TENTATIVE TOSHIBA Photocoupler GaAs Ired & Photo−Transistor

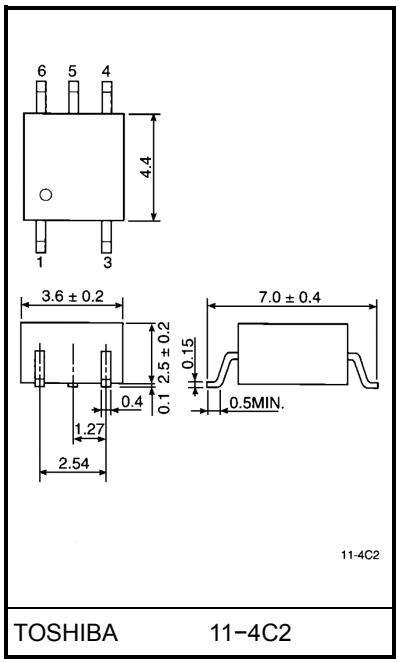
TLP141G

Programmable Controllers

AC−Output Module

Solid State Relay

Unit in mm



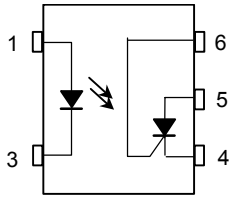
TOSHIBA 11−4C2

Weight: 0.09 g

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: 400 V (min.)
- Trigger LED current: 10 mA (max.)
- On-state current: 150 mA (max.)
- Isolation voltage: 2500 Vrms (min.)
- UL recognized: UL1577, file no. E67349

Pin Connections



1 : Anode
3 : Cathode
4 : Cathode
5 : Anode.
6 : Gate

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, 100 pps)	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_{DRM}	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 (10 s)		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

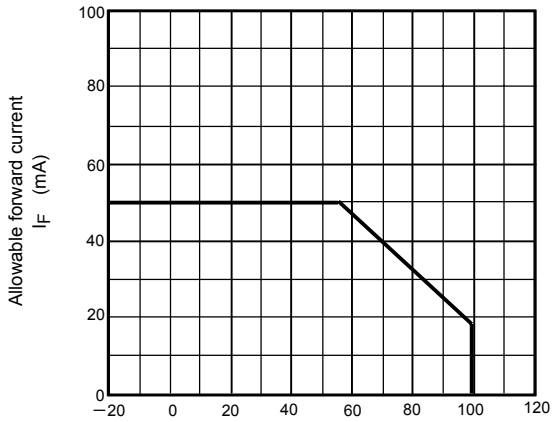
Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition		Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	I_F = 10 mA		1.0	1.15	1.3	V
	Reverse current	I_R	V_R = 5 V		—	—	10	μA
	Capacitance	C_T	V = 0, f = 1 MHz		—	30	—	pF
Detector	Off−state current	I_{DRM}	V_{AK} = 400 V, R_{GK} = 27 kΩ	Ta = 25°C	—	10	5000	nA
				Ta = 100°C	—	1	100	μA
	Reverse current	I_{RRM}	V_{KA} = 70 mA, R_{GK} = 27 kΩ	Ta = 25°C	—	10	5000	nA
				Ta = 100°C	—	1	100	μA
	On−state voltage	V_{TM}	I_{TM} = 100 mA		—	0.9	1.3	V
	Holding current	I_H	R_{GK} = 27 kΩ		—	0.2	1	mA
	Off−state dv / dt	dv/dt	V_{AK} = 280 V, R_{GK} = 27 kΩ		5	10	—	V / μs
	Capacitance	C_j	V = 0, f = 1 MHz	Anode to gate	—	20	—	pF
				Gate to cathode	—	350	—	

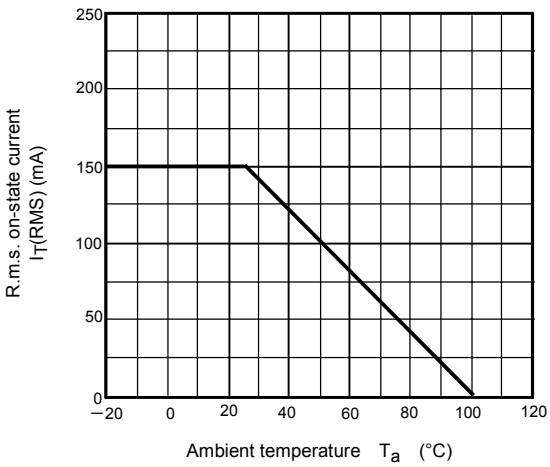
Coupled Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	V_{AK} = 6 V, 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 = 500 V, R_{GK} = 27kΩ	500	—	—	V / μs
Capacitance (input to output)	C_S	V_S = 0, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S = 500 V, 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

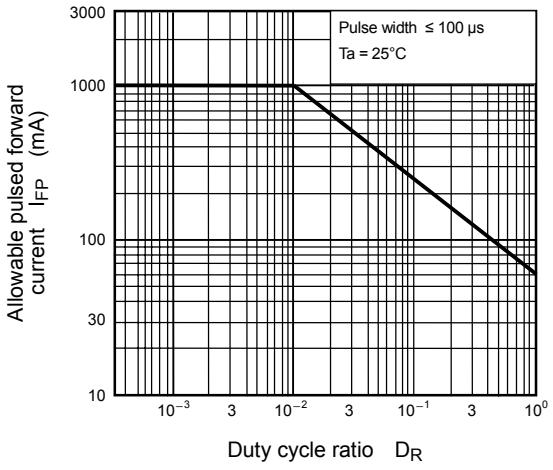
$I_F - T_a$



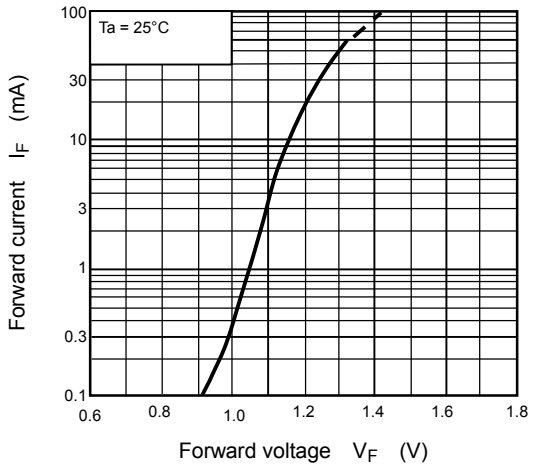
$I_{T(RMS)} - T_a$



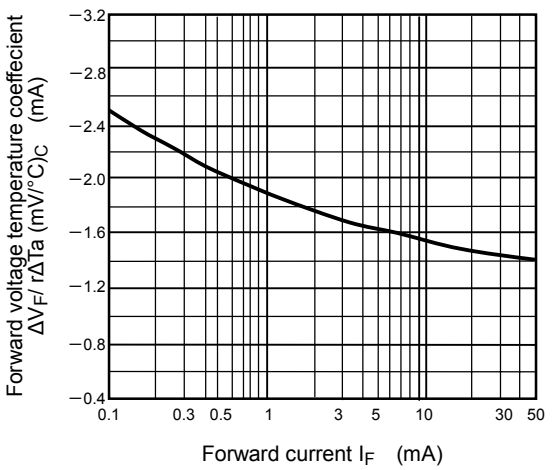
$I_{FP} - D_R$



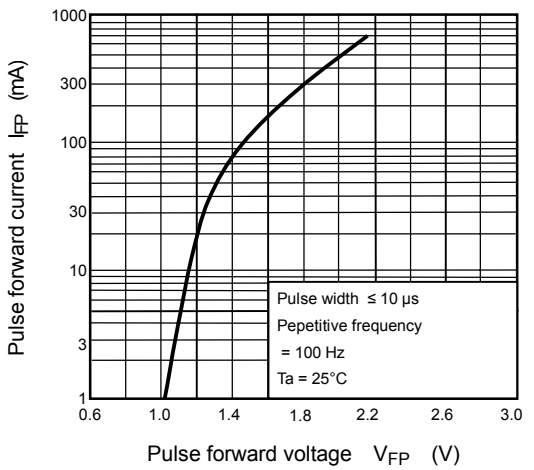
$I_F - V_F$



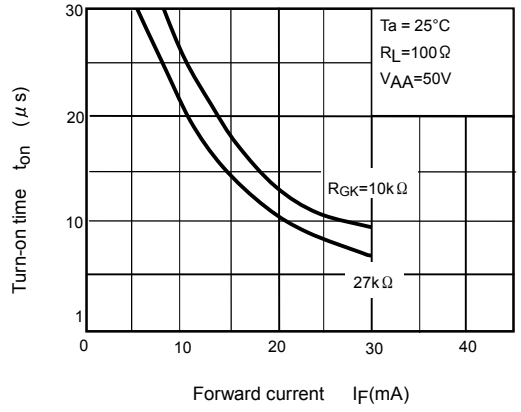
$\Delta V_F/\Delta T_a$ - I_F



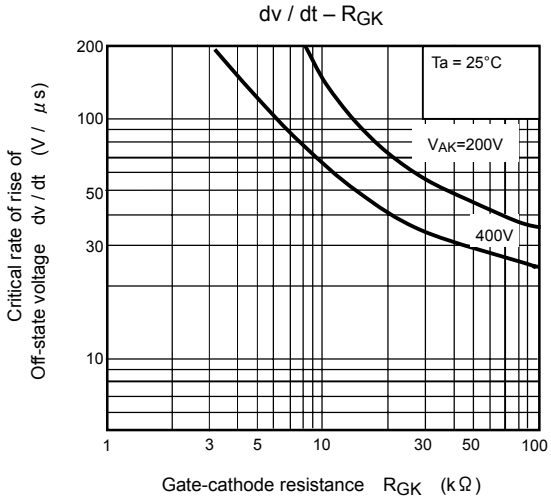
$I_{FP} - V_{FP}$



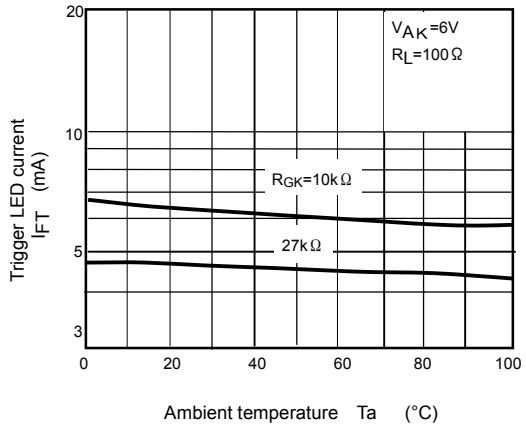
t_{on} – I_F



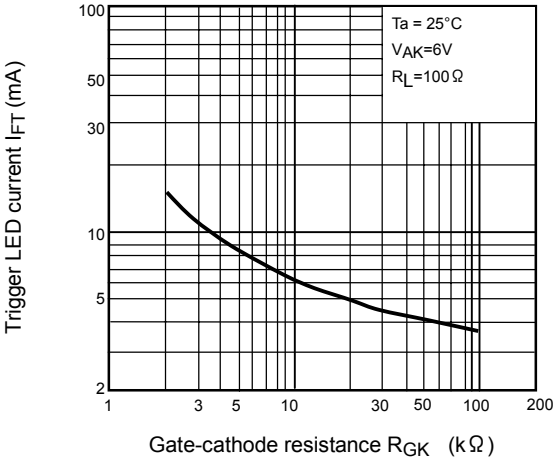
dv / dt – R_{GK}



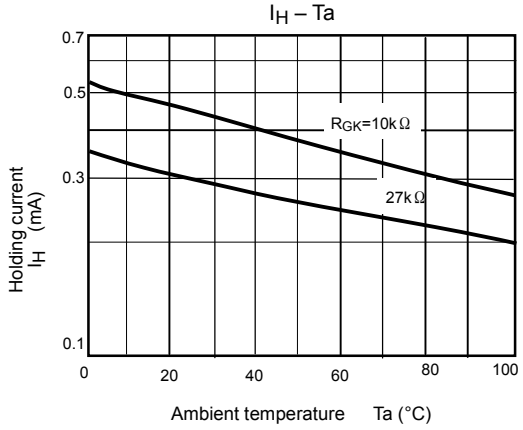
I_{FT} – Ta



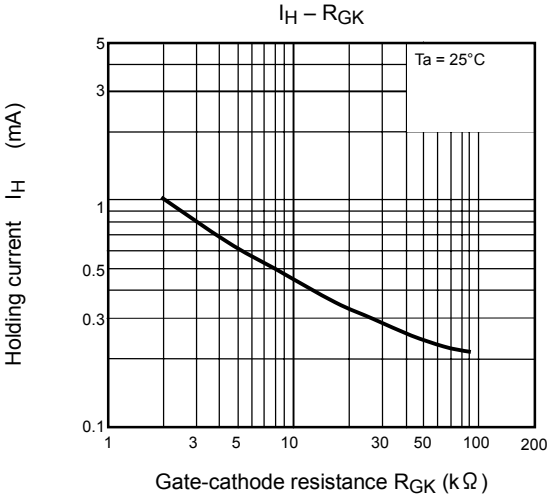
I_{FT} – R_{GK}



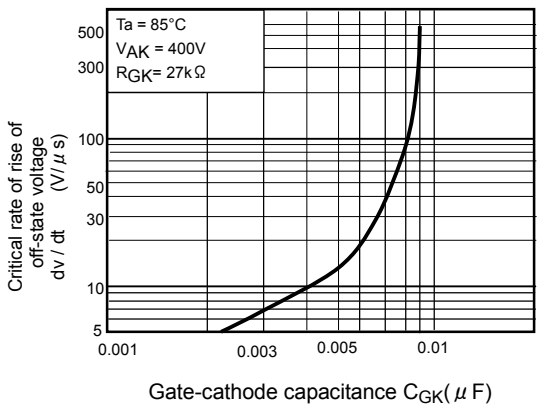
I_H – Ta



I_H – R_{GK}



dv / dt – C_{GK}



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