TENTATIVE TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

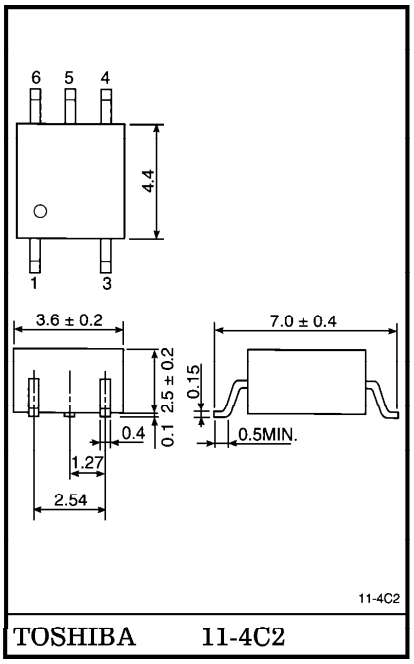
TLP141G

PROGRAMMABLE CONTROLLERS

AC-OUTPUT MODULE

SOLID STATE RELAY

Unit in mm



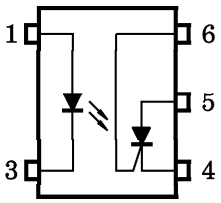
TOSHIBA 11-4C2

Weight : 0.09g

The TOSHIBA MINI FLAT COUPLER TLP141G is a small outline coupler, suitable for surface mount assembly.
The TLP141G consists of a photo thyristor, optically coupled to a gallium arsenide infrared emitting diode.

- Peak Off-State Voltage : 400V (MIN.)
- Trigger LED Current : 10mA (MAX.)
- On-State Current : 150mA (MAX.)
- Isolation Voltage : 2500Vrms (MIN.)
- UL Recognized : UL1577, File No. E67349

PIN CONNECTIONS



1. ANODE
3. CATHODE
4. CATHODE
5. ANODE
6. GATE

961001EBC2

MAXIMUM RATINGS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating (Ta ≧ 53°C)	ΔI_F / °C	−0.7	mA / °C
	Peak Forward Current (100 μs 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}	−55~100	°C
Lead Soldering Temperature (10s)		T_{sol}	260	°C
Isolation Voltage (AC, 1 min., RH ≦ 60%) (Note 1)		BV_S	2500	Vrms

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

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	120	Vac
Forward Current	I_F	15	20	25	mA
Operating Temperature	T_{opr}	−25	—	85	°C
Gate to Cathode Resistance	R_{GK}	—	27	33	kΩ
Gate to Cathode Capacitance	C_{GK}	—	0.01	0.1	μF

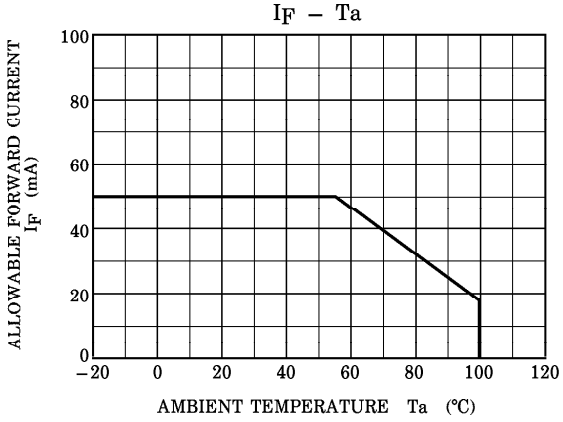
INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	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	—	20	—	pF
				Gate to Cathode	—	350	—	

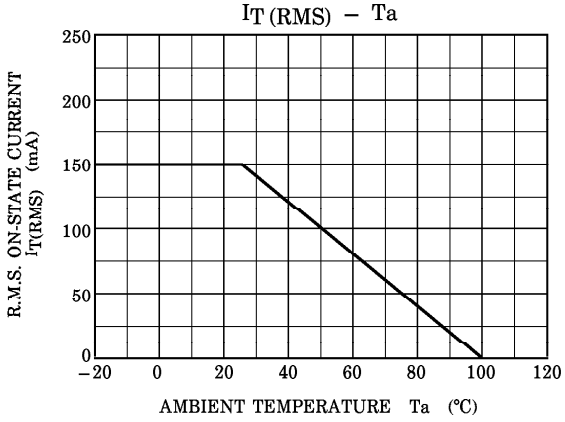
COUPLED CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	V_{AK} = 6V, R_{GK} = 27kΩ	—	4	10	mA
Turn-on Time	t_{on}	I_F = 50mA, 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, R.H. ≤ 60%	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc

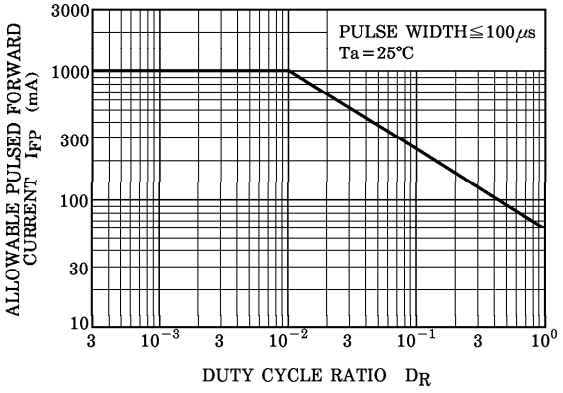
I_F – Ta



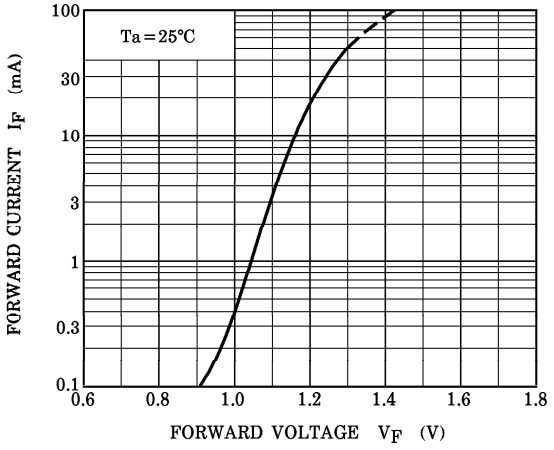
$I_{T\,(RMS)}$ – Ta



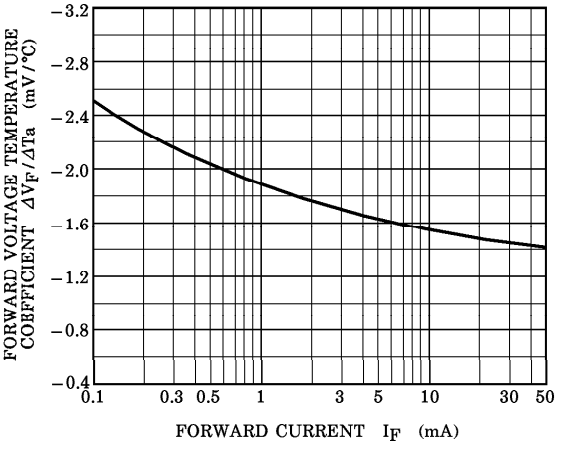
I_{FP} – D_R



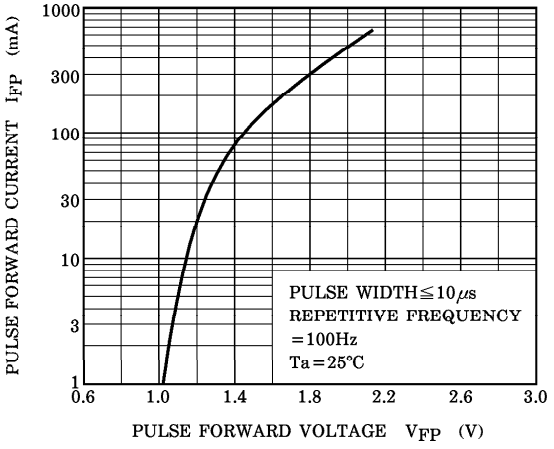
I_F – V_F



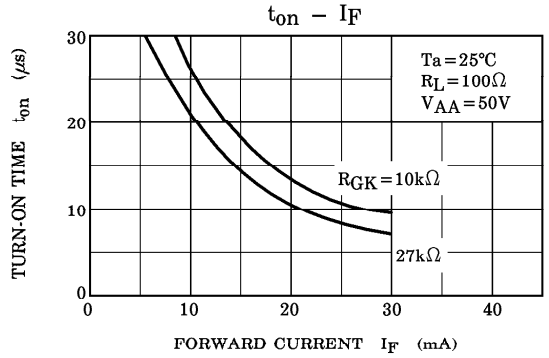
$\Delta V_F / \Delta Ta$ – I_F



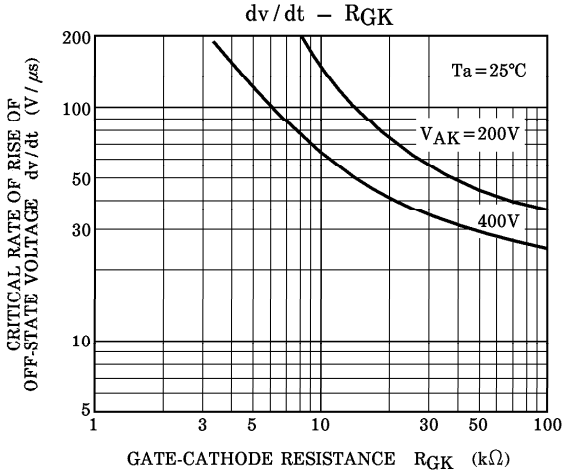
I_{FP} – V_{FP}



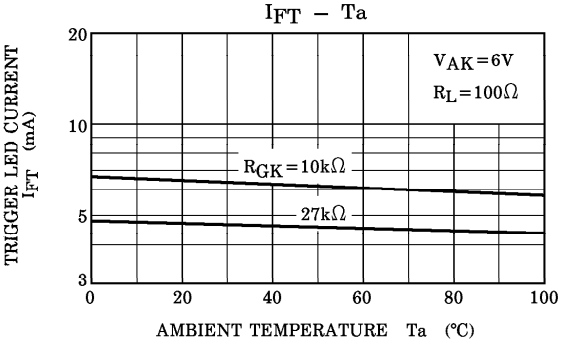
t_{on} – I_F



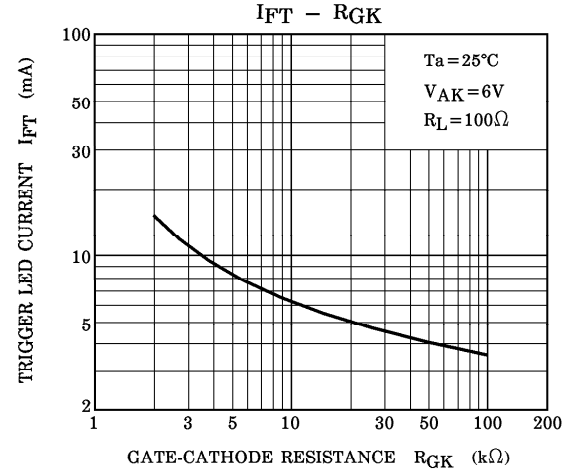
dv / dt – R_{GK}



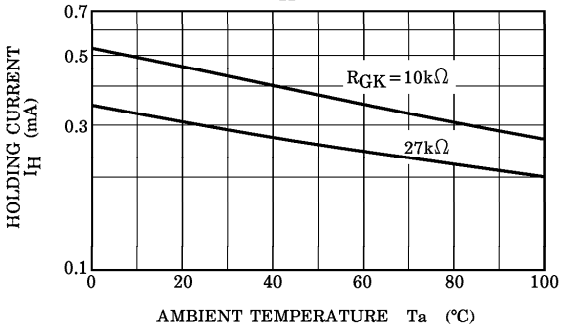
I_{FT} – Ta



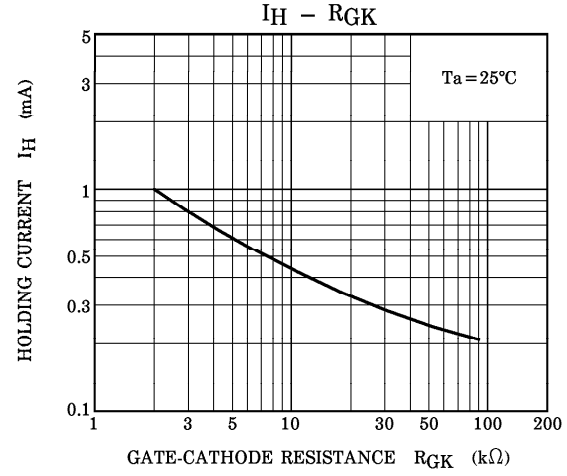
I_{FT} – R_{GK}



I_H – Ta



I_H – R_{GK}



dv / dt – C_{GK}