

TOSHIBA Photocoupler

# TLP281(V4)

**ATTACHMENT:** Specifications for VDE0884 option

Types: TLP281

Type designations for 'Option: (V4)', which are tested under VDE0884 requirements.

Ex. : TLP281 (V4-GR-TP)

V4 : VDE0884 option

GR : CTR rank name

TPR: standard taping name

Note: Use Toshiba standard type number for safety standard application.

Ex. TLP281 (V4-GR-TP) → TLP281

## VDE0884 Isolation Characteristics

Description	Symbol	Rating	Unit
Application classification (DIN VDE0110 teil 1/01.89, table 1) for rated mains voltage $\leq 150 V_{RMS}$ for rated mains voltage $\leq 300 V_{RMS}$		I-IV I-III	—
Climatic classification (DIN IEC68 teil 1/09.80)		55/100/21	—
Pollution degree (DIN VDE0110 teil 1/01.89)		2	—
Maximum operating insulation voltage	$V_{IORM}$	565	Vpk
Input to output test voltage, method A $V_{pr} = 1.5 \times V_{IORM}$ , Type and sample test $t_p = 60$ sec, Partial discharge $< 5$ pC	$V_{pr}$	850	Vpk
Input to output test voltage, method B $V_{pr} = 1.875 \times V_{IORM}$ , 100% production test $t_p = 1$ sec, Partial discharge $< 5$ pC	$V_{pr}$	1060	Vpk
Highest permissible overvoltage (Transient overvoltage, $t_{pr} = 10$ s)	$V_{TR}$	4000	Vpk
Safety limiting values (Max permissible ratings in case of fault, also refer to thermal derating curve) Current (Input current $I_f$ , $P_s = 0$ ) Power (Output or total power dissipation) Temperature	$I_{si}$ $P_{si}$ $T_{si}$	250 400 150	mA mW °C
Insulation resistance, $V_{IO} = 500$ V, $T_a = 25^\circ\text{C}$ $V_{IO} = 500$ V, $T_a = 100^\circ\text{C}$ $V_{IO} = 500$ V, $T_a = T_s$	$R_{si}$	$\geq 10^{12}$ $\geq 10^{11}$ $\geq 10^9$	$\Omega$

## Insulation Related Characteristics

Minimum creepage distance (*)	Cr	4.0 mm
Minimum clearance (*)	Cl	4.0 mm
Minimum insulation thickness	ti	0.4 mm
Comperative tracking index (DIN IEC112/VDE0303, part 1)	CTI	175 (VDE0110 teil 1/01.89 group IIIa)

\*: in accordance with DIN VDE0110 teil 1/01.89, table 2, & 4

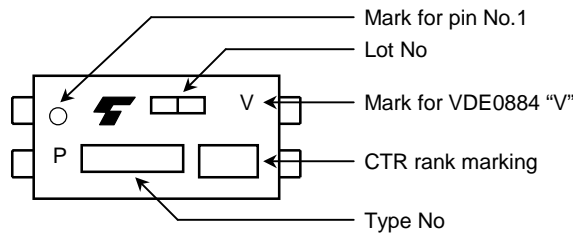
1. If a printed circuit is incorporated, the creepage distance and clearance may be reduced below this value. If this is not permissible, the user shall take suitable measures.
2. This photocoupler is suitable for 'safe electrical isolation' only within the safety limit data. Maintenance of the safety data shall be ensured by means of protective circuits.

VDE test sign : Marking on product for VDE0884

: Marking on paking for VDE0884



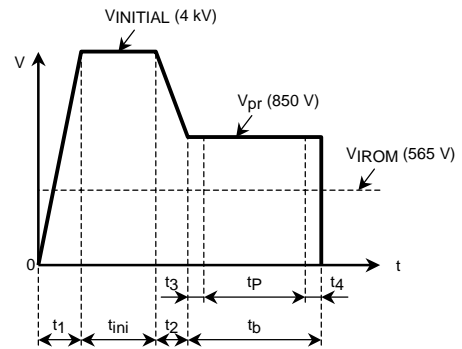
Marking example :



**Figure 1 Partial discharge measurement procedure according to VDE0884  
Destructive test for qualification and sampling tests.**

Method A  
(for type and sampling tests, destructive tests)

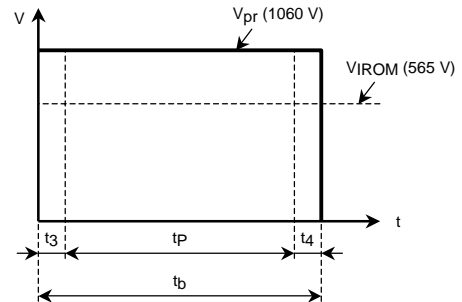
$t_1, t_2$	= 1 to 10 s
$t_3, t_4$	= 1 s
$t_P$ (Measuring time for partial discharge)	= 60 s
$t_b$	= 62 s
$t_{ini}$	= 10 s



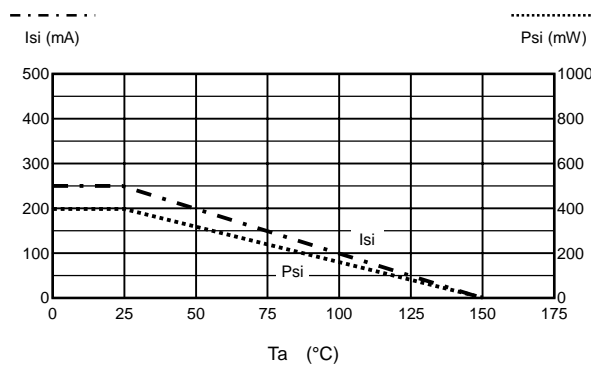
**Figure 2 Partial discharge measurement procedure according to VDE0884  
Non-destructive test for 100% inspection.**

Method B  
(for sample test, non-destructive test)

$t_3, t_4$	= 0.1 s
$t_P$ (Measuring time for partial discharge)	= 1 s
$t_b$	= 1.2 s



**Figure 3 Dependency of maximum safety ratings on ambient temperature**



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