

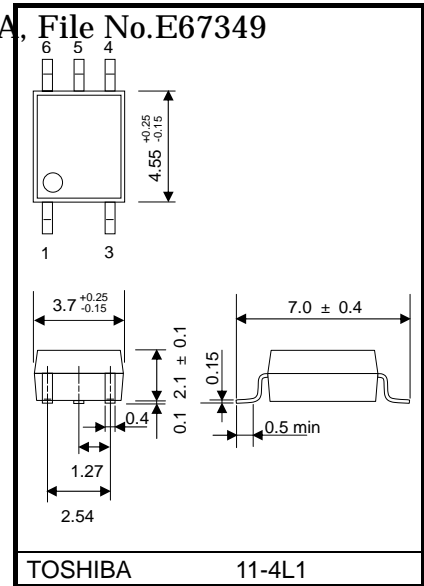
TOSHIBA Photocoupler GaA As Ired & Photo-IC

# TLP109

Programmable Control  $t_{\text{off}} = 0.8 \mu\text{s}$  (max)  $R_{\text{on}} = 1.9 \text{ k}\Omega$  x TTL-compatible x UL approved :UL1577, File No.E67349

- c-UL approved :CSA Component Acceptance Service No. 5A, File No.E67349
- Option (V4)  
VDE approved : DIN EN60747-5-2

Maximum Operating Insulation Voltage :

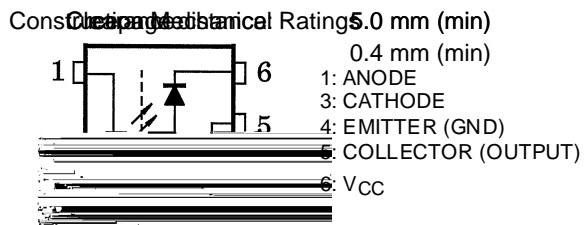


Weight: 0.08 g (Typ.)

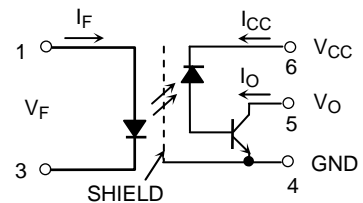
Highest Permissible Over Voltage : 6000V<sub>PK</sub> (707V<sub>PK</sub>)

(Note) : When a EN60747-5-2 approved type is needed, Please designate "Option(V4)"

## Pin Configuration (Top View)



## Schematic



## Absolute Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
LED	Forward current (Note 1)	$I_F$	20	mA
	Pulse forward current (Note 2)	$I_{FP}$	40	mA
	Peak transient forward current (Note 3)	$I_{FPT}$	1	A
	Reverse voltage	$V_R$	5	V
	Power dissipation (Note 4)	$P_D$	40	mW
Detector	Output current	$I_O$	8	mA
	Peak output current	$I_{OP}$	16	mA
	Supply voltage	$V_{CC}$	-0.5 to 30	V
	Output voltage	$V_O$	-0.5 to 20	V
	Output power dissipation (Note 5)	$P_O$	100	mW
Operating temperature range		$T_{opr}$	-55 to 125	°C
Storage temperature range		$T_{stg}$	-55 to 125	°C
Lead solder temperature (10 s)		$T_{sol}$	260	°C
Isolation Voltage (AC, 1 min., R.H. 60%) (Note 6)		$BV_S$	3750	Vrms

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

(Note 1) Derate 0.36 mA / °C above 95°C.

(Note 2) 50% duty cycle, 1 ms pulse width. Derate 0.72 mA / °C above 95°C.

(Note 3) Pulse width 1 μs, 300 pps.

(Note 4) Derate 0.72 mA / °C above 95°C.

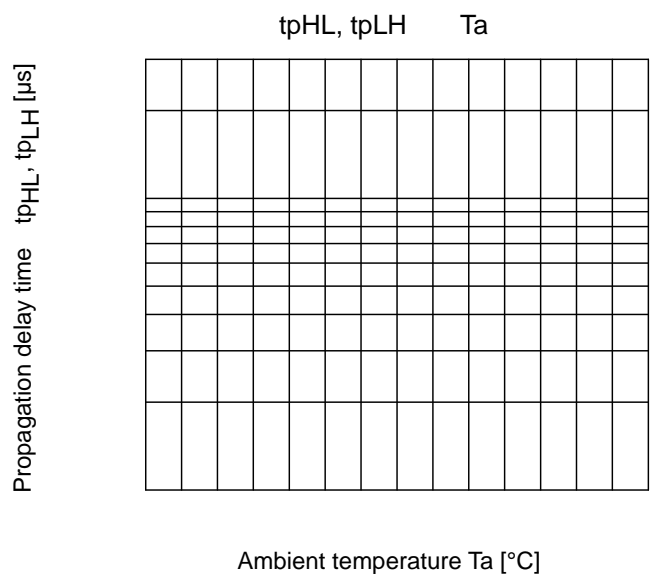
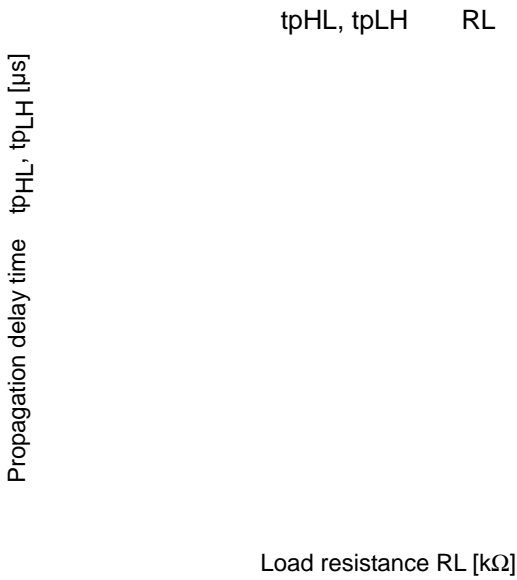
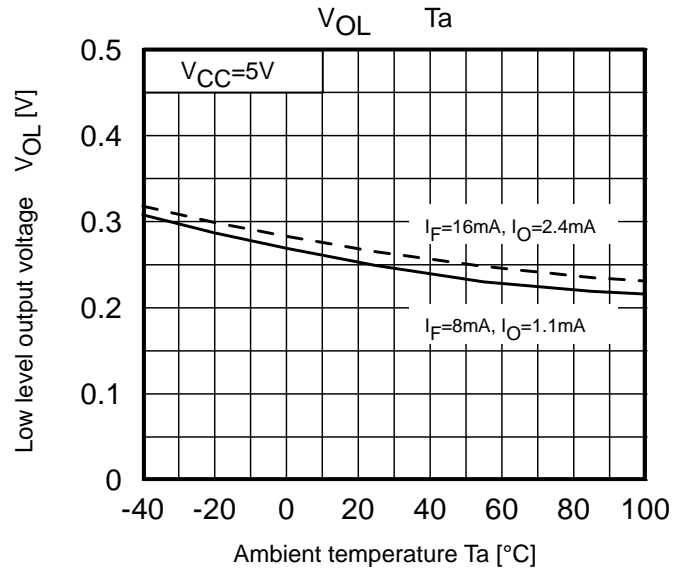
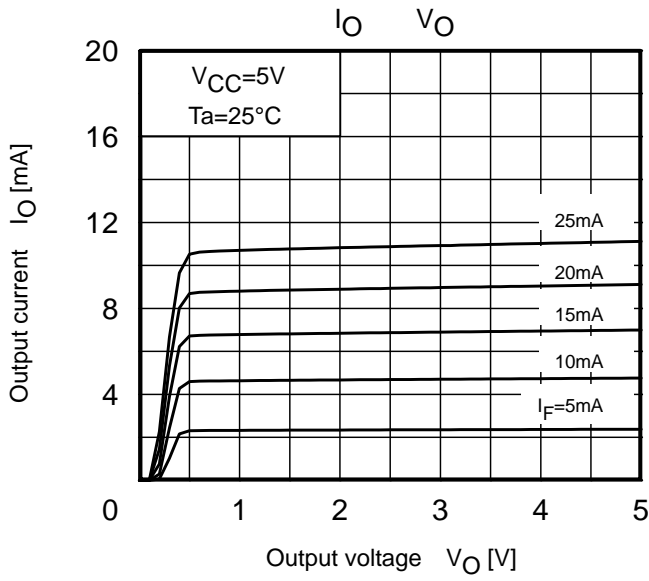
(Note 5) Derate 1.8 mW / °C above 95°C.

(Note 6) Device considered a two-terminal device: Pins 1 and 3 shorted together, and pins 4, 5 and 6 shorted together.









\* The above graphs show typical characteristics.

**Specification for Embossed-Tape Packing (TPL)(TPR) for SO6 Coupler**

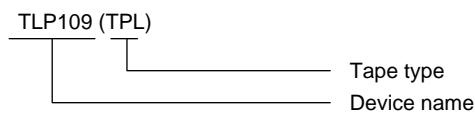
**1. Applicable Package**

Package	Product Type
SO6	Mini-flat coupler

**2. Product Naming System**

Type of package used for shipment is denoted by a symbol suffix after a product number. The method of classification is as below.

(Example)



**3. Tape Dimensions**

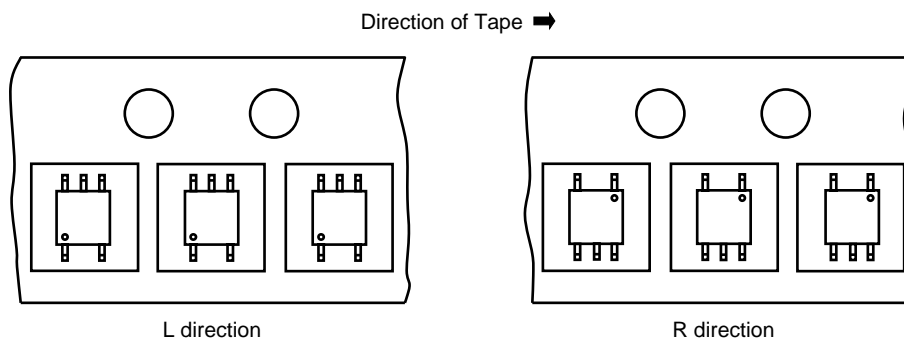
**3.1 Specification Classification Are as Shown in Table 1**

**Table 1 Tape Type Classification**

Tape type	Classification	Quantity (pcs / reel)
TPL	L direction	3000
TPR	R direction	3000

**3.2 Orientation of Device in Relation to Direction of Tape Movement**

Device orientation in the recesses is as shown in Figure 1.



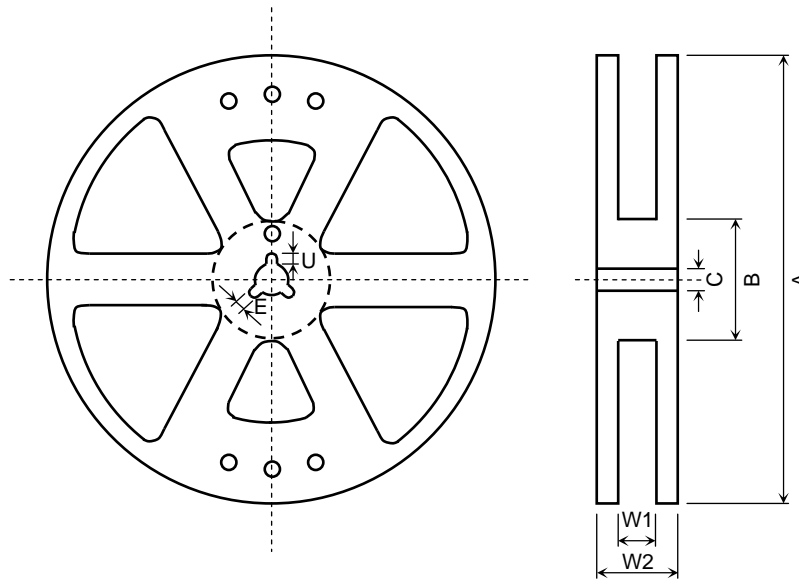
**Figure 1 Device Orientation**





**3.6 Reel**

- (1) Material: Plastic
- (2) Dimensions: The reel dimensions are as shown in Figure 3 and Table 4.



**Figure 3 Reel Form**

**Table 4 Reel Dimensions**

Unit: mm

Symbol	Dimension
A	380 ±2
B	80 ±1
C	13 ±0.5
E	2.0 ±0.5
U	4.0 ±0.5
W1	13.5 ±0.5
W2	17.5 ±1.0

**4. Packing**

Either one reel or five reels of photocoupler are packed in a shipping carton.

**5. Label Indication**

The carton bears a label indicating the product number, the symbol representing classification of standard, the quantity, the lot number and the Toshiba company name.

**6. Ordering Method**

When placing an order, please specify the product number, the tape type and the quantity as shown in the following example.

(Example)

