TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

TLP285

Power Supplies

Programmable Controllers

Hybrid ICs

TbTb TLP285 bbp   tab ply bba
gbraabgbi   d TLP285 sbnb SOP4
pkgydadp
SbTLP285 sgadp   agdt (Ta=-55 b110   ˚C)
adgbbbg (3750V) sbbbgbbe
gnapb b as sn   al by pv b ad
gadb

- ClEbWag   : 80 V (jm
- CbTaRab   : 50% (jm
    RabGB   : 100% (jm
- IbbVag   : 3750 Vm
- Gaabsbe-55 b110   ˚C
- UL Rig   : UL1577 , FbNoE67349
- bUL Rig   : CSA CpAbSb
    No5A
- BSI Apd   : BS EN 60065: 2002,
                                  : BS EN 60950-1: 2006

- Op(V4)
    VDE apd   : EN60747-5-2
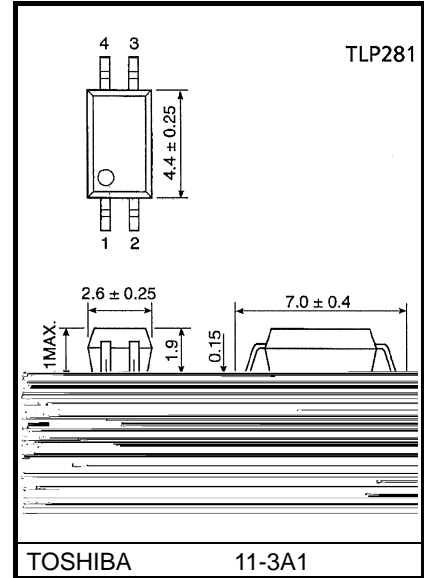   Maipbbg   : 707 Vb
    Hbbg   : 6000 V   b

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

CbMaaiRab

    CpgDbe   5.0 mm
    Cbae   5.0 mm
    IbbTb   0.4 mm

TLP281

4 3

4.4 ± 0.25

1 2

2.6 ± 0.25   7.0 ± 0.4

1 MAX.   1.9   0.15

TOSHIBA   11-3A1

Wbg0.05 gb

Current Transfer Ratio

TYPE	Rank (No.)	Current Transfer Ratio (%) (I_C / I_F) I_F = 5 mA, V_{CE} = 5 V, Ta = 25		Mark Code
		Min	Max	
TLP285	Blank	50	600	Blank Y,YE,G,GR,B,BL,GB
	Rank Y	50	150	YE
	Rank GR	100	300	GR
	Rank BL	200	600	BL
	Rank GB	100	600	GB
	Rank YH	75	150	Y
	Rank GRL	100	200	G
	Rank GRH	150	300	G
	Rank BLL	200	400	B

Note: Example GB: TLP285 (GB)

Applicable lead free products are
TLP285 (GB): TLP285

Absolute Maximum Ratings (Ta = 25)

	CHARACTERISTIC	SYMBOL	RATING	UNIT
LED	Forward Current	$I_{F(RMS)}$	50	mA
	Forward Current Derating	$I_F/°C$	−1.0 (Ta 75°C)	mA/°C
	Peak Forward Current (Note)	I_{FP}	1	A
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_j	125	°C
DETECTOR	Collector-Emitter Voltage	V_{CEO}	80	V
	Emitter-Collector Voltage	V_{ECO}	7	V
	Collector Current	I_C	50	mA
	Collector Power Dissipation	P_C	150	mW
	Collector Power Dissipation Derating (Ta 25°C)	$P_C/°C$	−1.5	mW/°C
	Junction Temperature	T_j	125	°C
Operating Temperature Range		T_{opr}	−55 to 110	°C
Storage Temperature Range		T_{stg}	−55 to 125	°C
Lead Soldering Temperature		T_{sol}	260 (10s)	°C

Coupled Electrical Characteristics (Ta = 25)

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Current Transfer Ratio	I_C / I_F	I_F = 5 mA, V_{CE} = 5 V		50	—	600	%
			Rank GB	100	—	600	
Saturated CTR	I_C / I_F (sat)	I_F = 1 mA, V_{CE} = 0.4 V		—	60	—	%
			Rank GB	30	—	—	
Collector–Emitter Saturation Voltage	V_{CE} (sat)	I_C = 2.4 mA, I_F = 8 mA		—	—	0.4	V
		I_C = 0.2 mA, I_F = 1 mA		—	0.2	—	
			Rank GB	—	—	0.4	
OFF-State Collector Current	I_C (off)	V_F = 0.7 V, V_{CE} = 48 V					

I_F - Ta

P_C - Ta

I_{FP} - D$_R$

I_F - V$_F$

TOSHIBA   TLP285

I_C-V_{CE} I_C-V_{CE}

I_C (A)

I_C-V_{CE} I_C-V_{CE}

V$_{CE(sat)}$ - Ta

I$_C$ - Ta
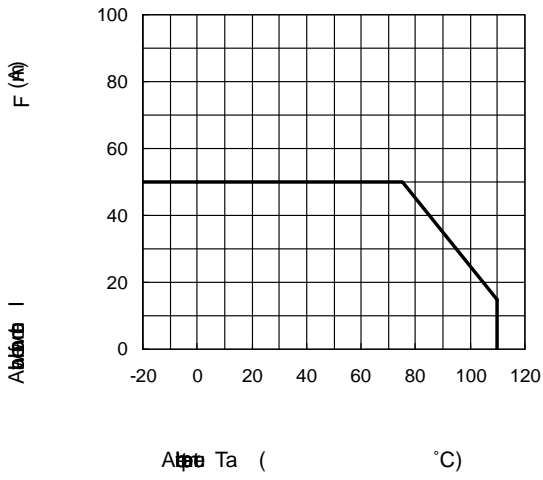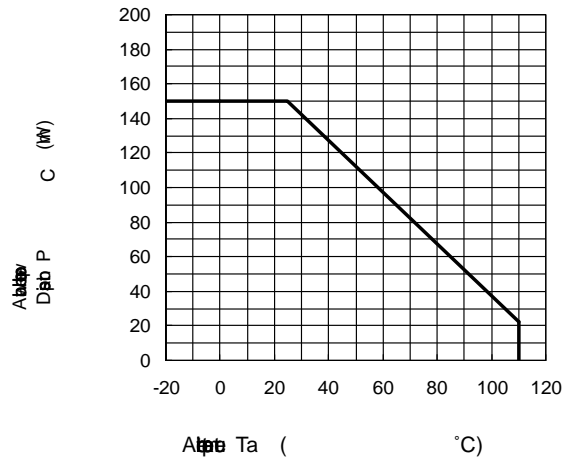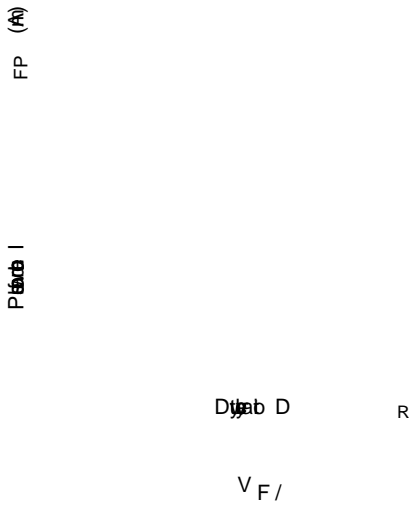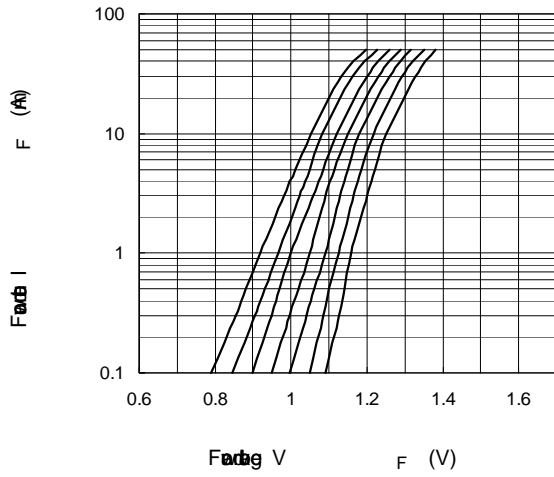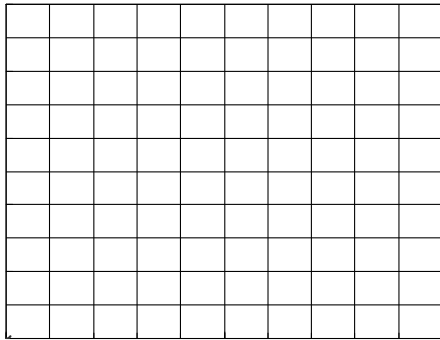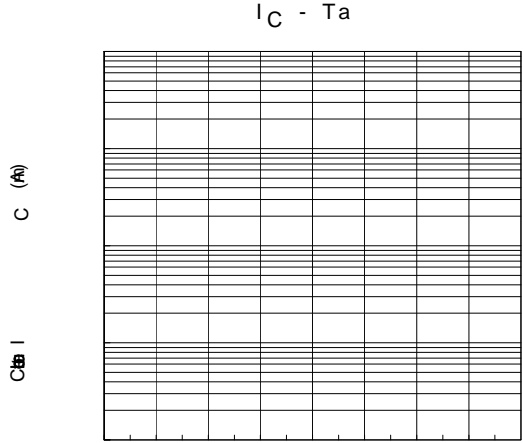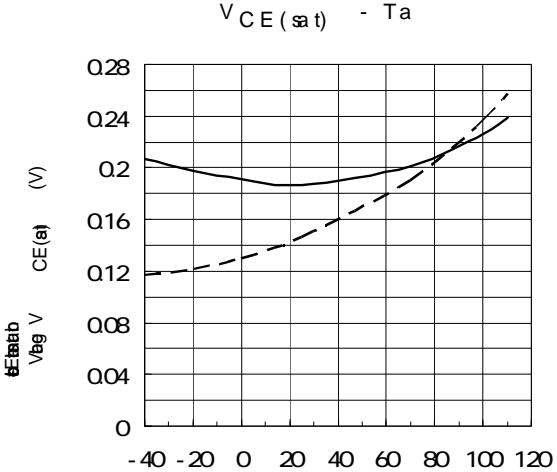
Soldering and Storage

1. Soldering

1.1 S

When a

1) U

Temperature (Pb)

Temperature (Pb)

2) U (Pb)   (Pb)

Preheat at 150°C to 60 and 120 s

2. Storage

1) A ... ...

2) F ... ...

3) K ... ... $5℃$ to $35℃$ and 45% to 75%,

4) D ... ...

5) S ... ... R ... ...

6) W ... ...

7) D ... ...

8) If ... ...

3.5 Tape Specification

(1) Tape material: Plastic (protection against electrostatics)
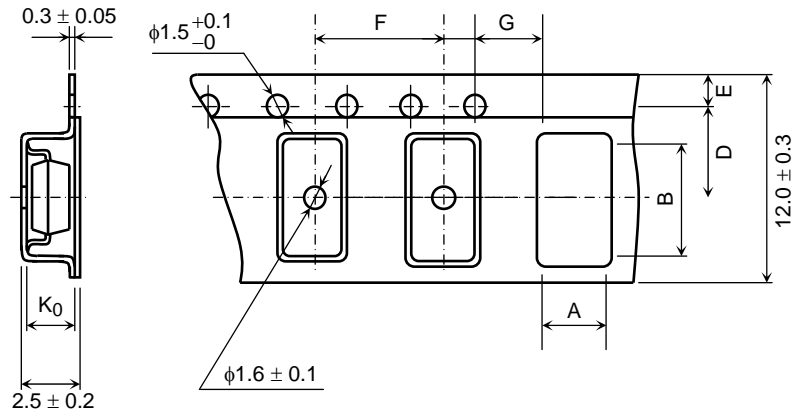(2) Dimensions: The tape dimensions are as shown in Figure 2 and table 2.

Figure   Tape Forms

Table   Tape Dimensions

Unit: mm

Symbol	Dimension	Remark
A	3.1	
B	7.5	
D	5.5	
E	1.75	
F	8.0	
G	4.0	
K_0	2.3	

3.6 Reel

(1) Material: Plastic

(2) Dimensions: The reel dimensions are as shown in Figure 3 and Table 3.
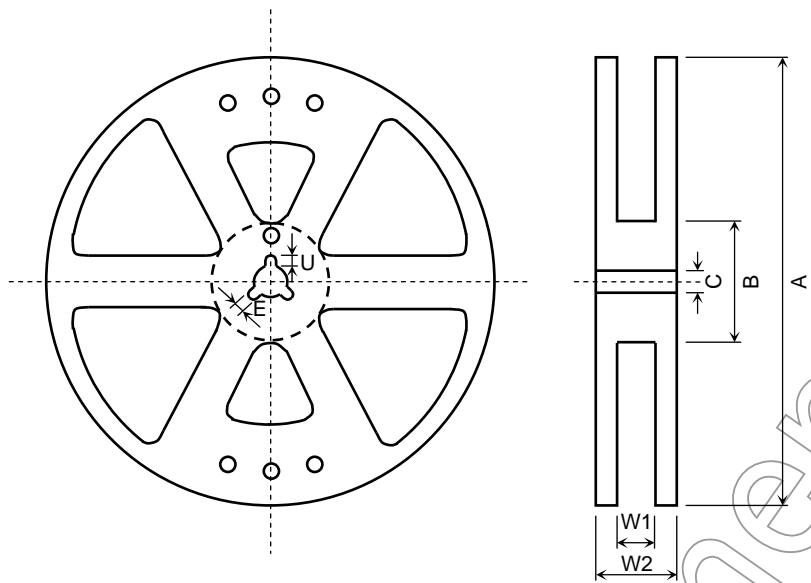
Figure3   Reel Form

Table3   Reel Dimensions

Unit: mm

Symbol	Dimension
A	330 ±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 ten 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 CTR rank, the tape type and the quantity as shown in the following example.

Example

TLP285(GB-TP,F) 2500 p

→ Quantity (ex. 2500)
→ [[G]]/RoHS COMPATIBLE (Note)
→ Tape type
→ CTR rank
→ Device name

Note : Part of TOSHIBA also releases as the RoHS compatible product.
The RoHS is the Directive 2002/95/EC the European Parliament and the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

TOSHIBA Photocoupler

Option :(V4)

Attachment : Specifications for <u>EN60747-5-2</u> option: (V4)

Types : TLP285(F)

Type designations for "option: <u>(V4)</u>", which are tested under EN60747 requirements.

Ex.: TLP285 (V4-GB-TP,F) V4 : EN60747 option
GB: CTR rank type
TP : Standard tape & reel type
F : [[G]]/RoHS COMPATIBLE (Note 6)

Note: Use TOSHIBA standard type number for safety standard application.
Ex.: TLP285 (V4-GB-TP,F) D TLP285

EN60747 Isolation Characteristics

Description		Symbol	Rating	Unit
Application				
for rating 150V rms			I-IV	
for rating 300V rms			I-III	
Climatic classification			55 / 110 / 21	
Pollution degree			2	
Maximum working voltage		V_{IORM}	707	V peak
Input to output test voltage Method A				
$V_p \times 1.5$, V_{IORM}, partial discharge		V_p	1060	V peak
$t = 10$ s, partial discharge ≤ 5 pC				
Input to output test voltage Method B				
$V_p \times 1.875$, V_{IORM}, 100% production test		V_p	1325	V peak
$t = 1$ s, partial discharge ≤ 5 pC				
Highest allowable overvoltage		V_{TR}	6000	V peak
(transient overvoltage, $t = 60$ s)				
Safety limiting values (maximum values,single fault status)				
current ($t \leq 180$ s, V_F, $P = 0$)		I_s	250	mA
power dissipation		P_s	400	mW
temperature		T_s	150	℃
Isolation resistance V_{IO}=500V, Ta=T_s		R_s	≧ 10^9	Ω

Insulation Related Specifications

Minimum	Cr	5.0m
Minimum	Cl	5.0m
Minimum	t	0.4m
Comparative	CTI	175

1. If a device ...
   (e.g. a solder ... ≥3.5m
   If ...
2. This is ...
   Maximum ...

VDE ... Marking
EN60747

Marking
EN60747

VDE

Marking Example TLP285(F)
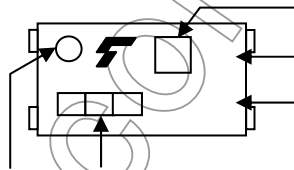
RESTRICTIONS ON PRODUCT USE

- To Cp ba dele acf a(b   (TOSHIBA'), elg mele gtn   fo b
  ithp ac de hade ec ea   d (P) l ue

- Ttea ca ye foten ye pd   eu ipe n TOSHIBA. E ev
  TOSHIBA s he pd   tib yf pd   cib ue a bi sn

- T gf TOSHIBA ye lp ter ay eo da by Pd te m afoe l C te ae
  kfi hp te ea ds cdp   i ga e tig acds g d   fb a nde fa ve   ad
  sbi he a ith da s ite b a en   toe a f Pt ob a efa en f b   by l
  pv de an g ptb ea t p B fe te ag d   i ga cg ten   t
  a cf ear tdh (a) ta tth d e le   itan TOSHIBA frb blahn ld   aditfd TOSH   IBA
  S he R teh y a H ad ts e d () bt   late a p tat P td ia hf o C ten   sa e
  Ufte a la p h t   lug te a p fb h   jd tte d(a) ig h