

TOSHIBA PHOTOCOUPLER GaAs IRED + PHOTO-TRIAC

TLP165J

TRIAC DRIVE
PROGRAMMABLE CONTROLLERS
AC-OUTPUT MODULE
SOLID STATE RELAY

The TOSHIBA MINI FLAT COUPLER TLP165J is a small outline coupler, suitable for surface mount assembly.
The TLP165J consists of a photo triac, optically coupled to a gallium arsenide infrared emitting diode.

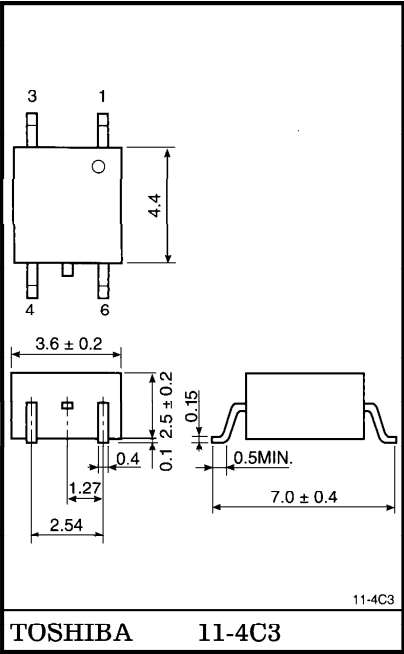
- Peak Off-State Voltage : 600V (MIN.)
 - Trigger LED Current : 10mA (MAX.)
 - On-State Current : 70mA (MAX.)
 - Isolation Voltage : 2500Vrms (MIN.)
 - UL Recognized : UL1577, File No. E67349
 - Option (V4) type
- VDE Approved : VDE 0884 Satisfied
Maximum Operating Insulation Voltage : 565Vpk
Highest Permissible Over Voltage : 4000Vpk

TRIGGER LED CURRENT

TYPE (Note 1)	TRIGGER LED CURRENT (mA)		MARKING OF CLASSIFICATION
	V _T =6V, T _a =25°C		
	Min.	Max.	
(IFT7)	—	7	T7
None	—	10	T7, blank

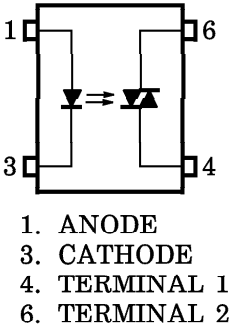
* Exp. Rank IFT7 : TLP165J (IFT7)
(Note 1) Application type name for certification test, please use standard product type name, i.e.
TLP165J (IFT7) : TLP165J

Unit in mm



Weight : 0.09g

PIN CONFIGURATIONS



961001EBC2

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- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	RATING	UNIT
LED	Forward Current		I _F	50	mA
	Forward Current Derating (Ta≥53℃)		ΔI _F /℃	−0.7	mA/℃
	Peak Forward Current (100μs pulse, 100pps)		I _{FP}	1	A
	Reverse Voltage		V _R	5	V
	Junction Temperature		T _j	125	℃
DETECTOR	Off-State Output Terminal Voltage		V _{DRM}	600	V
	On-State RMS Current	Ta=25℃	I _T (RMS)	70	mA
		Ta=70℃		40	
	On-State Current Derating (Ta≥25℃)		ΔI _T /℃	−0.67	mA/℃
	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	℃
Storage Temperature Range			T _{stg}	−55~125	℃
Operating Temperature Range			T _{opr}	−40~100	℃
Lead Soldering Temperature (10s)			T _{sol}	260	℃
Isolation Voltage (AC, 1 min., R.H.≤60%) (Note 2)			BV _S	2500	Vrms

(Note 2) Device considered a two terminal device : Pins 1 and 3 shorted together and 4 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	240	Vac
Forward Current	I_F	15	20	25	mA
Peak On-State Current	I_{TP}	—	—	1	A
Operating Temperature	T_{opr}	-25	—	85	°C

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	—	—	1.0	—	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{\text{in}} = 240\text{Vrms}, T_a = 85^\circ\text{C}$ (Note 3)	—	500	—	$\text{V}/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$I_T = 15\text{mA}, V_{\text{in}} = 60\text{Vrms}$ (Note 3)	—	0.2	—	$\text{V}/\mu\text{s}$

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_T = 6\text{V}$	—	—	10	mA
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	—	—	Vrms
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc
Turn-on Time	t_{ON}	$V_D = 6 \rightarrow 4\text{V}, R_L = 100\Omega$ $I_F = \text{Rated } I_{\text{FT}} \times 1.5$	—	—	100	μs

(Note 3) dv/dt TEST CIRCUIT

