TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP560G

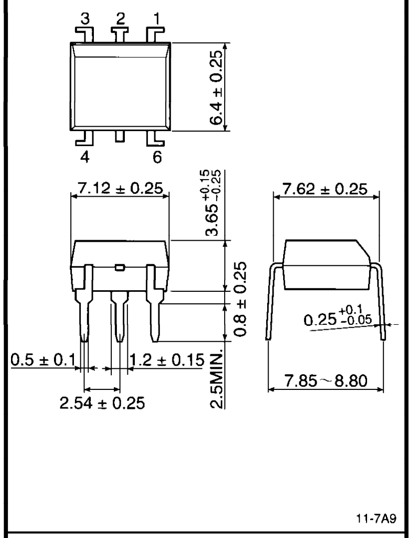
TRIAC DRIVER

PROGRAMMABLE CONTROLLERS

AC-OUTPUT MODULE

SOLID STATE RELAY

Unit in mm



TOSHIBA 11-7A9

Weight : 0.39g

The TOSHIBA TLP560G consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

- Peak Off-State Voltage : 400V (MIN.)
- On-State Current : 100mA (MAX.)
- Isolation Voltage : $2500V_{rms}$ (MIN.)
- UL Recognized : File No. E67349
- Isolation Operating Voltage : $2500V_{ac}$ or $300V_{dc}$ for Isolation Groupe C*1
- Trigger LED Current

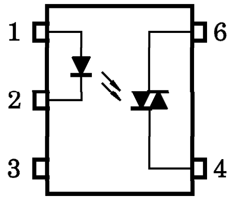
CLASSIFICATION*	TRIGGER LED CURRENT (mA) $V_T = 6V$, Ta = 25°C MIN.	TRIGGER LED CURRENT (mA) $V_T = 6V$, Ta = 25°C MAX.	MARKING OF CLASSIFICATION
(IFT5)	—	5	T5
(IFT7)	—	7	T5, T7
Standard	—	10	T5, T7, Blank

*Ex. (IFT5) ; TLP560G (IFT5)

(Note) Application type name for certification test, please use standard product type name, i.e. TLP560G (IFT5) : TLP560G

*1 : According to VDE0110, table 4.

PIN CONFIGURATION (TOP VIEW)



1 : ANODE
2 : CATHODE
3 : N.C.
4 : TERMINAL 1
6 : TERMINAL 2

961001EBC2

- TOSHIBA is continually working to improve the quality and the 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 observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product 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 products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- 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 foreign exchange and foreign trade control 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.

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	$I_{T\,(RMS)}$	100	mA
		Ta = 70°C		50	
	On-State Current Derating (Ta≧25°C)		ΔI_T / °C	−1.1	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, 1 min., R.H.≦60%)			BV_S	2500	V_{rms}

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	120	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

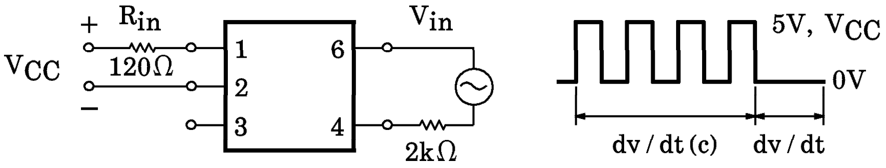
INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

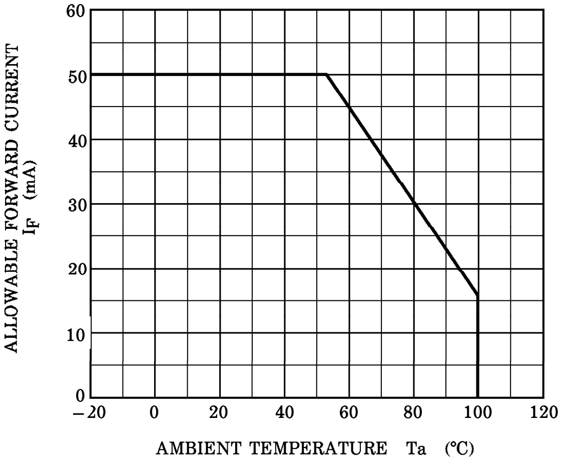
	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F = 10mA$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R = 5V$	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1MHz	—	10	—	pF
DETECTOR	Peak Off-State Current	I_{DRM}	$V_{DRM} = 400V$	—	10	100	nA
	Peak On-State Voltage	V_{TM}	$I_{TM} = 100mA$	—	1.7	3.0	V
	Holding Current	I_H	—	—	0.6	—	mA
	Critical Rate of Rise of Off-State Voltage	dv / dt	$V_{in} = 120V_{rms}$, Ta = 85°C (Fig.1)	200	500	—	V / μs
	Critical Rate of Rise of Commutating Voltage	dv / dt (c)	$V_{in} = 30V_{rms}$, $I_T = 15mA$ (Fig.1)	—	0.2	—	V / μs

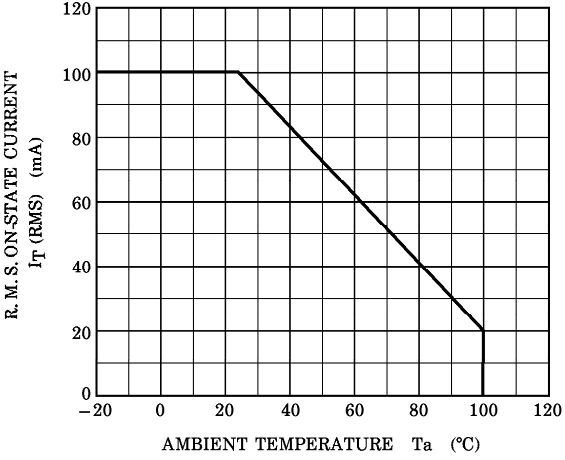
COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

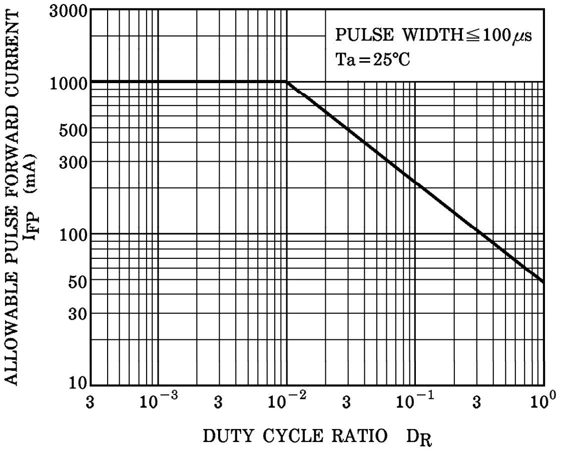
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_T = 3V$	—	5	10	mA
Capacitance (Input to Output)	C_S	$V_S = 0$, f = 1MHz	—	0.8	—	pF
Isolation Resistance	R_S	$V_S = 500V$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	V_{dc}

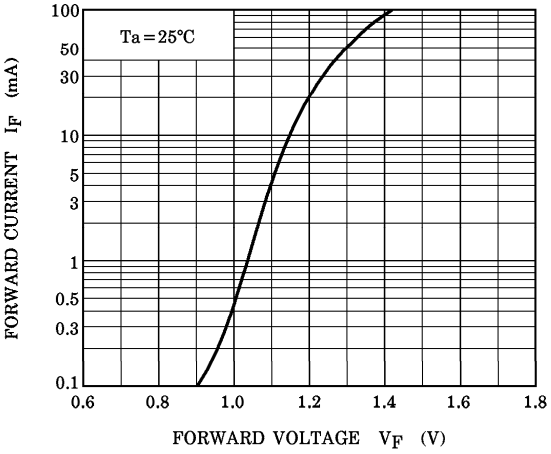
Fig.1 : dv / dt TEST CIRCUIT

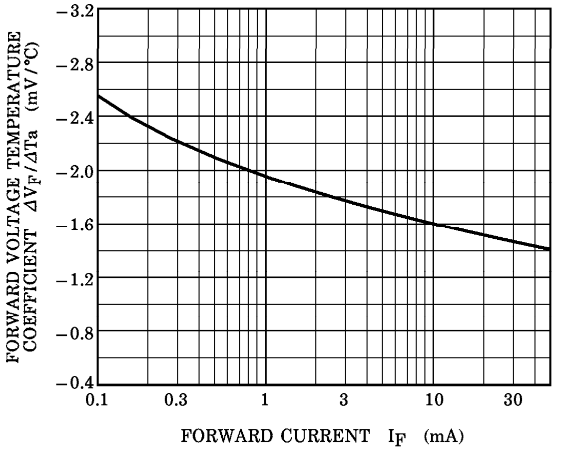


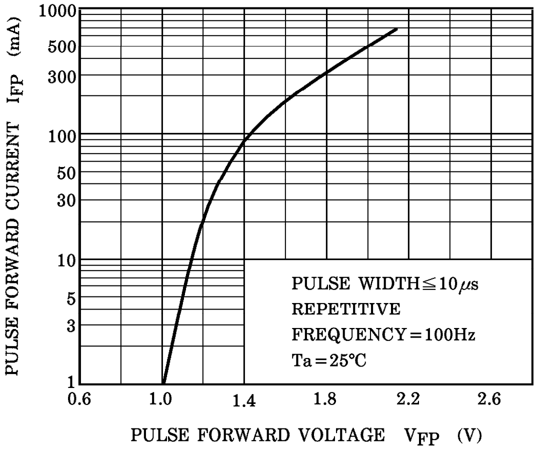

I_F – Ta


$I_{T(RMS)}$ – Ta

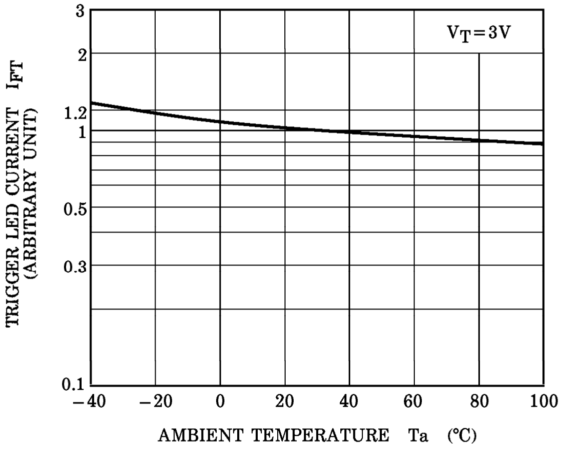

I_{FP} – D_R


I_F – V_F

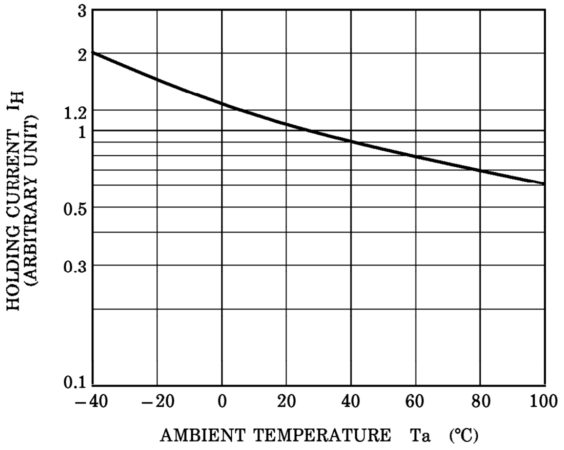

$\Delta V_F / \Delta Ta$ – I_F


I_{FP} – V_{FP}

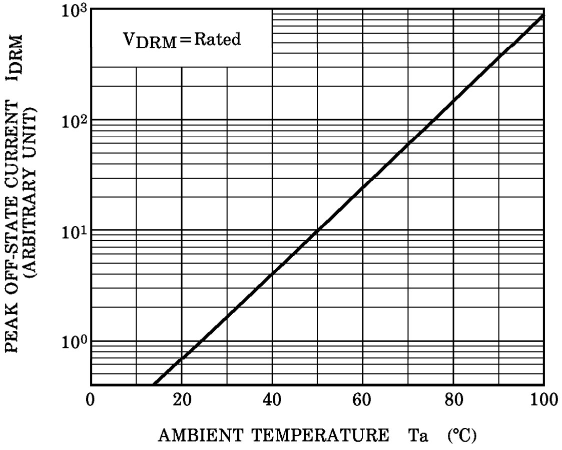
NORMALIZED I_{FT} – Ta



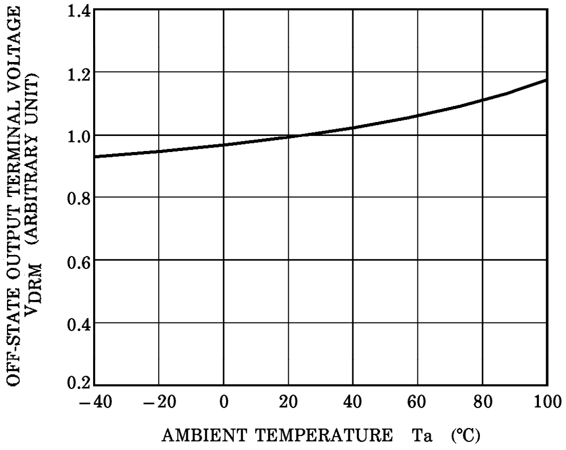
NORMALIZED I_H – Ta



NORMALIZED I_{DRM} – Ta



NORMALIZED V_{DRM} – Ta



NORMALIZED CURRENT –
LED CURRENT PULSE WIDTH