

(TLP525G)

TRIAC DRIVE

PROGRAMMABLE CONTROLLERS

AC-OUTPUT MODULE

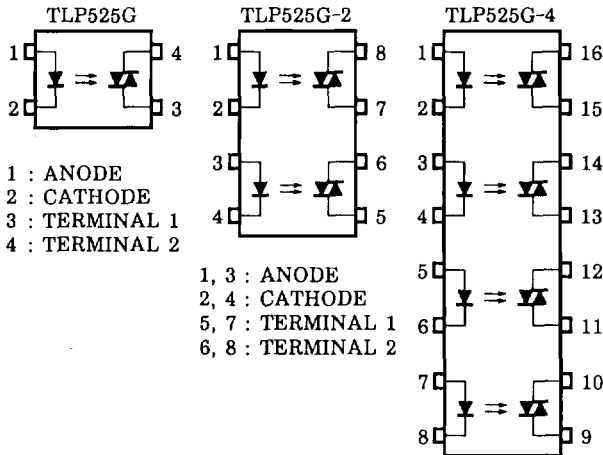
SOLID STATE RELAY

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<sub>rms</sub> (MIN.)
- UL Recognized : File No. E67349

PIN CONFIGURATIONS (TOP VIEW)



Unit in mm

TLP525G	
JEDEC	—
EIAJ	—
TOSHIBA	11-5B1
TLP525G-2	
JEDEC	—
EIAJ	—
TOSHIBA	11-10C1
TLP525G-4	
JEDEC	—
EIAJ	—
TOSHIBA	11-20A1

# TLP525G, -2, -4

(TLP525G)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING		UNIT	
			TLP525G	TLP525G-2 TLP525G-4		
LED	Forward Current	I <sub>F</sub>	50	50	mA	
	Forward Current Derating	I <sub>F</sub> / °C	-0.7 (Ta ≥ 53°C)	-0.5 (Ta ≥ 25°C)	mA / °C	
	Pulse Forward Current	I <sub>FP</sub>	1 (100μs pulse, 100pps)		A	
	Reverse Voltage	V <sub>R</sub>	5		V	
	Junction Temperature	T <sub>j</sub>	125		°C	
DETECTOR	Off-State Output Terminal Voltage	V <sub>DRM</sub>	400		V	
	On-State RMS Current	I <sub>T</sub> (RMS)	Ta = 25°C	100	80	mA
			Ta = 70°C	50	40	mA
	On-State Current Derating (Ta ≥ 25°C)	I <sub>T</sub> / °C	-1.1	-0.9	mA / °C	
	Peak On State Current	I <sub>TP</sub>	2 (100μs pulse, 120pps)		A	
	Peak Nonrepetitive Surge Current (P <sub>w</sub> = 10ms, DC = 10%)	I <sub>TSM</sub>	1.2		A	
	Junction Temperature	T <sub>j</sub>	115		°C	
Storage Temperature Range	T <sub>stg</sub>	-55~150		°C		
Operating Temperature Range	T <sub>opr</sub>	-40~100		°C		
Lead Soldering Temperature	T <sub>sol</sub>	260 (10 sec.)		°C		
Isolation Voltage	BVS	2500 (AC, 1 min., R.H. ≤ 60%)		V <sub>rms</sub>		

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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	$\mu\text{A}$
	Capacitance	$C_T$	$V = 0, f = 1\text{MHz}$	—	30	—	pF
DETECTOR	Peak Off-State Current	$I_{DRM}$	$V_{DRM} = 400\text{V}$	—	10	100	nA
	Peak On-State Voltage	$V_{TM}$	$I_{TM} = 100\text{mA}$	—	1.7	3.0	V
	Holding Current	$I_H$	—	—	0.2	—	mA
	Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{in} = 120V_{rms}, T_a = 85^\circ\text{C}$ (Figure 1)	—	500	—	$V/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{in} = 30V_{rms}, I_T = 15\text{mA}$ (Figure 1)	—	0.2	—	$V/\mu\text{s}$

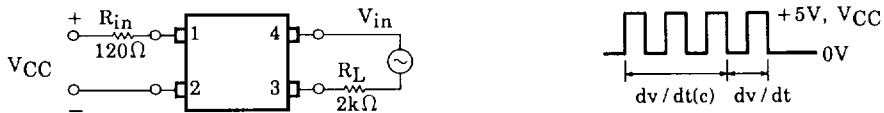
COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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	$R_S$	$V_S = 500\text{V}$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
Isolation Voltage	$BV_S$	AC, 1 minute	2500	—	—	$V_{rms}$
		AC, 1 second	—	5000	—	
		DC, 1 minute	—	5000	—	$V_{dc}$

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	$V_{AC}$	—	—	120	Vac
Forward Current	$I_F$	15	20	25	mA
Peak On-State Current	$I_{TP}$	—	—	1	A
Operating Temperature	$T_{opr}$	-25	—	85	$^\circ\text{C}$

Fig.1  $dv/dt$  TEST CIRCUIT



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