

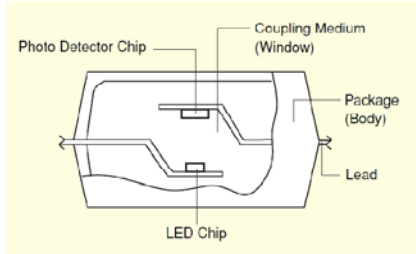
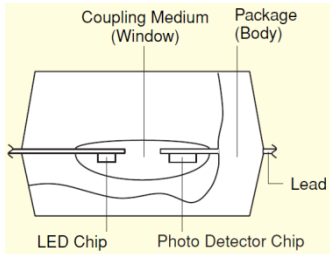
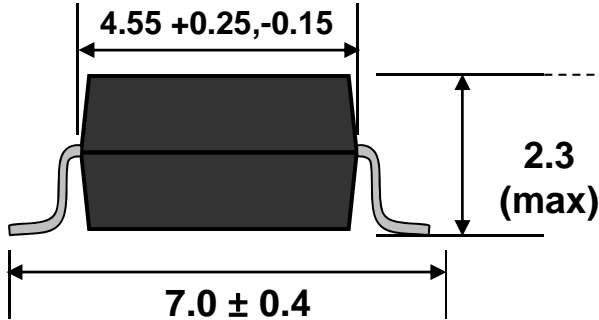
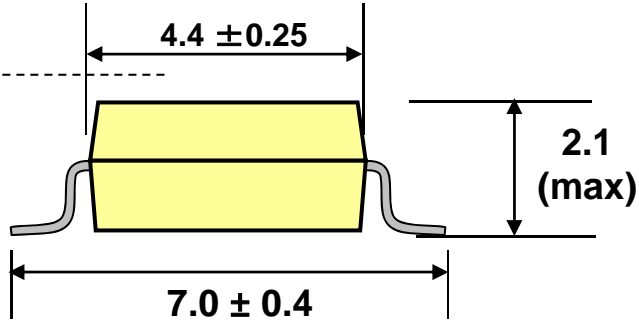
TOSHIBA

Leading Innovation >>>

Half-pitch 4-ch Transistor Photocouplers (Reference)

**Toshiba Corporation Semiconductor Company
Optoelectronics Device Marketing & Engineering Group 1**

◆ Construction Comparison

Characteristic	TLP290-4 / TLP291-4 (New product)	TLP280-4 / TLP281-4 (Existing product)
Internal construction	(Transmissive type in double-molded packages) 	(Reflective type in single-molded packages) 
Overall dimensions (mm)		
Creepage/clearance distance (mm)	5.0 (min)	4.0 (min)
Isolation thickness (mm)	0.4 (min)	0.4 (min)

Comparison of Package Dimensions

Reference

		TOSHIBA	
		TLP291-4 (Development product)	TLP281-4
Package Dimensions (Unit: mm)			
Example land Pattern (Unit: mm)			

Taller than TLP281-4

2.3mm (MAX)

2.1mm (MAX)

<Product dimensions>
Please confirm that no problems pertaining to the height and width of the product will occur before usage.

Same lead width between LED and detector sides despite increase in package width.

Same land pattern.

■ Comparison of Absolute Maximum Ratings

Reference

★ Increase in guaranteed operating temperature range: 100°C_{MAX} ⇒ 110°C_{MAX}..

Absolute Maximum Ratings (Ta=25°C)

Characteristics	Symbol	Unit	TLP281-4	TLP291-4*
Forward current	IF	mA	50	50
Pulse forward current (Note 1)	IFP	A	1	1
Reverse voltage	VR	V	5	5
Collector-emitter voltage	VCEO	V	80	80
Emitter-collector voltage	VECO	V	7	7
Collector current	Ic	mA	50	50
Output power dissipation	Pc	mW	100	100
Output power dissipation derating (Ta ≥ 25°C)	$\Delta P_c / ^\circ C$	mW/°C	-1	-1
Operating temperature range	Topr	°C	-55 to 100	-55 to 110
Storage temperature range	Tstg	°C	-55 to 125	-55 to 125
Lead solder temperature	Tsol	°C	260(10s)	260(10s)
Total package power dissipation (per ch)	PT	mW	170	170
Total package power dissipation (Ta ≥ 25°C)(per ch)	$\Delta P_T / ^\circ C$	mW/°C	-1.7	-1.7
Isolation voltage (Note 2)	BVs	Vrms	2500	2500

* New product

Note 1: Pulse width ≤ 100 μs, frequency = 100Hz

Note 2: AC, 1 min, R.H.≤60%. LED pins and detector pins are shorted respectively.

Electrical characteristics (Ta=25°C)

Characteristic	Symbol	Unit	TLP281-4			TLP291-4*			Test conditions
			Min	Typ	Max	Min	Typ	Max	
Forward current	VF	V	1	1.15	1.3	1.1	1.2	1.4	TOSHIBA : IF=10mA, Renesas : IF=5mA
Reverse current	IR	μA	—	—	10	—	—	10	VR=5V
Collector dark current	ICEO	μA	—	0.01	0.1	—	0.01	0.1	TOSHIBA : VCE=48V, Renesas : VCE=80V
Current transfer ratio (CTR)	IC/IF	%	50		600	50		400	IF=5mA, VCE=5V
Saturated CTR	IC/IF(sat)	%	—	60	—	—	60	—	IF=1mA, VCE=0.4V
Collector-emitter saturation voltage	VCE(sat)	V	—	0.2	—	—	—	0.4	TOSHIBA : IC=2.4mA, IF=8mA Renesas : IC=2mA, IF=10mA
Off-state collector current	Ic(off)	μA	—	—	10	—	—	10	VF=0.7V, VCE=48V

* New product