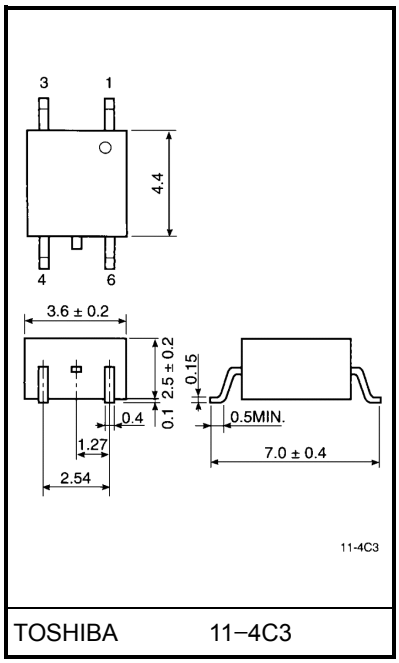
TOSHIBA Photocoupler GaAs Ired & Photo−Triac

TLP161G

Triac Drive
Programmable Controllers
AC−Output Module
Solid State Relay

Unit in mm



TOSHIBA 11−4C3

Weight: 0.09 g

The TOSHIBA mini flat coupler TLP161G is a small outline coupler, suitable for surface mount assembly.
The TLP161G consists of a photo triac, optically coupled to a gallium arsenide infrared emitting diode.

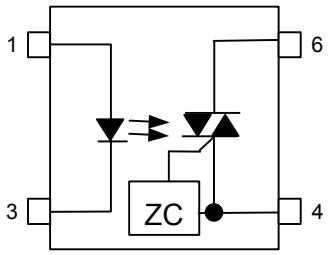
- Zero−voltage crossing turn−on
- Peak off−state voltage: 400V(min.)
- Trigger LED current: 10mA(max.)
- On−state current: 70mA(max.)
- Isolation voltage: 2500Vrms(min.)
- UL recognized: UL1577, file no. E67349

Trigger LED Current

Classi−fication*	Trigger LED Current (mA) V_T=3V, Ta=25°C		Marking Of Classification
	Min.	Max.	
(IFT5)	—	5	T5
(IFT7)	—	7	T5, T7
Standard	—	10	T5, T7, blank

*Ex. (IFT5); TLP161G(IFT5)
(Note) Application type name for certification test, please use standard product type name, i.e.
TLP161G(IFT5): TLP161G

Pin Configurations



1. ANODE
3. CATHODE
4. TERMINAL 1
6. TERMINAL 2

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 (100μs pulse, 100pps)		I_{FP}	1	A
	Reverse voltage		V_R	5	V
	Junction temperature		T_j	125	°C
Detector	Off−state output terminal voltage		V_{DRM}	400	V
	On−state RMS current	Ta=25°C	$I_{T(RMS)}$	70	mA
		Ta=70°C		40	
	On−state current derating (Ta ≥ 25°C)		ΔI_T / °C	−0.67	mA / °C
	Peak on−state current (100μs pulse, 120pps)		I_{TP}	2	A
	Peak nonrepetitive surge current (PW=10ms, DC=10%)		I_{TSM}	1.2	A
	Junction temperature		T_j	115	°C
Storage temperature range			T_{stg}	−55~125	°C
Operating temperature range			T_{opr}	−40~100	°C
Lead soldering temperature (10s)			T_{sol}	260	°C
Isolation voltage (AC, 1min., R.H.≤ 60%) (Note)			BV_S	2500	Vrms

(Note) Device considered a two terminal device: Pins 1 and 3 shorted together and pins 4 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
Peak on−state current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	−25	—	85	°C

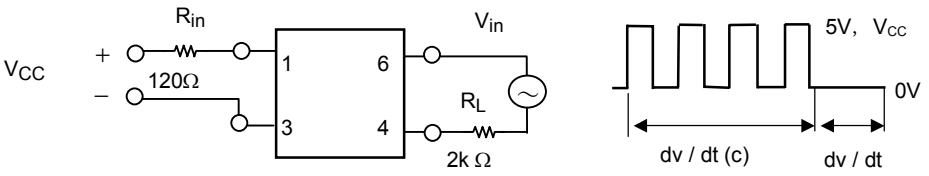
Individual Electrical Characteristics (Ta = 25°C)

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	Peak off−state current	I_{DRM}	V_{DRM}=400V	—	10	1000	nA
	Peak on−state voltage	V_{TM}	I_{TM}=70 mA	—	1.7	2.8	V
	Holding current	I_H	—	—	0.6	—	mA
	Critical rate of rise of off−state voltage	dv / dt	V_{in}=120Vrms, Ta=85°C (Fig.1)	200	500	—	V / μs
	Critical rate of rise of commutating voltage	dv / dt(c)	V_{in}=30Vrms, I_T=15mA (Fig.1)	—	0.2	—	V / μs

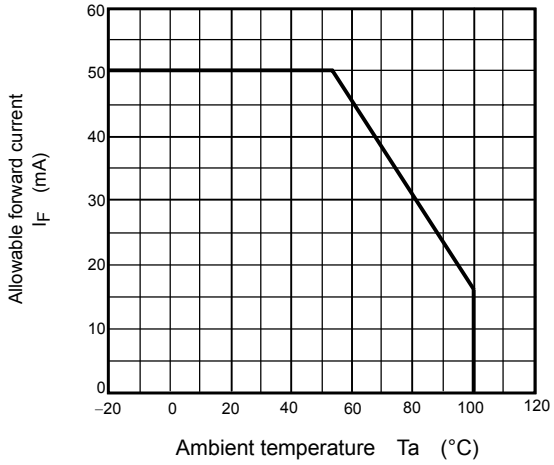
Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	V_T=3V	—	5	10	mA
Inhibit voltage	V_{IH}	I_F=rated I_{FT}	—	—	40	V
Leakage in inhibited state	I_{IH}	I_F=rated I_{FT} V_T=rated V_{DRM}	—	100	300	μA
Capacitance (input to output)	C_S	V_S=0, f=1MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S=500V, R.H.≤ 60%	1×10^{12}	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

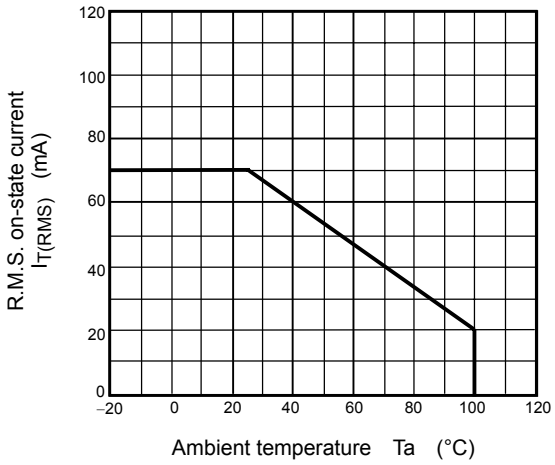
Fig.1 dv / dt test circuit



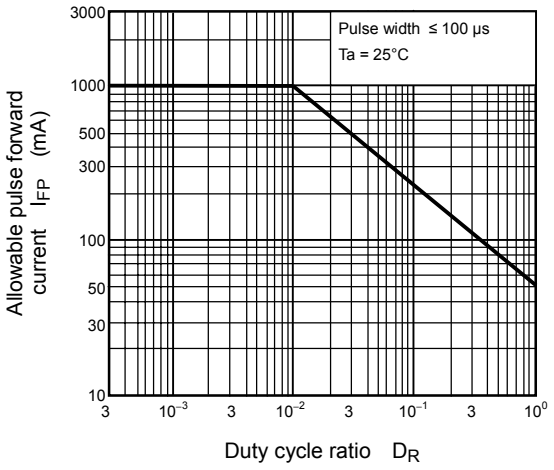
I_F – Ta



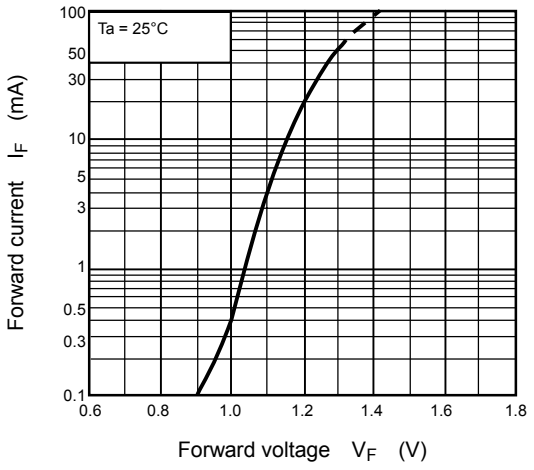
$I_{T(RMS)}$ – Ta



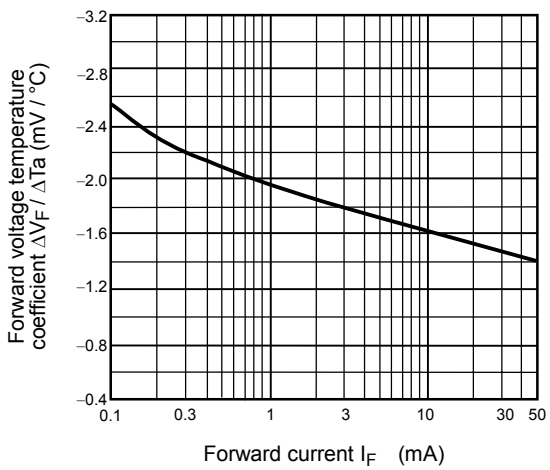
I_{FP} – D_R



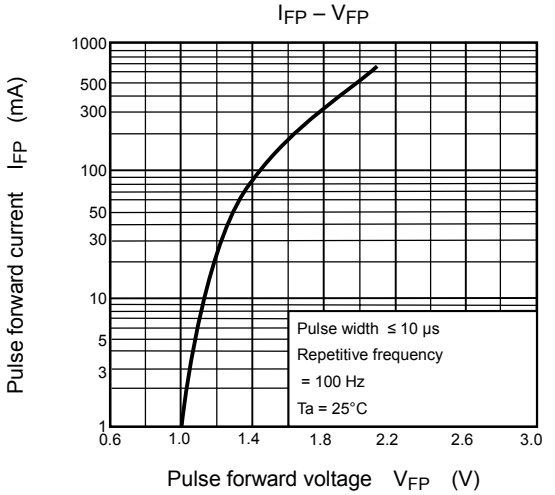
I_F – V_F



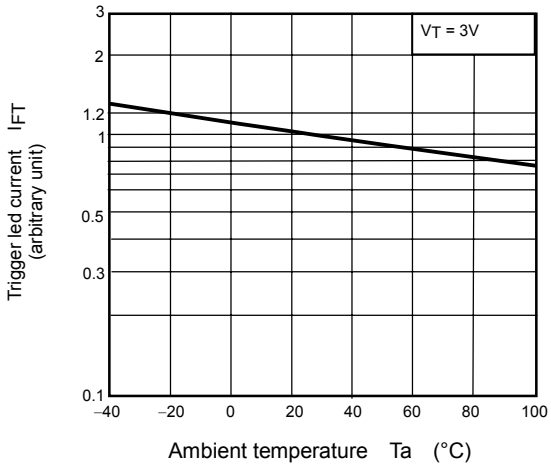
$\Delta V_F / \Delta Ta$ – I_F



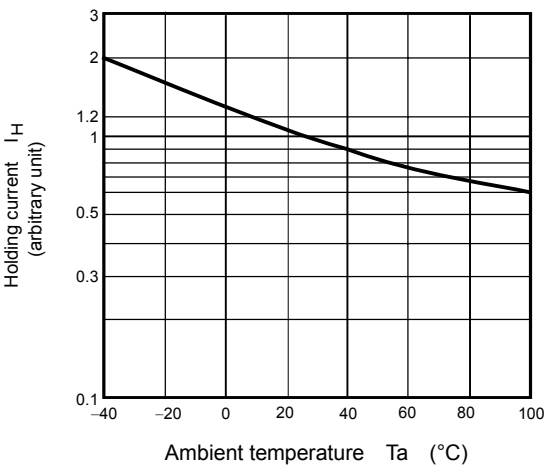
I_{FP} – V_{FP}



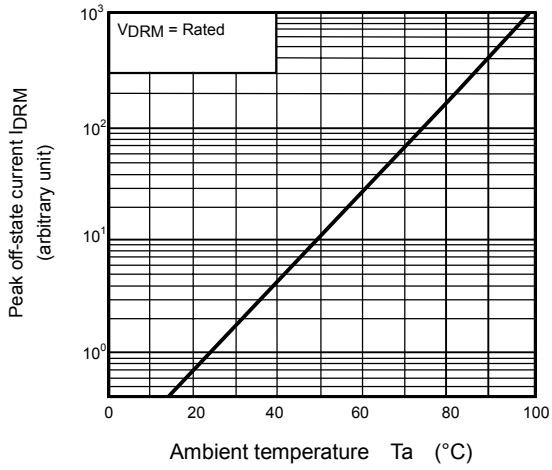
Normalized $I_{FT} - T_a$



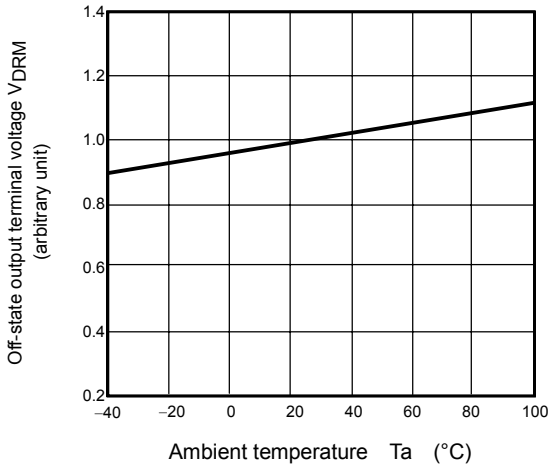
Normalized $I_H - T_a$



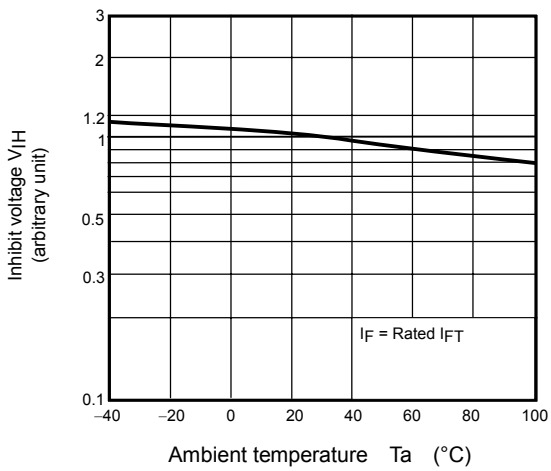
Normalized $I_{DRM} - T_a$



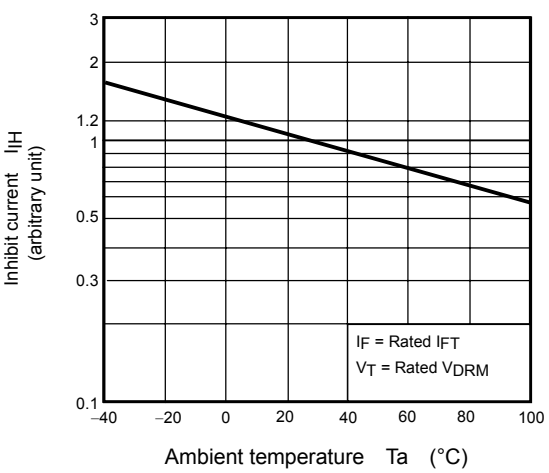
Normalized $V_{DRM} - T_a$



Normalized $V_{IH} - T_a$



Normalized $I_{IH} - T_a$



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