

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP525G, TLP525G-2, TLP525G-4

TRIAC DRIVE

PROGRAMMABLE CONTROLLERS

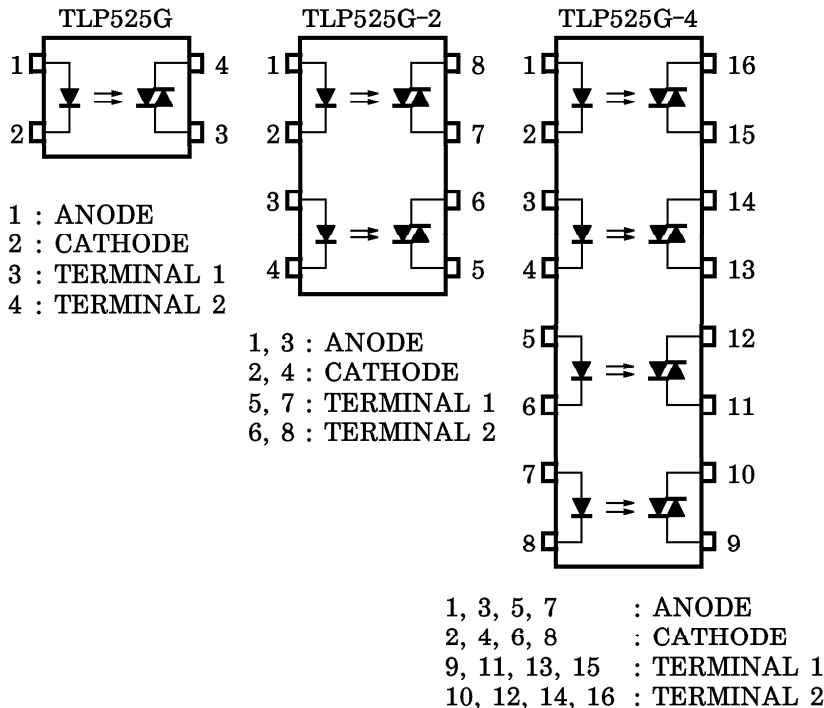
AC-OUTPUT MODULE

SOLID STATE RELAY

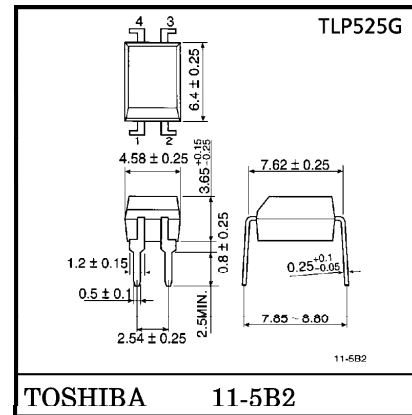
The TOSHIBA TLP525G, -2 and -4 consist of a photo-triac optically coupled to a gallium arsenide infrared emitting diode. The TLP525G-2 offers two isolated channels in an eight lead plastic DIP package, while the TLP525G-4 provides four isolated channels in a sixteen lead plastic DIP package.

- Peak Off-state Voltage : 400V (MIN.)
- Trigger LED Current : 10mA (MAX.)
- Peak On-state Current : 2Apk (MAX.)
- Isolation Voltage : 2500V_{rms} (MIN.)
- UL Recognized : File No. E67349

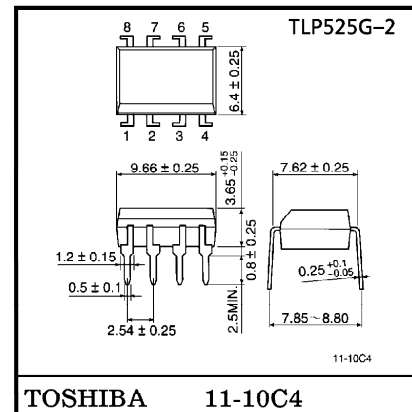
PIN CONFIGURATIONS (TOP VIEW)



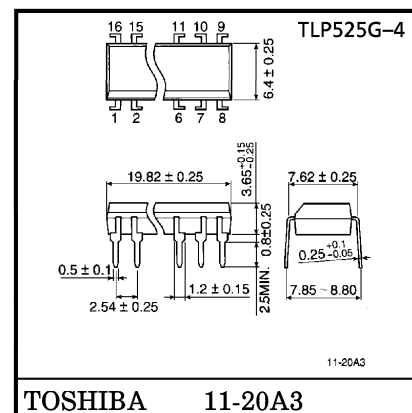
Unit in mm



Weight : 0.26g



Weight : 0.54g



Weight : 1.1g

961001EAA2

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING		UNIT
			TLP525G	TLP525G-2 TLP525G-4	
LED	Forward Current	I_F	50	50	mA
	Forward Current Derating	$I_F / ^\circ\text{C}$	$-0.7 (T_a \geq 53^\circ\text{C})$	$-0.5 (T_a \geq 25^\circ\text{C})$	mA / $^\circ\text{C}$
	Pulse Forward Current	I_{FP}	1 (100 μs pulse, 100pps)		A
	Reverse Voltage	V_R	5		V
	Junction Temperature	T_j	125		$^\circ\text{C}$
DETECTOR	Off-State Output Terminal Voltage	V_{DRM}	400		V
	On-State RMS Current	$I_T (\text{RMS})$	100	80	mA
			50	40	
	On-State Current Derating (Ta $\geq 25^\circ\text{C}$)	$I_T / ^\circ\text{C}$	-1.1	-0.9	mA / $^\circ\text{C}$
	Peak On State Current	I_{TP}	2 (100 μs pulse, 120pps)		A
	Peak Nonrepetitive Surge Current (P _w = 10ms, DC = 10%)	I_{TSM}	1.2		A
	Junction Temperature	T_j	115		$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55 \sim 125$		$^\circ\text{C}$
Operating Temperature Range		T_{opr}	$-40 \sim 100$		$^\circ\text{C}$
Lead Soldering Temperature		T_{sol}	260 (10s)		$^\circ\text{C}$
Isolation Voltage (Note)		BV_S	2500 (AC, 1min., R.H. $\leq 60\%$)		V_{rms}

(Note) Device considered a two terminal device : LED side pins shorted together and DETECTOR side pins shorted together.

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	$^\circ\text{C}$

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}	$V_{\text{DRM}}=400\text{V}$	—	10	100	nA
	Peak On-State Voltage	V_{TM}	$I_{\text{TM}}=100\text{mA}$	—	1.7	3.0	V
	Holding Current	I_H	—	—	0.2	—	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{\text{in}}=120\text{V}_{\text{rms}}, T_a=85^\circ\text{C}$ (Figure 1)	200	500	—	$\text{V}/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{\text{in}}=30\text{V}_{\text{rms}}, I_T=15\text{mA}$ (Figure 1)	—	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}	$V_T=3\text{V}$	—	5	10	mA
Capacitance Input to Output	C_S	$V_S=0, f=1\text{MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$V_S=500\text{V}, \text{R.H.} \leq 60\%$	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

