

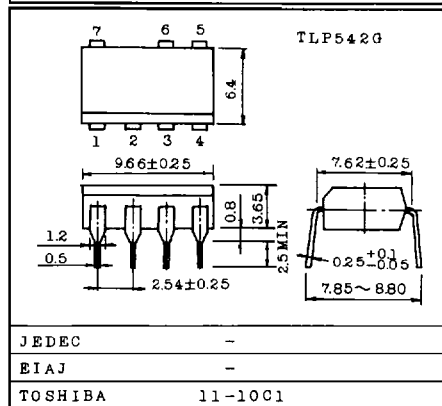
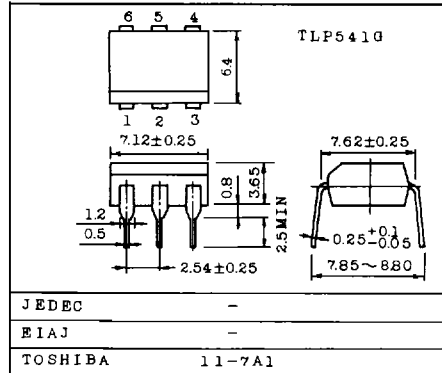
# TLP541G, 542G

PROGRAMMABLE CONTROLLERS.  
 AC-OUTPUT MODULE.  
 SOLID STATE RELAY.

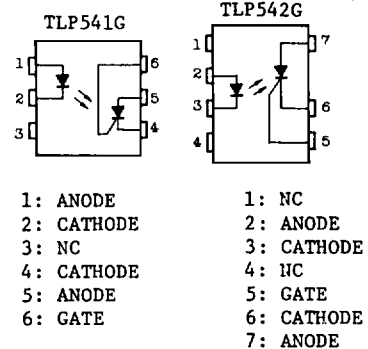
The TOSHIBA TLP541G consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package. The TOSHIBA TLP542G consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a seven lead plastic DIP package.

- Peak Off-State Voltage: 400V Min.
- Trigger LED Current : 7mA Max.
- On-State Current : 150mA Max.
- Isolation Voltage : 2500Vrms Min.
- UL Recognized : File No. E67349

Unit in mm



PIN CONFIGURATIONS (TOP VIEW)



# TLP541G, 542G

MAXIMUM RATING (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	70	mA
	Forward Current Derating (Ta≥25°C)	$\Delta I_F/^\circ\text{C}$	-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	Peak Forward Voltage (R <sub>GK</sub> =27KΩ)	$V_{DRM}$	400	V
	Peak Reverse Voltage (R <sub>GK</sub> =27KΩ)	$V_{RRM}$	400	V
	On-State Current	$I_T(\text{RMS})$	150	mA
	On-State Current Derating (Ta≥25°C)	$\Delta I_T/^\circ\text{C}$	-2.0	mA/°C
	Peak One Cycle Surge Current	$I_{TSM}$	2	A
	Peak Reverse Gate Voltage	$V_{GM}$	-5	V
	Junction Temperature	$T_j$	100	°C
Storage Temperature Range		$T_{stg}$	-55~125	°C
Operating Temperature Range		$T_{opr}$	-30~100	°C
Lead Soldering Temperature (10sec.)		$T_{sold}$	260	°C
Isolation Voltage (AC, 1 min, RH≤60%)		$BV_S$	2500	V <sub>rms</sub>

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
LED	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =10mA	1.0	1.15	1.3	V	
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	10	μA	
	Capacitance	C <sub>T</sub>	V=0, f=1MHz	-	30	-	pF	
DETECTOR	Off-State Current	I <sub>DRM</sub>	V <sub>AK</sub> =400V R <sub>GK</sub> =27kΩ	Ta=25°C	-	10	5000	nA
				Ta=100°C	-	1	100	μA
	Reverse Current	I <sub>RRM</sub>	V <sub>KA</sub> =400V R <sub>GK</sub> =27kΩ	Ta=25°C	-	10	5000	nA
				Ta=100°C	-	1	100	μA
	On-State Voltage	V <sub>TM</sub>	I <sub>TM</sub> =100mA	-	0.9	1.3	V	
	Holding Current	I <sub>H</sub>	R <sub>GK</sub> =27kΩ	-	0.2	1	mA	
Off-State dv/dt	dv/dt	V <sub>AK</sub> =280V, R <sub>GK</sub> =27kΩ	5	10	-	V/μs		
Capacitance	C <sub>j</sub>	V=0, f=1MHz Anode to Gate Gate to Cathode	-	20	-	pF		
			-	350	-			

COUPLED CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I <sub>FT</sub>	V <sub>AK</sub> =6V, R <sub>GK</sub> =27k	1	4	7	mA
Turn-on Time	t <sub>on</sub>	I <sub>F</sub> =50mA R <sub>GK</sub> =27kΩ	-	10	-	μs
Capacitance (Input to Output)	C <sub>S</sub>	V <sub>S</sub> =0, f=1MHz	-	0.8	-	pF
Isolation Resistance	R <sub>S</sub>	V <sub>S</sub> =500V, R.H.≤60%	-	10 <sup>14</sup>	-	Ω
Isolation Voltage	BV <sub>S</sub>	AC, 1 minute	2500	-	-	V <sub>Rms</sub>

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sub>AC</sub>	-	-	120	V <sub>ac</sub>
Forward Current	I <sub>F</sub>	10	16	25	mA
Operating Temperature	T <sub>opr</sub>	-30	-	85	°C
Gate to Cathode Resistance	R <sub>GK</sub>	-	27	33	kΩ
Gate to Cathode Capacity	C <sub>GK</sub>	-	0.01	0.1	μF

