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 ≦ 150 V_{RMS} for rated mains voltage ≦ 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 vaoltage	U_{IORM}	565	Vpk
Input to output test voltage, method A Upr = 1.5×V_{IORM}, type and sample test t_p = 60sec, partial discharge < 5pC	Upr	850	Vpk
Input to output test voltage, method B Upr = 1.875×V_{IORM}, 100% production test t_p = 1sec, partial discharge < 5pC	Upr	1060	Vpk
Highest permissible overvoltage (transient overvoltage, t_{pr} = 10s)	U_{TR}	6000	Vpk
Safety limiting values (max. permissible ratings in case of fault, also refer to thermal derating curve current (input current If, Ps = 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, Ta = 25°C V_{IO} = 500V, Ta = 100°C V_{IO} = 500V, Ta = Ts	R_{si}	$\geq 10^{12}$ $\geq 10^{11}$ $\geq 10^{9}$	Ω

Insulation Related Specifications

Minimum creepage distance*	Cr	4.0 mm
Minimun 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 koppelelement ist fur "sichere elektrische trennung" nur innerhalb der sicherheitsgrenzdaten geeignet. Die einhaltung der sicherheitsgrenzen muβ durch schutzschaltungen sichergestellt sein.)

TLP181

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

Marking example:

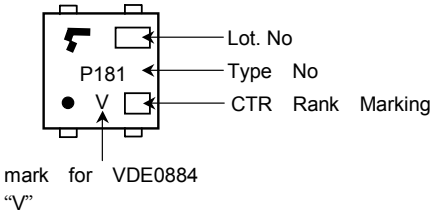


Figure 1 Partial discharge measurement procedure according to VDE0884
Destructive test for qualification and sampling tests.

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

t_1, t_2	= 1 to 10s
t_3, t_4	= 1s
t_p (Measuring time for partial discharge)	= 50s
t_b	= 62s
t_{ini}	= 10s

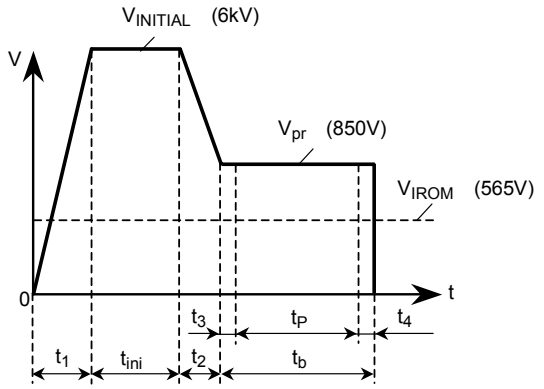


Figure 2 Partial discharge measurement procedure according to VDE0884
Non−destructive test for 100% inspection.

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

t3, t4	= 0.1s
tp (Measuring time for partial discharge)	= 1s
tb	= 1.2s

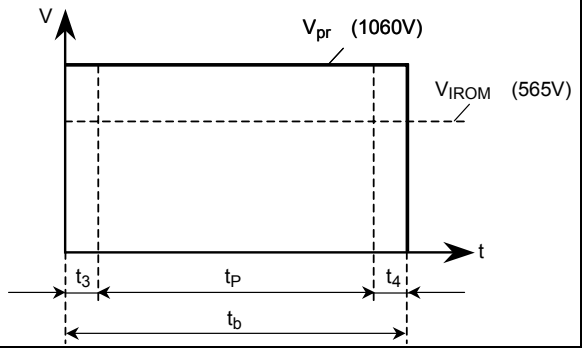
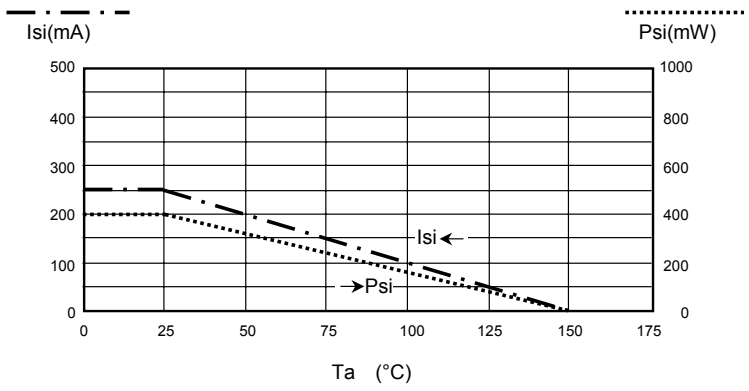


Figure 3 Dependency of maximum safety ratings on ambient temperature



RESTRICTIONS ON PRODUCT USE

000707EBC

- TOSHIBA is continually working to improve the quality and 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 comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products 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 TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer’s own risk.
- 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 the foreign exchange and foreign trade 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.
- The information contained herein is subject to change without notice.