TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-THYRISTOR

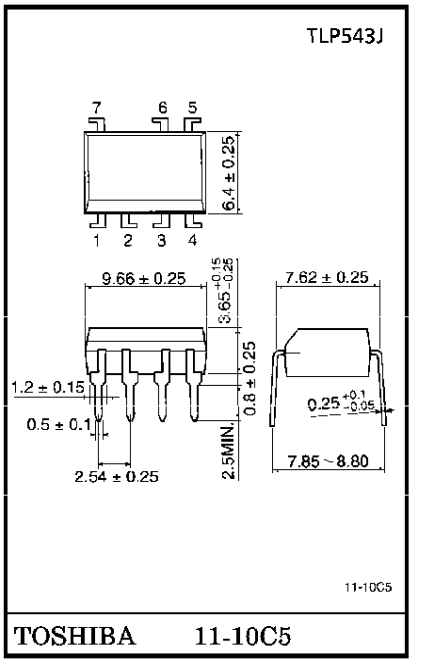
TLP543J, TLP545J

PROGRAMMABLE CONTROLLERS

AC-OUTPUT MODULE

SOLID STATE RELAY

Unit in mm



TOSHIBA 11-10C5

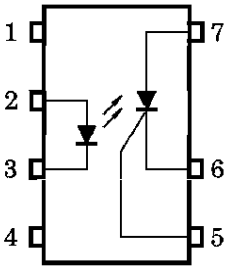
Weight : 0.53g

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

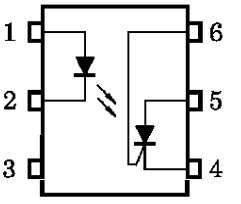
PIN CONFIGURATIONS (TOP VIEW)

TLP543J



1 : N.C.
2 : ANODE (LED)
3 : CATHODE (LED)
4 : N.C.
5 : GATE
6 : CATHODE (SCR)
7 : ANODE (SCR)

TLP545J



1 : ANODE (LED)
2 : CATHODE (LED)
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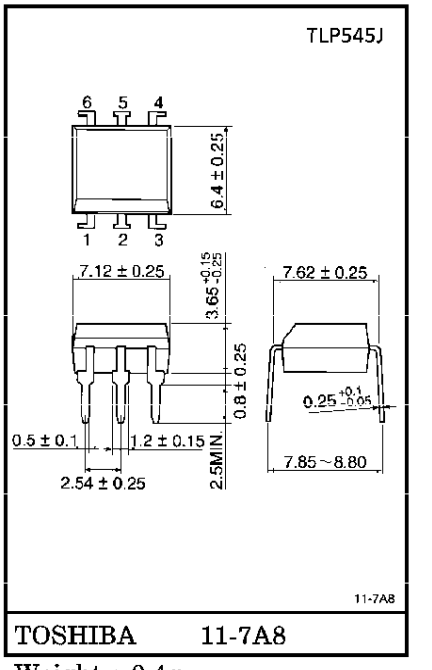
4 : CATHODE (SCR)
5 : ANODE (SCR)
6 : GATE



TOSHIBA 11-7A8

Weight : 0.4g

961001EAA2

MAXIMUM RATINGS (Ta = 25°C)

		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	70	mA
	Forward Current Derating (Ta ≧ 25°C)	ΔI_F / °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} = 27kΩ) Peak Reverse Voltage (R_{GK} = 27kΩ)	V_{DRM} V_{RRM}	600	V
	On-State Current	$I_{T\,(RMS)}$	150	mA
	On-State Current Derating	ΔI_T / °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 ≦ 100μs, f = 100Hz
(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	kΩ
Gate to Cathode Capacity	C_{GK}	—	0.01	0.1	μF

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

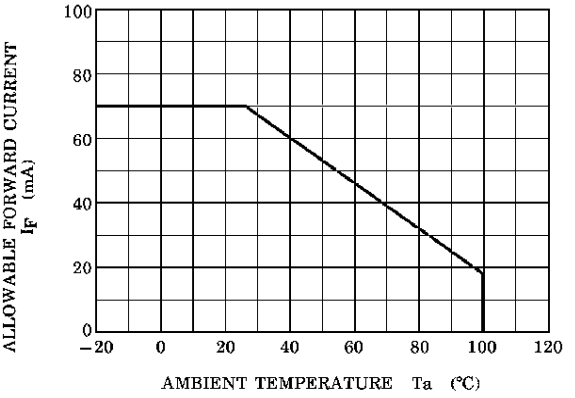
	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F = 10mA	1.0	1.15	1.3	V
	Reverse Current	I_R	V_R = 5V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1MHz	—	30	—	pF
DETECTOR	Off-State Current and Reverse Current	I_{DRM} and I_{RRM}	V_{DRM} = Rating, R_{GK} = 27kΩ	—	—	5	μA
	On-State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

COUPLED CHARACTERISTICS (Ta = 25°C)

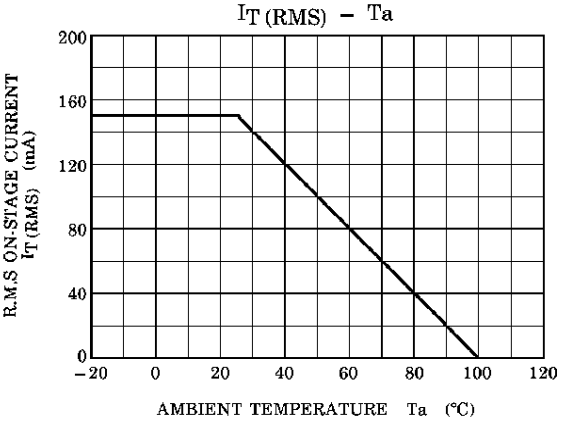
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	V_{AK} = 6V, R_{GK} = 27kΩ, R_L = 100Ω	—	—	10	mA
Turn-On Time	t_{ON}	I_F = 50mA, R_{GK} = 27kΩ	—	10	—	μs
Capacitance (Input to Output)	C_S	V = 0, f = 1MHz	—	0.8	—	pF
Isolation Resistance	R_S	R.H. ≤ 60%, V = 500V	5×10^{10}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

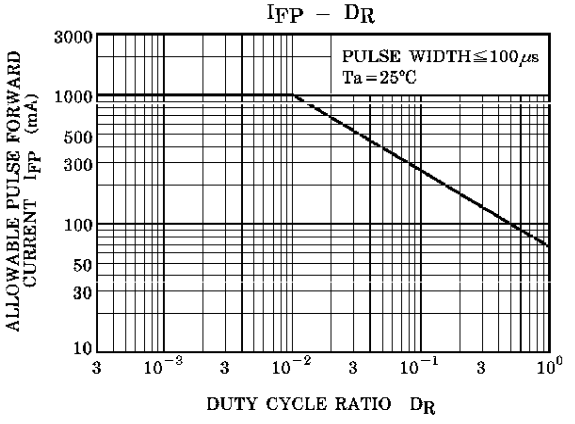
I_F – Ta



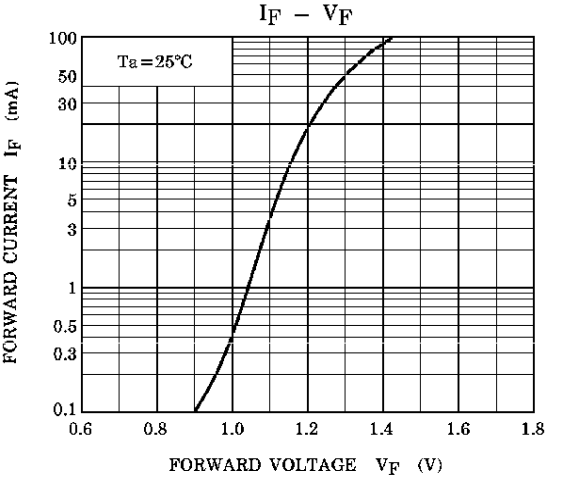
$I_{T\,(RMS)}$ – Ta



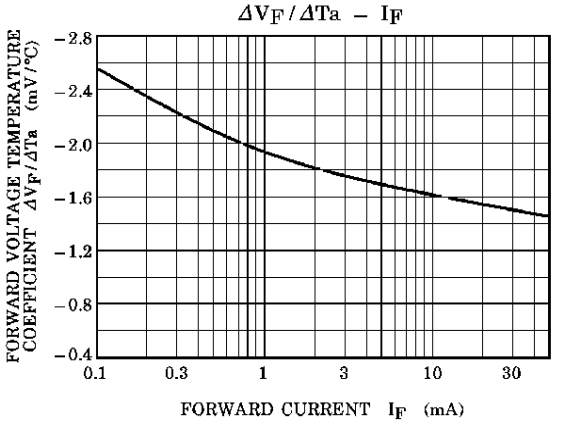
I_{FP} – D_R



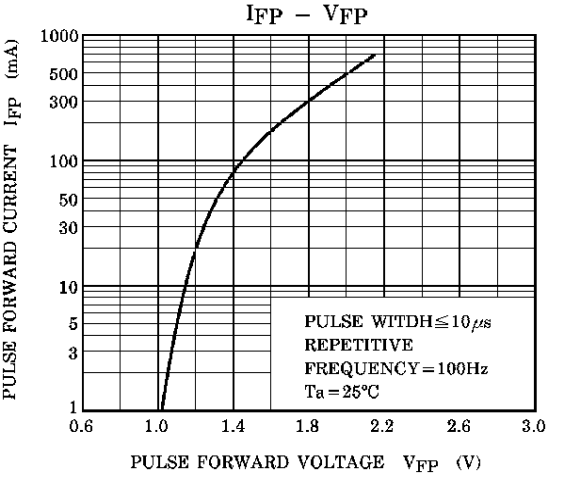
I_F – V_F



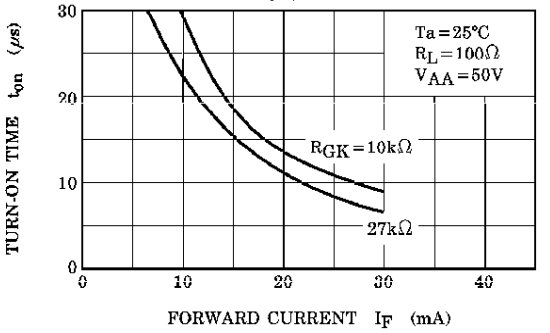
$\Delta V_F / \Delta Ta$ – I_F



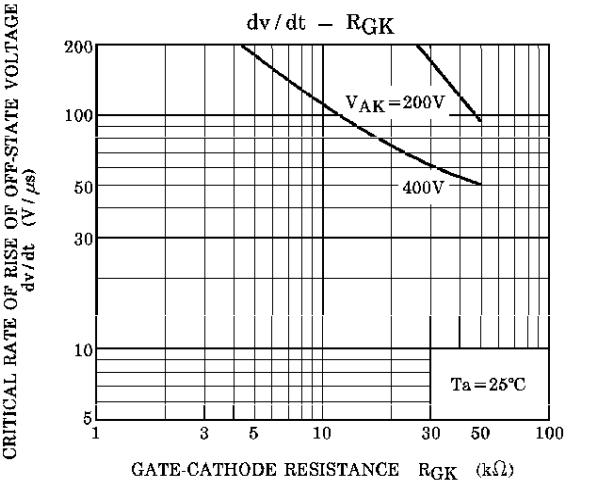
I_{FP} – V_{FP}



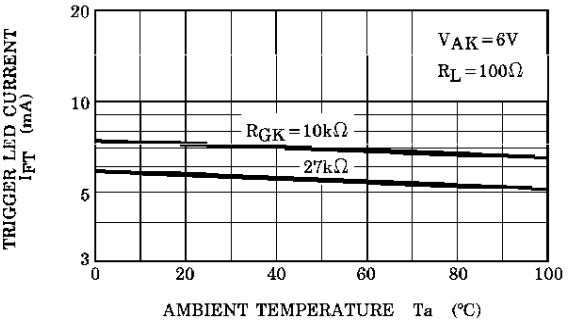
t_{ON} – I_F



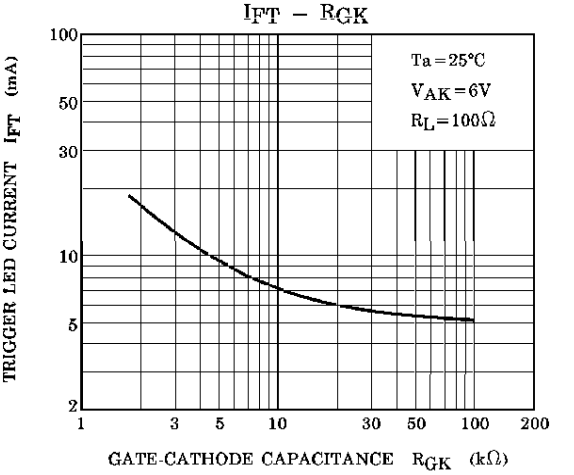
dv/dt – R_{GK}



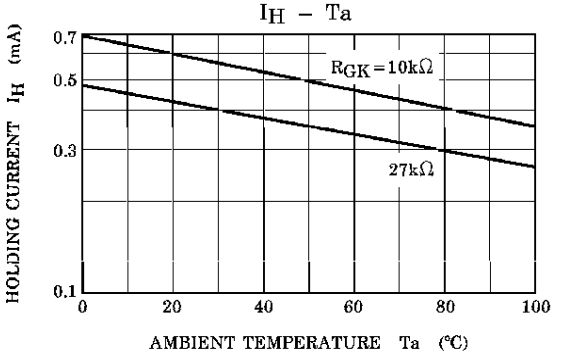
I_{FT} – Ta



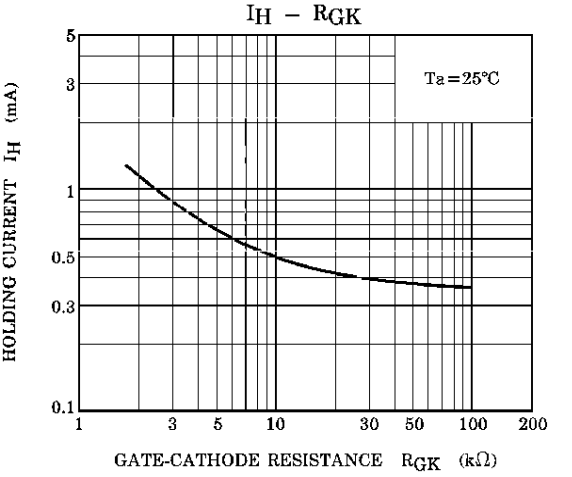
I_{FT} – R_{GK}



I_H – Ta



I_H – R_{GK}



dv/dt – C_{GK}