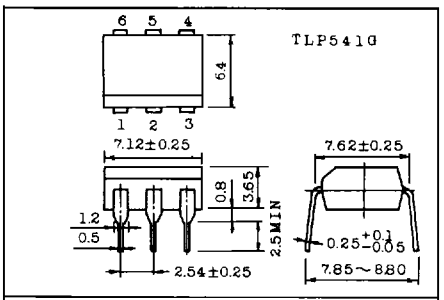
TLP541G, 542G

PROGRAMMABLE CONTROLLERS.
AC-OUTPUT MODULE.
SOLID STATE RELAY.

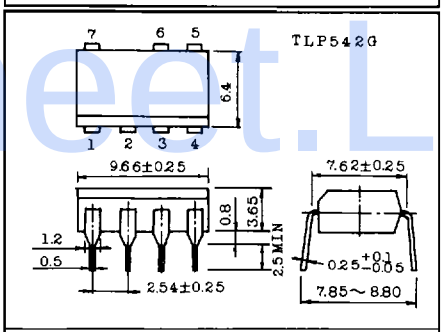
The TOSHIBA TLP541G consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.
The TOSHIBA TLP542G consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a seven lead plastic DIP package.

- Peak Off-State Voltage: 400V Min.
- Trigger LED Current : 7mA Max.
- On-State Current : 150mA Max.
- Isolation Voltage : 2500Vrms Min.
- UL Recognized : File No. E67349

Unit in mm

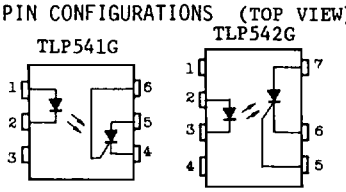


JEDEC	–
EIAJ	–
TOSHIBA	11-7A1



JEDEC	–
EIAJ	–
TOSHIBA	11-10C1

PIN CONFIGURATIONS (TOP VIEW)



TLP541G	TLP542G
1: ANODE	1: NC
2: CATHODE	2: ANODE
3: NC	3: CATHODE
4: CATHODE	4: NC
5: ANODE	5: GATE
6: GATE	6: CATHODE
	7: ANODE

MAXIMUM RATING (Ta=25°C)

	CHARACTERISTIC	SQMBOL	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 (100μs pulse, 100pps)	I_{FP}	1	A
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_j	125	°C
DETECTOR	Peak Forward Voltage (R_{GK}=27KΩ)	V_{DRM}	400	V
	Peak Reverse Voltage (R_{GK}=27KΩ)	V_{RRM}	400	V
	On-State Current	$I_{T(RMS)}$	150	mA
	On-State Current Derating (Ta≧25°C)	ΔI_T/°C	-2.0	mA/°C
	Peak One Cycle Surge Current	I_{TSM}	2	A
	Peak Reverse Gate Voltage	V_{GM}	-5	V
	Junction Temperature	T_j	100	°C
Storage Temperature Range		T_{stg}	-55∿125	°C
Operating Temperature Range		T_{opr}	-30∿100	°C
Lead Soldering Temperature (10sec.)		T_{sold}	260	°C
Isolation Voltage (AC, 1 min, RH≦60%)		BV_S	2500	V_{rms}

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}=400V, R_{GK}=27kΩ	Ta=25°C	-	10	5000	nA
				Ta=100°C	-	1	100	μA
	Reverse Current	I_{RRM}	V_{KA}=400V, R_{GK}=27kΩ	Ta=25°C	-	10	5000	nA
				Ta=100°C	-	1	100	μA
	On-State Voltage	V_{TM}	I_{TM}=100mA		-	0.9	1.3	V
	Holding Current	I_H	R_{GK}=27kΩ		-	0.2	1	mA
	Off-State dv/dt	dv/dt	V_{AK}=280V, R_{GK}=27kΩ		5	10	-	V/μs
	Capacitance	C_j	V=0, f=1MHz Anode to Gate Gate to Cathode		- -	20 350	- -	pF

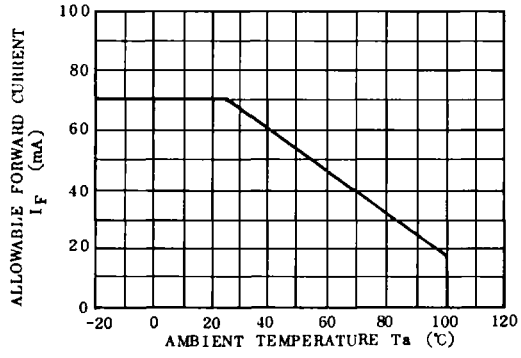
COUPLED CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	V_{AK}=6V, R_{GK}=27k	1	4	7	mA
Turn-on Time	t_{on}	I_F=50mA, R_{GK}=27kΩ	-	10	-	μs
Capacitance (Input to Output)	C_S	V_S=0, f=1MHz	-	0.8	-	pF
Isolation Resistance	R_S	V_S=500V, R.H.≤60%	-	10^{14}	-	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	-	-	V_{rms}

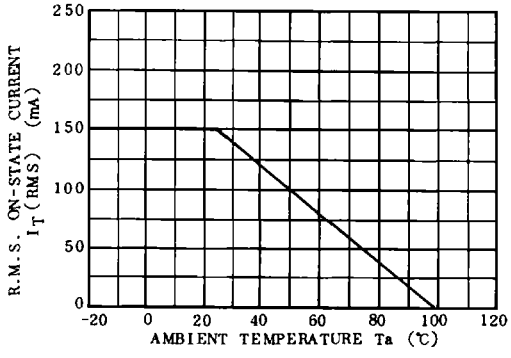
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	-	-	120	V_{ac}
Forward Current	I_F	10	16	25	mA
Operating Temperature	T_{opr}	-30	-	85	°C
Gate to Cathode Resistance	R_{GK}	-	27	33	kΩ
Gate to Cathode Capacity	C_{GK}	-	0.01	0.1	μF

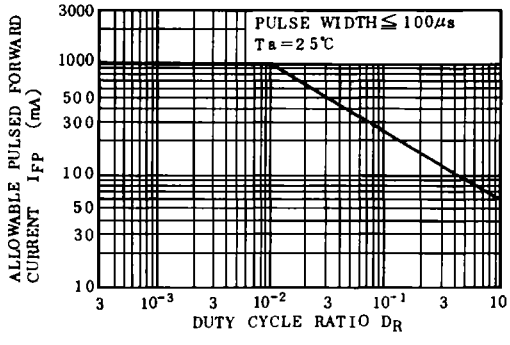
I_F — Ta



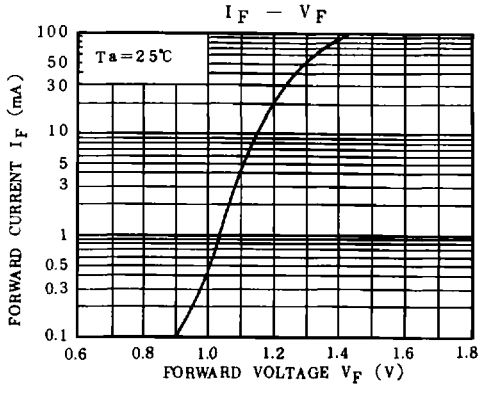
I_T(RMS) — Ta



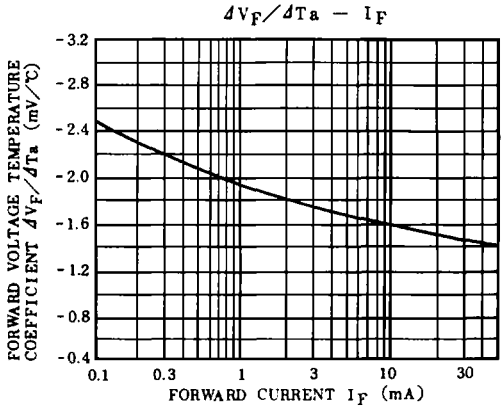
I_{FP} — D_R



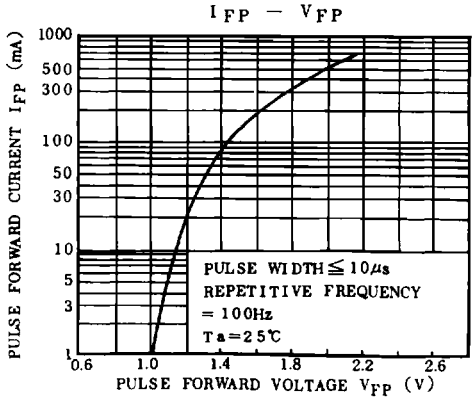
I_F — V_F



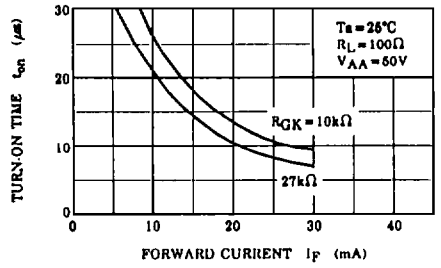
$\Delta V_F/\Delta Ta$ — I_F



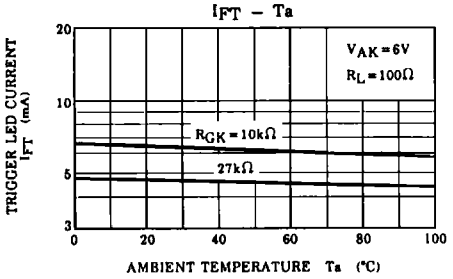
I_{FP} — V_{FP}



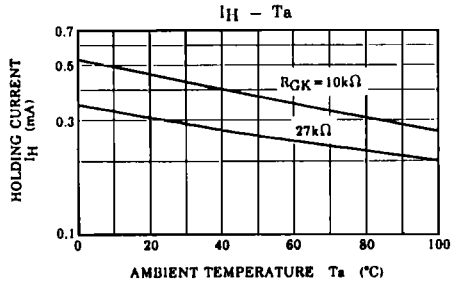
t_{on} – I_F



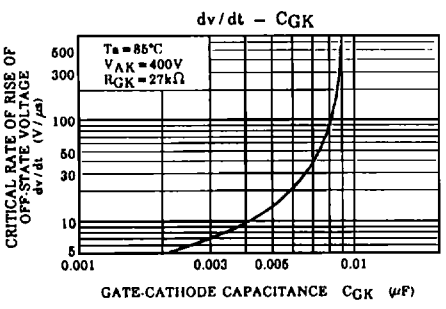
I_{FT} – Ta



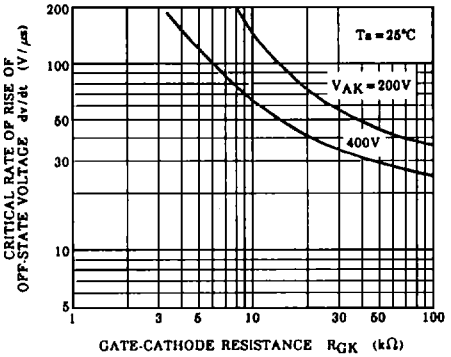
I_H – Ta



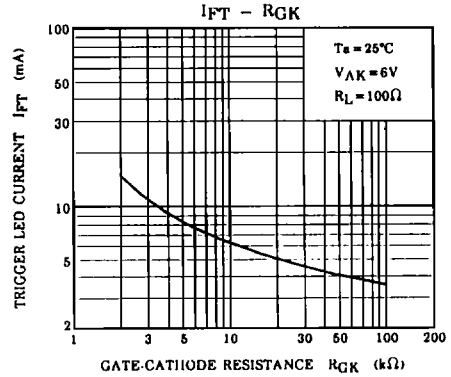
dv/dt – C_{GK}



dv/dt – R_{GK}



I_{FT} – R_{GK}



I_H – R_{GK}