

TLP645G

GaAs IRED & PHOTO-THYRISTOR

TENTATIVE DATA

OFFICE MACHINE.
HOUSEHOLE USE EQUIPMENT.
SOLID STATE RELAY.
SWITCHING POWER SUPPLY.

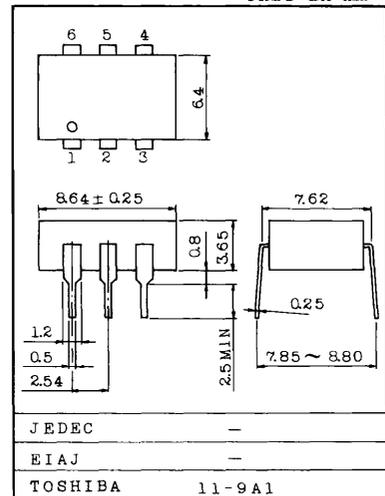
The TOSHIBA TLP645G consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

- . Peak Off-State Voltage : 400V Min.
- . Trigger LED Current : 10mA Max.
- . On-State Current : 150mA Max.
- . Isolation Voltage : 5000V_{rms} Min.
- . Guaranteed Requirements of IEC380/VDE0806
- . Climatic Test Class : 55/150/21
- . Isolation Creepage Path: 8.0mm Min.
- . Isolation Clearance : 7.3mm Min.
- . Isolation Operating Voltage
: 500V_{ac} or 600V_{dc} for Isolation Group C. *1
- . Creeping Current Resistance : Group I *2

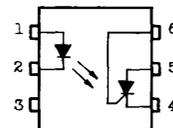
*1 : According to VDE0110, table 4

*2 : According to VDE0110, table 3

Unit in mm



PIN CONFIGURATIONS (TOP VIEW)



- 1: ANODE
- 2: CATHODE
- 3: NC
- 4: CATHODE
- 5: ANODE
- 6: GATE

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISITC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	60	mA
	Forward Current Derating (Ta ≥ 39°C)	ΔI _F /°C	-0.7	mA/°C
	Peak Forward Current (100μs pulse, 100pps)	I _{FP}	1	A
	Power Dissipation	P _D	100	mW
	Power Dissipation Derating (Ta ≥ 25°C)	ΔP _D /°C	-1.0	mW/°C
	Reverse Voltage	V _R	5	V
	Junction Temperature	T _j	125	°C
DETECTOR	Peak Forward Voltage (R _{GK} =27kΩ)	V _{DRM}	400	V
	Peak Reverse Voltage (R _{GK} =27kΩ)	V _{RRM}	400	V
	On-State Current	I _T (RMS)	150	mA
	On-State Current Derating (Ta ≥ 25°C)	ΔI _T /°C	-2.0	mA/°C
	Peak On-State Current (100μs pulse, 120pps)	I _{TP}	3	A
	Peak One Cycle Surge Current	I _{TSM}	2	A
	Peak Reverse Gate Voltage	V _{GM}	5	V
	Power Dissipation	P _D	150	mW
	Power Dissipation Derating (Ta ≥ 25°C)	ΔP _D /°C	-2.0	mW/°C
	Junction Temperature	T _j	100	°C
Storage Temperature Range		T _{stg}	-55~150	°C
Operating Temperature Range		T _{opr}	-55~100	°C
Lead Soldering Temperature (10 sec.)		T _{sold}	260	°C
Total Package Power Dissipation		P _T	250	mW
Total Package Power Dissipation Derating (Ta ≥ 25°C)		ΔP _T /°C	-3.3	mW/°C
Isolation Voltage (AC, 1 min., RH ≤ 60%)		BVS	5000	V _{rms}

TLP645G

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	-	30	-	pF	
DETECTOR	Off-State Current	I _{DRM}	V _{AK} =400V R _{GK} =27kΩ	Ta=25°C	-	10	5000	nA
				Ta=100°C	-	1	100	μA
	Reverse Current	I _{RRM}	V _{KA} =400V R _{GK} =27kΩ	Ta=25°C	-	10	5000	nA
				Ta=100°C	-	1	100	μA
	On-State Voltage	V _{TM}	I _{TM} =100mA	-	0.9	1.3	V	
	Holding Current	I _H	R _{GK} =27kΩ	-	0.2	-	mA	
	Off-State dv/dt	dv/dt	V _D =280V, R _{GK} =27kΩ	5	10	-	V/μs	
Capacitance	C _j	V=0, f=1MHz Anode to Gate Gate to Cathode	-	20	-	pF		
			-	350	-	pF		

COUPLED CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I _{FT}	V _{AK} =6V, R _{GK} =27kΩ	-	4	10	mA
Turn-on Time	t _{on}	I _F =30mA, V _{AA} =50V R _{GK} =27kΩ	-	10	-	μs
Coupled dv/dt	dv/dt	V _S =500V, R _{GK} =27kΩ	500	-	-	V/μs
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	5000	-	-	V _{rms}
		AC, 1 second	-	10000	-	V _{rms}
		DC, 1 minute	-	10000	-	V _{dc}

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{AC}	-	-	120	V _{ac}
Forward Current	I _F	15	20	25	mA
Operating Temperature	T _{opr}	-25	-	85	°C
Gate to Cathode Resistance	R _{GK}	-	27	33	kΩ
Gate to Cathode Capacity	C _{GK}	-	0.01	0.1	μF

