

TOSHIBA PHOTOCOUPLER

TLP181(V4)

ATTACHMENT : SPECIFICATIONS FOR VDE0884 OPTION

Types : TLP181

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

Ex. : TLP181 (V4-GR-TPR)	V4 : VDE0884 option
	GR : CTR rank name
	TPR : standard taping name

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

Ex. TLP181 (V4-GR-TPR) → TLP181

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	U_{IORM}	565	V _{pk}
Input to output Test Voltage, Method A $U_{pr} = 1.5 \times V_{IORM}$, Type and Sample Test $t_p = 60sec$, Partial Discharge $< 5pC$	U_{pr}	850	V _{pk}
Input to output Test Voltage, Method B $U_{pr} = 1.875 \times V_{IORM}$, 100% Production Test $t_p = 1sec$, Partial Discharge $< 5pC$	U_{pr}	1060	V _{pk}
Highest Permissible Overvoltage (Transient Overvoltage, $t_{pr} = 10s$)	U_{TR}	6000	V _{pk}
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, $V_{IO} = 500V$, $T_a = 25^\circ C$ $V_{IO} = 500V$, $T_a = 100^\circ C$ $V_{IO} = 500V$, $T_a = T_s$	R_{si}	$\geq 10^{12}$ $\geq 10^{11}$ $\geq 10^9$	Ω

961001EBC2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

INSULATION RELATED SPECIFICATIONS

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 III a)

* in accordance with DIN VDE0110 Teil 1/01.89, Table 2, & 4)

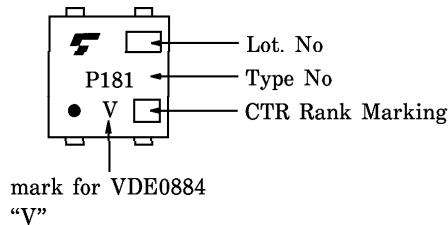
1. If a printed circuit is incorporated, the creepage distance and clearance may be reduced below this value. If this is not permissible, the user shall take suitable measures.
2. This photocoupler is suitable for 'safe electrical isolation' only within the safety limit data. Maintenance of the safety data shall be ensured by means of protective circuits.
(Dieses Koppelement ist für "Sichere Elektrische Trennung" nur innerhalb der Sicherheitsgrenzdaten geeignet. Die Einhaltung der Sicherheitsgrenzen muß durch Schutzschaltungen sichergestellt sein.)

TLP181

VDE Test sign : Marking on product
for VDE0884
: Marking on paking
for VDE0884



Marking Example :



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- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
- The products described in this document are subject to foreign exchange and foreign trade control laws.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
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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 10s
 t_3, t_4 = 1s
 t_p (Measuring time for partial discharge) = 50s
 t_b = 62s
 t_{ini} = 10s

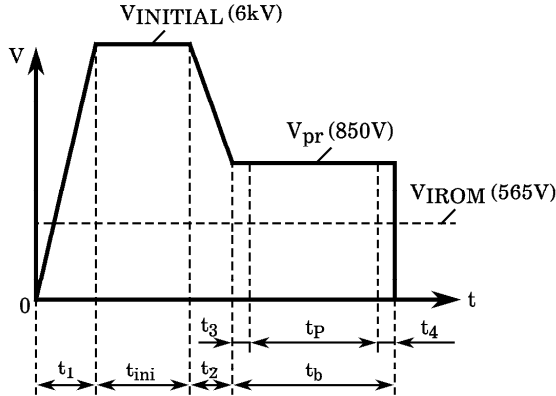


Figure 2 Partial discharge measurement procedure according to VDE0884
Non-destructive test for 100% inspection.

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

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

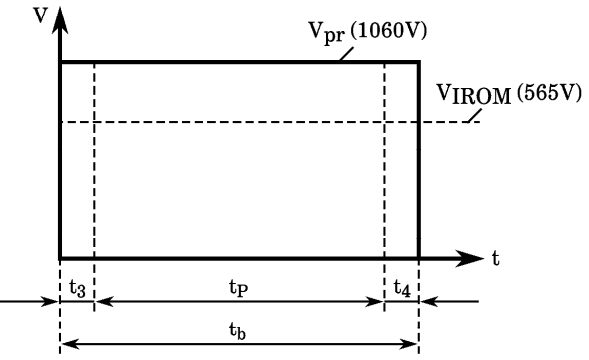


Figure 3 Dependency of maximum safety ratings on ambient temperature

