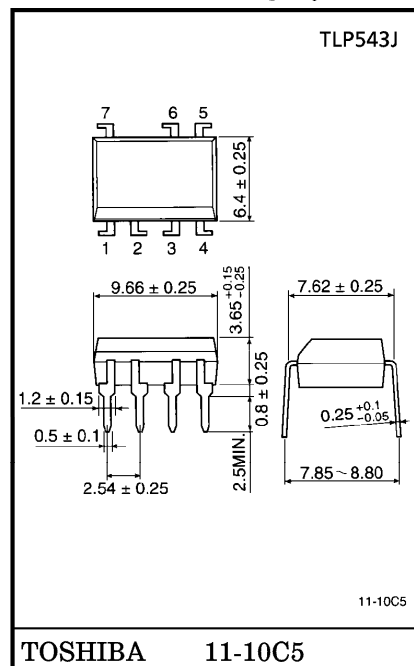
The TOSHIBA TLP545J consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

- Trigger LED Current : $I_{FT} = 10\text{mA}$ (Max.)
- On-State Current : $I_T(\text{RMS}) = 150\text{mA}$
- Peak Off-State Voltage : $V_{DRM} = V_{RRM} = 600\text{V}$ (Min.)
- Isolation Voltage : $2500V_{\text{rms}}$ (Min.)
- UL Recognized : UL1577, File No. E67349

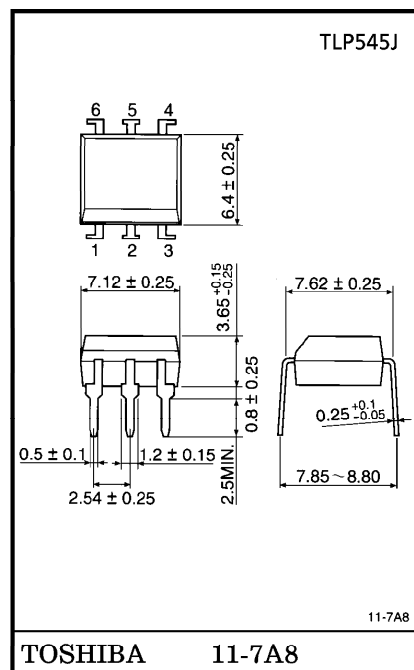
PIN CONFIGURATIONS (TOP VIEW)



Unit in mm



Weight : 0.53g



Weight : 0.4g

MAXIMUM RATINGS (Ta = 25°C)

		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	70	mA
	Forward Current Derating (Ta $\geq$ 25°C)	$\Delta I_F / ^\circ\text{C}$	-0.7	mA / °C
	Peak Forward Current (Note 1)	I_{FP}	1	A
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_j	125	°C
DETECTOR	Peak Forward Voltage ($R_{GK} = 27\text{k}\Omega$)	V_{DRM}	600	V
	Peak Reverse Voltage ($R_{GK} = 27\text{k}\Omega$)	V_{RRM}		
	On-State Current	$I_T(\text{RMS})$	150	mA
	On-State Current Derating	$\Delta I_T / ^\circ\text{C}$	-2	mA / °C
	Peak One Cycle Surge Current	I_{TSM}	1	A
	Peak Reverse Gate Voltage	V_{GM}	-5	V
	Junction Temperature	T_j	100	°C
Operating Temperature Range		T_{opr}	-30~100	°C
Storage Temperature Range		T_{stg}	-55~125	°C
Lead Soldering Temperature (10s) (Note 2)		T_{sol}	260	°C

(Note 1) Pulse width $\leq 100\mu\text{s}$, $f = 100\text{Hz}$

(Note 2) Soldering portion of lead : up to 2mm from body of the device.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	250	V _{AC}
Forward Current	I_F	15	20	25	mA
Operating Temperature	T_{opr}	-30	—	85	°C
Gate to Cathode Resistance	R_{GK}	—	10	27	k Ω
Gate to Cathode Capacity	C_{GK}	—	0.01	0.1	μF

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

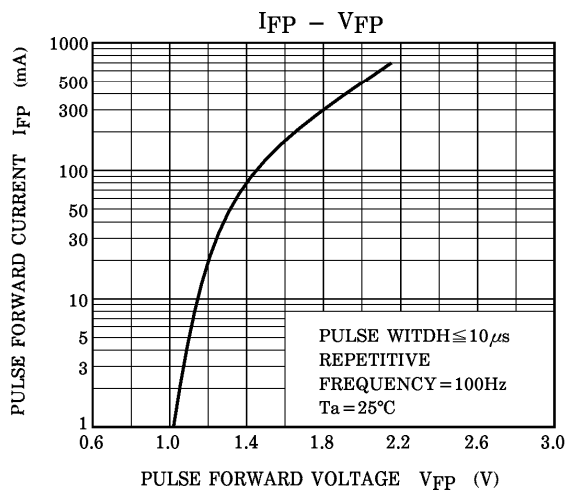
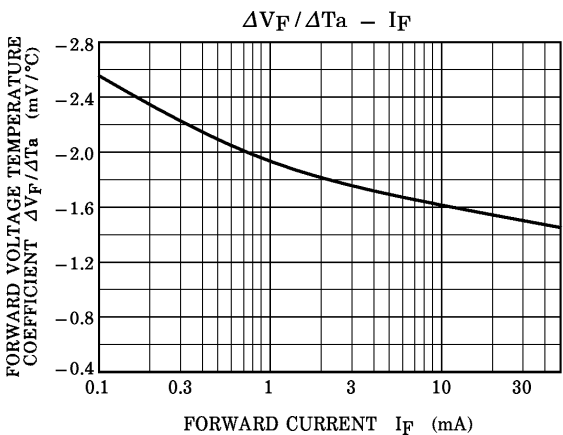
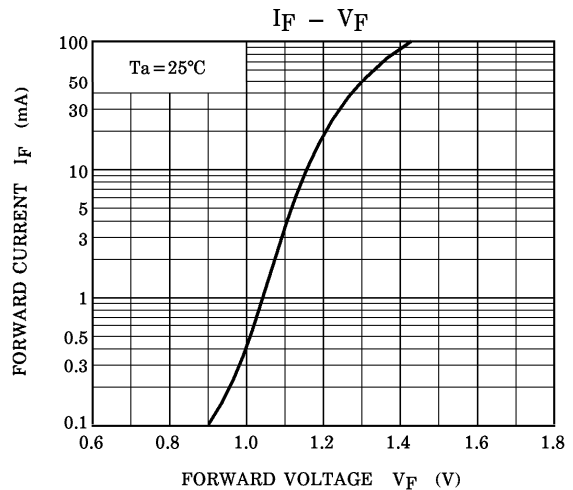
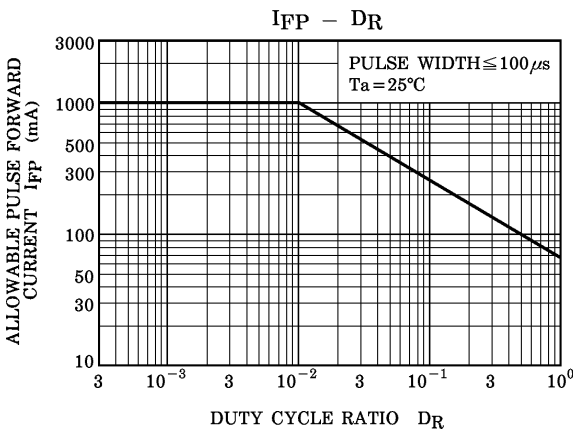
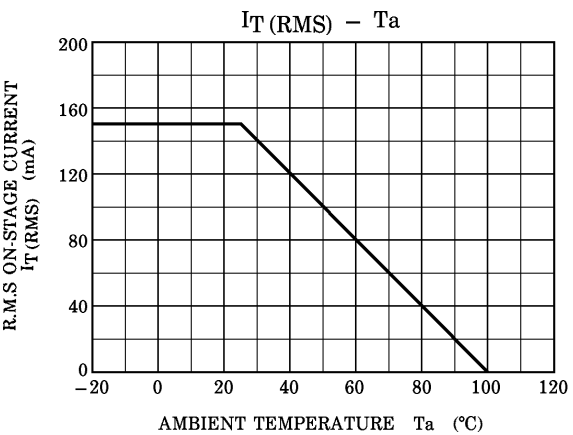
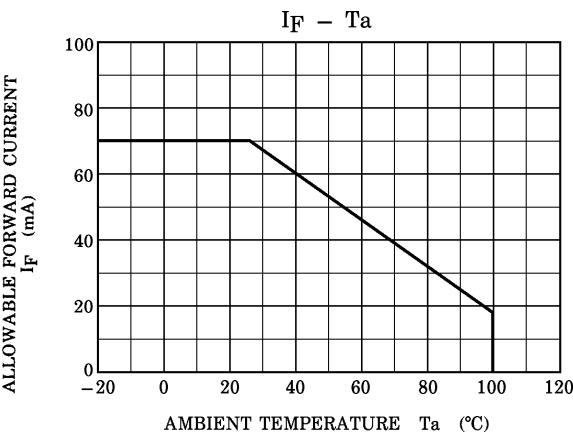
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	30	—	pF
DETECTOR	Off-State Current and Reverse Current	I_{DRM} and I_{RRM}	$V_{DRM} = \text{Rating}, R_{GK} = 27\text{k}\Omega$	—	—	5	μA
	On-State Voltage	V_{TM}	$I_{TM} = 100\text{mA}$	—	—	1.3	V
	Holding Current	I_H	$R_{GK} = 27\text{k}\Omega$	—	0.2	—	mA
	Off-State dv/dt	dv/dt	$V_{AK} = \text{Rating}, R_{GK} = 27\text{k}\Omega$	—	10	—	$\text{V} / \mu\text{s}$

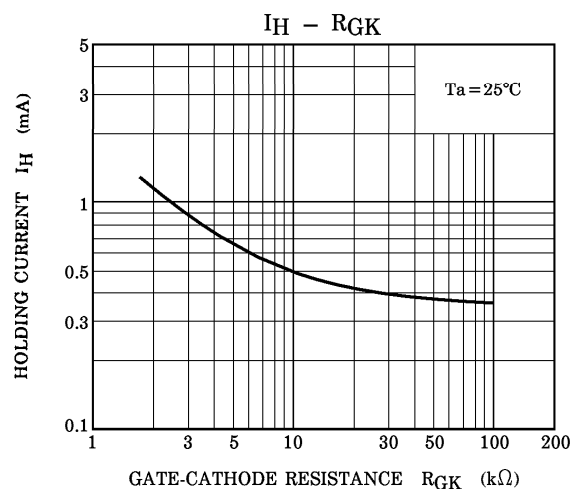
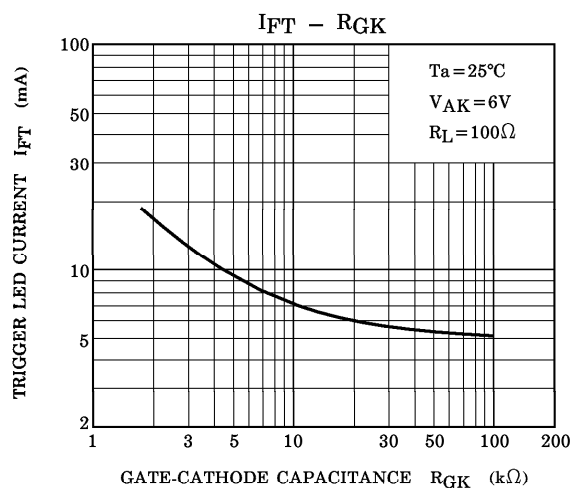
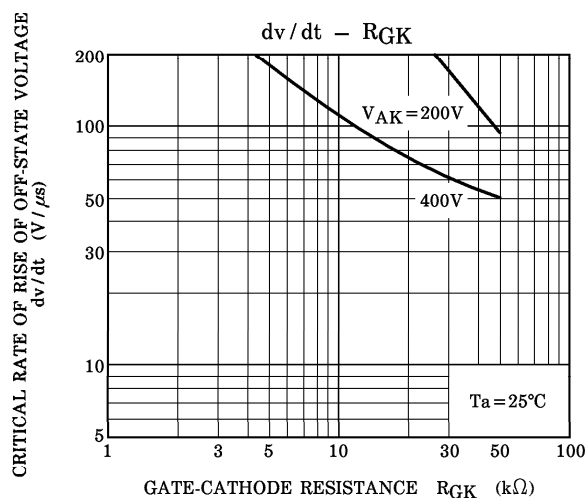
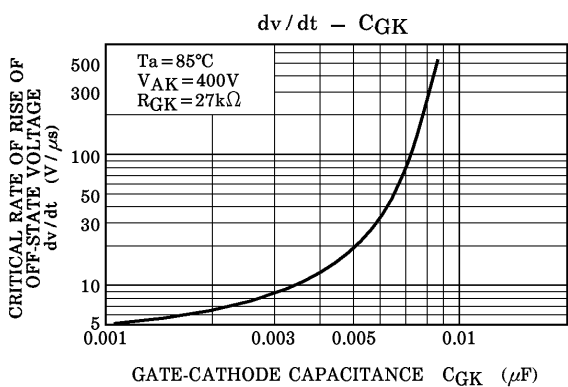
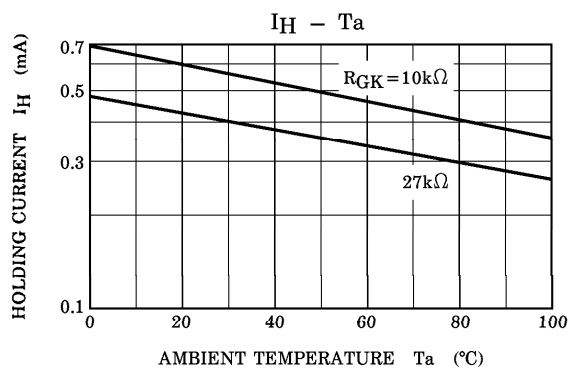
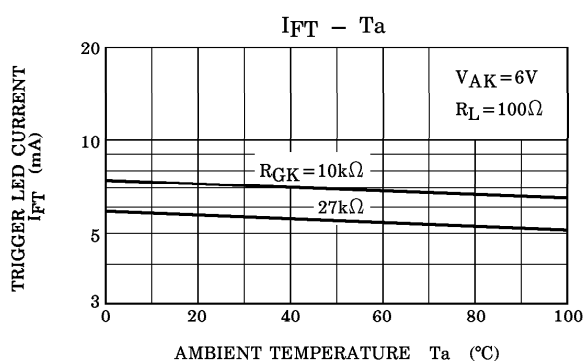
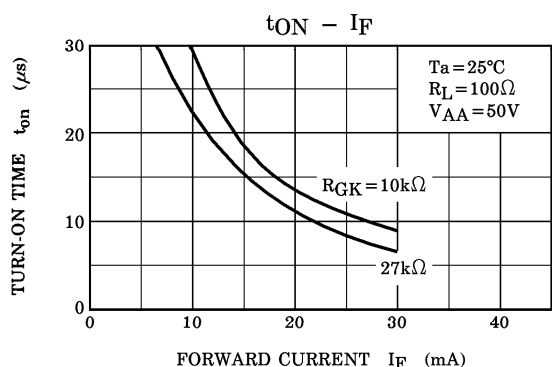
COUPLED CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_{AK} = 6\text{V}, R_{GK} = 27\text{k}\Omega$ $R_L = 100\Omega$	—	—	10	mA
Turn-On Time	t_{ON}	$I_F = 50\text{mA}, R_{GK} = 27\text{k}\Omega$	—	10	—	μs
Capacitance (Input to Output)	C_S	$V = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$\text{R.H.} \leq 60\%, V = 500\text{V}$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage (Note 3)	BV_S	AC, 1 minute, $\text{R.H.} \leq 60\%$	2500	—	—	V_{rms}

(Note 3) TLP543J : Device considered a two terminal device : Pins 1, 2, 3 and 4 shorted together and pins 5, 6, 7 and 8 shorted together.

TLP545J : Device considered a two terminal device : Pins 1, 2 and 3 shorted together and pins 4, 5 and 6 shorted together.





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