TOSHIBA TLP161J

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

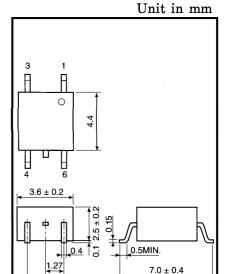
TRIGGER LED CURRENT

CLASSI- FICATION*	TRIGGER LED	MARKING OF		
	$V_{\mathrm{T}}=6V$,	CLASSIFICATION		
	MIN.	MAX.	CLASSIFICATION	
(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

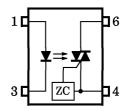


11-4C3

Weight: 0.09g

TOSHIBA

PIN CONFIGURATIONS



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	RATING	UNIT	
	Forward Current			50	mA	
	Forward Current Derating (Ta \geq 53°C)	∆I _F /°C	-0.7	mA/°C		
LED	Peak Forward Current (100 µs pulse, 1	I_{FP}	1	A		
	Reverse Voltage	v_{R}	5	V		
	Junction Temperature	T_{j}	125	°C		
	Off-State Output Terminal Voltage	$v_{ m DRM}$	600	V		
	On-State RMS Current	Ta = 25°C	Image	70	mA	
OR		$Ta = 70^{\circ}C$	IT(RMS)	40		
DETECTOR	On-State Current Derating (Ta\ge 25°C)	$\Delta I_{\mathrm{T}}/^{\circ}\mathrm{C}$	-0.67	mA/°C		
TE	Peak On-State Current (100 µs pulse,	$I_{ ext{TP}}$	2	A		
DE	Peak Nonrepetitive Surge Current (PW=10ms, DC=10%)	I _{TSM}	1.2	A		
	Junction Temperature	T_{j}	115	°C		
Storage Temperature Range			$\mathrm{T_{stg}}$	-55~125	°C	
Operating Temperature Range			$T_{ m opr}$	-40~100	°C	
Lead Soldering Temperature (10s)			$T_{ m sol}$	260	$^{\circ}\mathrm{C}$	
Isol	Isolation Voltage (AC, 1 min., R.H.≤60%) (Note)			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}	1	1	240	Vac
Forward Current	${ m I_F}$	15	20	25	mA
Peak On-State Current	$ m I_{TP}$	l	l	1	Α
Operating Temperature	$\mathrm{T}_{\mathrm{opr}}$	-25		85	°C

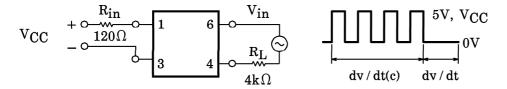
INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

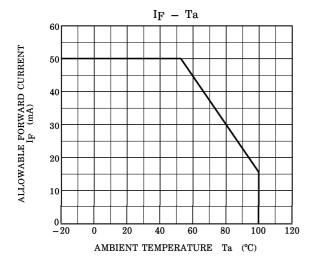
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
	Forward Voltage	$ m V_{ m F}$	$I_{ m F} = 10 { m mA}$	1.0	1.15	1.3	V
LED	Reverse Current	${ m I}_{ m R}$	$V_R=5V$	_	_	10	μ A
	Capacitance	C_{T}	V=0, f=1MHz	_	30	_	pF
)R	Peak Off-State Current	${ m I}_{ m DRM}$	$V_{ m DRM} = 600 V$		10	1000	nA
	Peak On-State Voltage	$ m V_{TM}$	$I_{TM} = 70 \text{mA}$	_	1.7	2.8	V
CT	Holding Current	${ m I_H}$	_	_	0.6	_	mA
DETECTOR	Critical Rate of Rise of Off-State Voltage	dv/dt	V _{in} =240Vrms, Ta=85°C (Fig.1)	200	500	_	V/μs
	Critical Rate of Rise of Commutating Voltage	dv / dt(c)	V_{in} = 60Vrms, I_T = 15mA (Fig.1)	_	0.2	_	V/μs

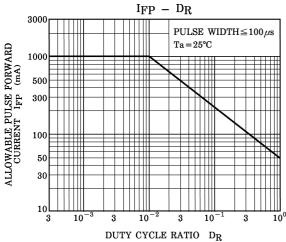
COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

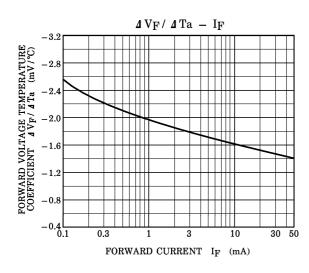
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_{T}=6V$	_	5	10	mA
Inhibit Voltage	$ m v_{IH}$	I _F =Rated I _F T	_	-	50	V
Leakage in Inhibited State	${ m I}_{ m IH}$	$I_{\mathbf{F}}$ =Rated $I_{\mathbf{FT}}$ $V_{\mathbf{T}}$ =Rated $V_{\mathbf{DRM}}$		200	600	μ A
Capacitance (Input to Output)	c_{S}	$V_S=0$, f=1MHz	_	0.8	_	pF
Isolation Resistance	$R_{\mathbf{S}}$	V _S =500V, R.H.≦60%	1×10^{12}	10^{14}		Ω
	$_{ m BV_S}$	AC, 1 minute	2500	_	_	Vrms
Isolation Voltage		AC, 1 second, in oil	_	5000	_	
		DC, 1 minute, in oil	_	5000	_	Vdc

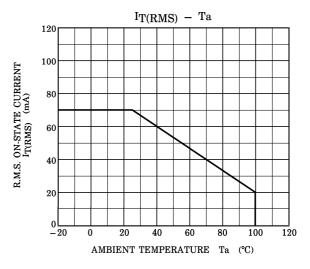
Fig.1 dv/dt TEST CIRCUIT

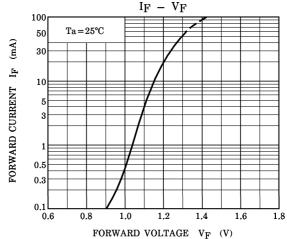


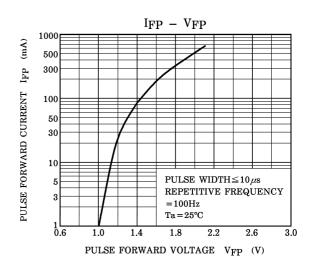


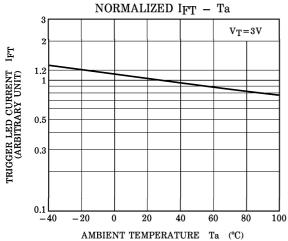


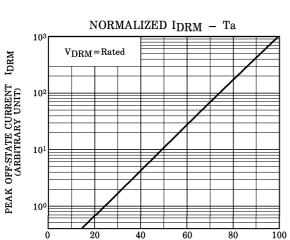




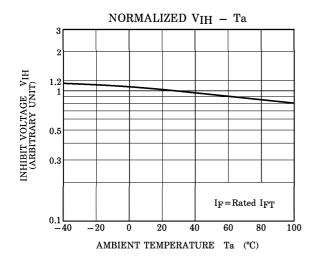


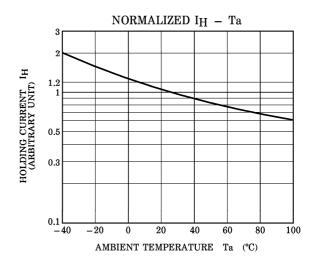


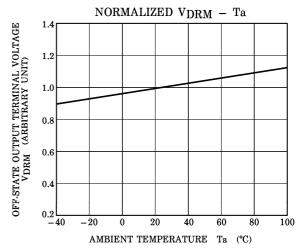


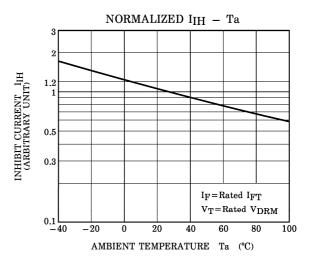


AMBIENT TEMPERATURE Ta (°C)









RESTRICTIONS ON PRODUCT USE

000707EBC

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- 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.
- The products described in this document are subject to the foreign exchange and foreign trade laws.
- ◆ The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.