

TOSHIBA Photocoupler GaAs Ired + Photo-Triac

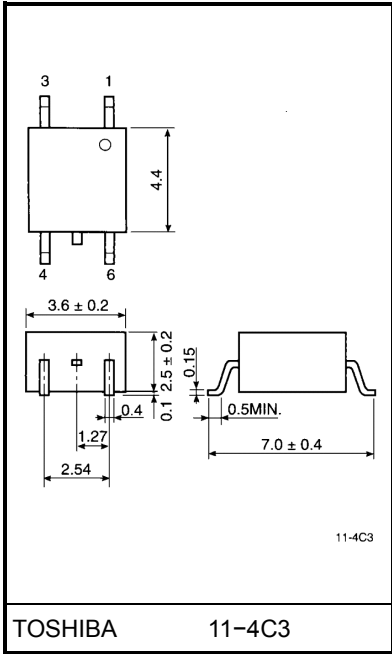
TLP161J

Triac Drive
Programmable Controllers
Ac-Output Module
Solid State Relay

The TOSHIBA mini flat coupler TLP161J is a small outline coupler, suitable for surface mount assembly.
The TLP161J consists of a photo triac, optically coupled to a gallium arsenide infrared emitting diode.

- Zero-voltage crossing Turn-on
- Peak off-state voltage: 600V (min.)
- Trigger LED current: 10mA (max.)
- On-state current: 70mA (max.)
- Isolation voltage: 2500Vrms (min.)
- UL recognized: UL1577, file no. E67349

Unit in mm



Weight: 0.09 g

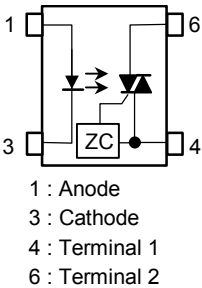
Trigger LED Current

Classification*	Trigger LED Current (mA)		Marking Of Classification
	V _T = 6V, Ta = 25°C		
	Min.	Max.	
(IFT7)	—	7	T7
Standard	—	10	T7, blank

*Ex. (IFT7); TLP161J (IFT7)

(Note) Application type name for certification test, please use standard product type name, i.e.
TLP161J (IFT7): TLP161J

Pin Configuration



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}	600	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 (10 s)			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}	—	—	240	V_{ac}
Forward current	I_F	15	20	25	mA
Peak on-state current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	-25	—	85	°C

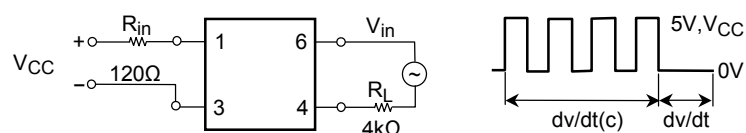
Individual Electrical Characteristics (Ta = 25°C)

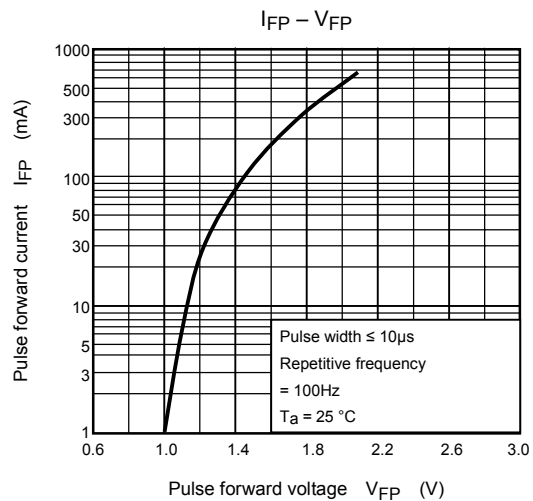
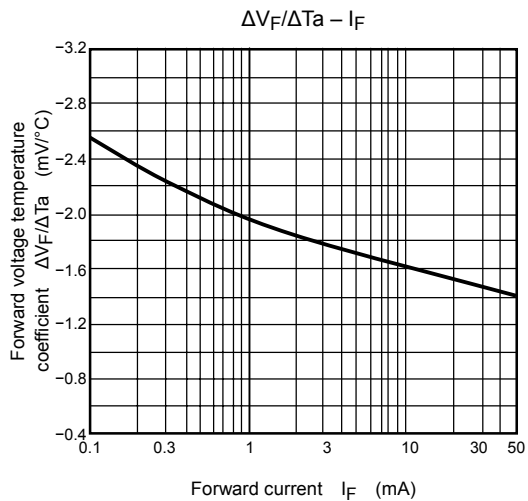
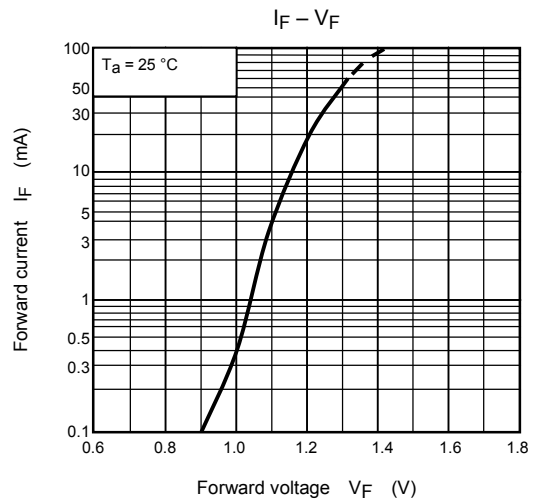
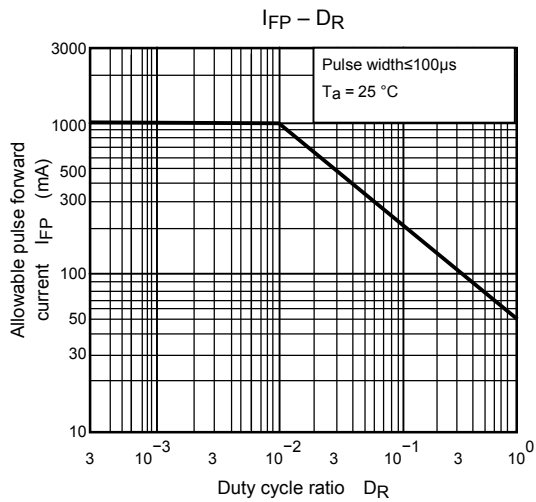
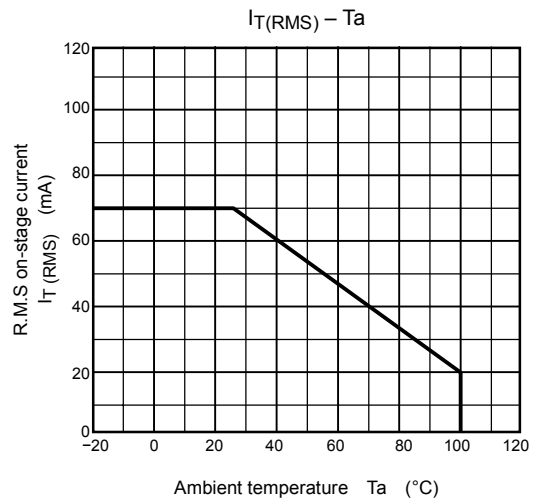
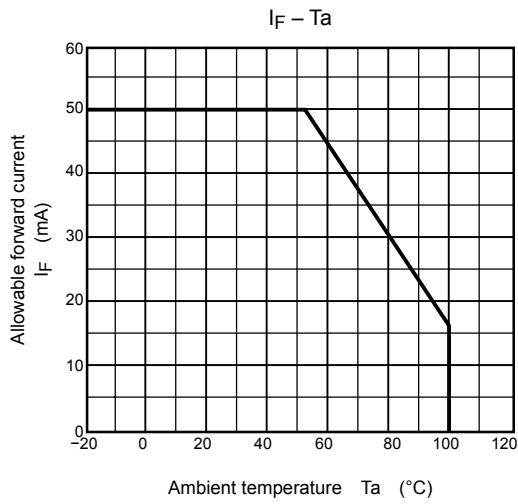
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	30	—	pF
Detector	Peak off-state current	I_{DRM}	$V_{\text{DRM}} = 600\text{V}$	—	10	1000	nA
	Peak on-state voltage	V_{TM}	$I_{\text{TM}} = 70\text{mA}$	—	1.7	2.8	V
	Holding current	I_H	—	—	0.6	—	mA
	Critical rate of rise of off-state voltage	dv / dt	$V_{\text{in}} = 240\text{Vrms}, T_a = 85^\circ\text{C}$ (Fig.1)	200	500	—	V/ μs
	Critical rate of rise of commutating voltage	$dv / dt(c)$	$V_{\text{in}} = 60\text{Vrms}, I_T = 15\text{mA}$ (Fig.1)	—	0.2	—	V/ μs

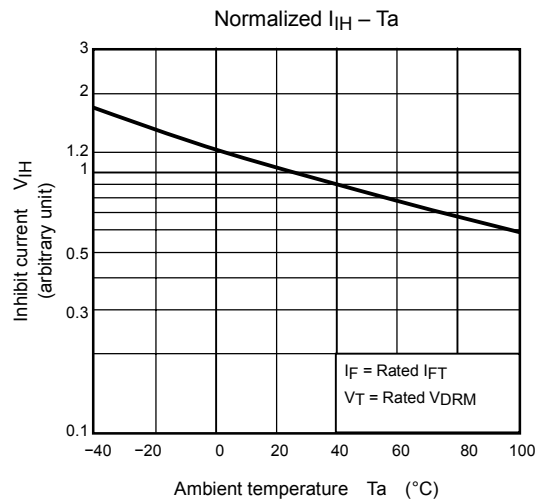
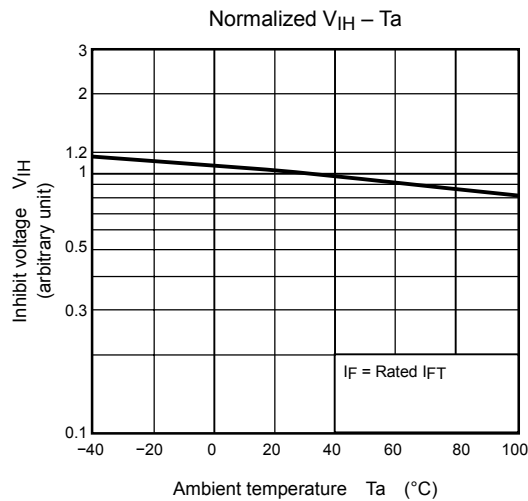
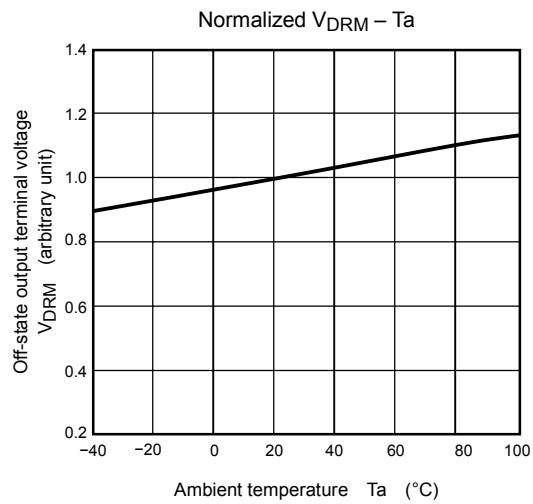
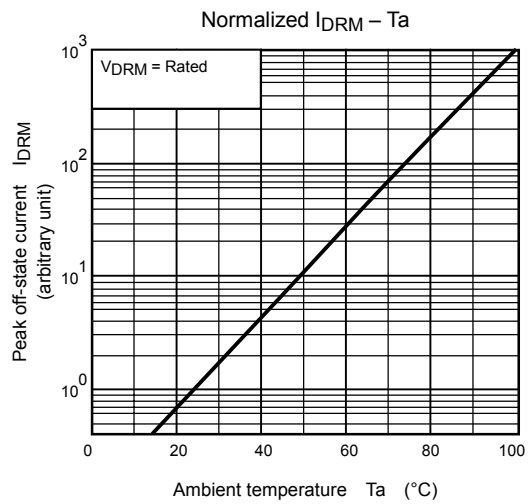
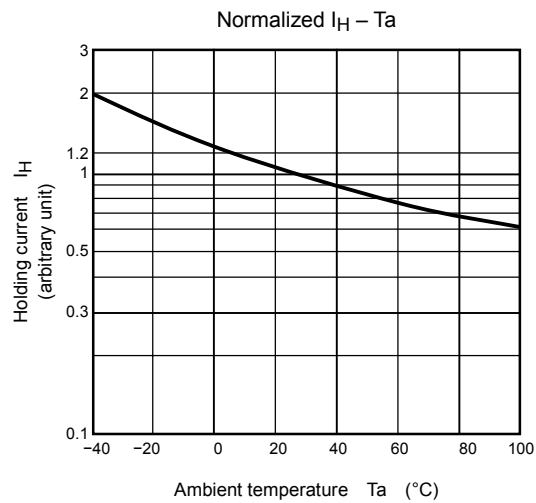
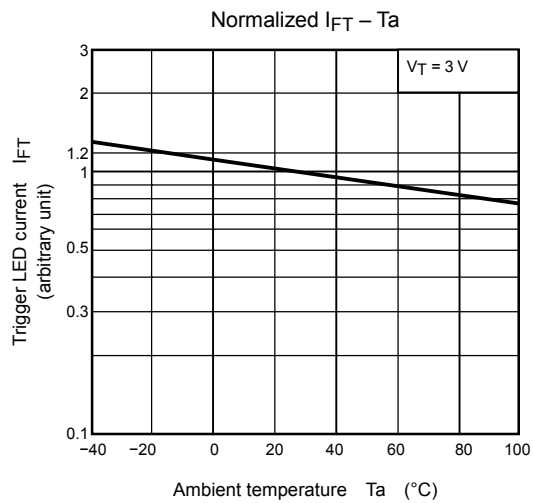
Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	$V_T = 6\text{V}$	—	5	10	mA
Inhibit voltage	V_{IH}	$I_F = \text{Rated } I_{\text{FT}}$	—	—	50	V
Leakage in inhibited state	I_{IH}	$I_F = \text{Rated } I_{\text{FT}}$ $V_T = \text{Rated } V_{\text{DRM}}$	—	200	600	μA
Capacitance (input to output)	C_S	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	1×10^{12}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second, in oil	—	5000	—	
		AC, 1 minute, in oil	—	5000	—	Vdc

Fig.1 dv / dt test circuit







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