| ABSOLUTE MAXIMUM RATINGS [1] ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | |
|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **VALUE** | **UNIT** |
| **INPUT** | | | | |
| Reverse voltage | | $V_R$ | 5 | V |
| Forward current | | $I_F$ | 60 | mA |
| Forward surge current | $t_p \leq 10$ µs | $I_{FSM}$ | 3 | A |
| Power dissipation | | $P_{diss}$ | 70 | mW |
| Junction temperature | | $T_j$ | 125 | °C |
| **OUTPUT** | | | | |
| Collector emitter voltage | | $V_{CEO}$ | 32 | V |
| Emitter collector voltage | | $V_{ECO}$ | 7 | V |
| Collector current | | $I_C$ | 50 | mA |
| Collector peak current | $t_p/T = 0.5$, $t_p \leq 10$ ms | $I_{CM}$ | 100 | mA |
| Power dissipation | | $P_{diss}$ | 70 | mW |
| Junction temperature | | $T_j$ | 125 | °C |
| **COUPLER** | | | | |
| Isolation test voltage (RMS) | | $V_{ISO}$ | 5000 | $V_{RMS}$ |
| Total power dissipation | | $P_{tot}$ | 200 | mW |
| Ambient temperature range | | $T_{amb}$ | - 55 to + 110 | °C |
| Storage temperature range | | $T_{stg}$ | - 55 to + 125 | °C |
| Soldering temperature [2] | 2 mm from case, t ≤ 10 s | $T_{sld}$ | 260 | °C |

**Notes**

[1] Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability.

[2] Refer to wave profile for soldering conditions for through hole devices.

| ELECTRICAL CHARACTERISTCS [1] ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| **INPUT** | | | | | | |
| Forward voltage | $I_F$ = 50 mA | $V_F$ | | 1.25 | 1.6 | V |
| Junction capacitance | $V_R$ = 0, f = 1 MHz | $C_j$ | | 50 | | pF |
| **OUTPUT** | | | | | | |
| Collector emitter voltage | $I_C$ = 1 mA | $V_{CEO}$ | 32 | | | V |
| Emitter collector voltage | $I_E$ = 100 µA | $V_{ECO}$ | 7 | | | V |
| Collector ermitter cut-off current | $V_{CE}$ = 20 V, $I_F$ = 0, E = 0 | $I_{CEO}$ | | 200 | | nA |
| **COUPLER** | | | | | | |
| Collector emitter saturation voltage | $I_F$ = 10 mA, $I_C$ = 1 mA | $V_{CEsat}$ | | | 0.3 | V |
| Cut-off frequency | $V_{CE}$ = 5 V, $I_F$ = 10 mA, $R_L$ = 100 Ω | $f_c$ | | 110 | | kHz |
| Coupling capacitance | f = 1 MHz | $C_k$ | | 0.6 | | pF |

**Note**

[1] Minimum and maximum values are testing requierements. Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and are not part of the testing requirements.

## CURRENT TRANSFER RATIO

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| $I_C/I_F$ | $V_{CE}$ = 5 V, $I_F$ = 10 mA | TCDT1100 | CTR | 40 | | | % |
| | | TCDT1100G | CTR | | | | % |
| | | TCDT1101 | CTR | 40 | | 80 | % |
| | | TCDT1101G | CTR | | | | % |
| | | TCDT1102 | CTR | 63 | | 125 | % |
| | | TCDT1102G | CTR | | | | % |
| | | TCDT1103 | CTR | 100 | | 200 | % |
| | | TCDT1103G | CTR | | | | % |

## MAXIMUM SAFETY RATINGS

| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| **INPUT** | | | | | | |
| Forward current | | $I_F$ | | | 130 | mA |
| **OUTPUT** | | | | | | |
| Power dissipation | | $P_{diss}$ | | | 265 | mW |
| **COUPLER** | | | | | | |
| Rated impulse voltage | | $V_{IOTM}$ | | | 6 | kV |
| Safety temperature | | $T_{si}$ | | | 150 | °C |

**Note**

- According to DIN EN 60747-5-5. This optocoupler is suitable for safe electrical isolation only within the safety ratings. Compliance with the safety ratings shall be ensured by means of suitable protective circuits.

## INSULATION RATED PARAMETERS

| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Partial discharge test voltage - routine test | 100 %, $t_{test}$ = 1 s | $V_{pd}$ | 1.6 | | | kV |
| Partial discharge test voltage - lot test (sample test) | $t_{Tr}$ = 60 s, $t_{test}$ = 10 s, (see figure 1) | $V_{IOTM}$ | 6 | | | kV |
| | | $V_{pd}$ | 1.3 | | | kV |
| Insulation resistance | $V_{IO}$ = 500 V | $R_{IO}$ | $10^{12}$ | | | Ω |
| | $V_{IO}$ = 500 V, $T_{amb}$ = 100 °C | $R_{IO}$ | $10^{11}$ | | | Ω |
| | $V_{IO}$ = 500 V, $T_{amb}$ = 150 °C (construction test only) | $R_{IO}$ | $10^{9}$ | | | Ω |

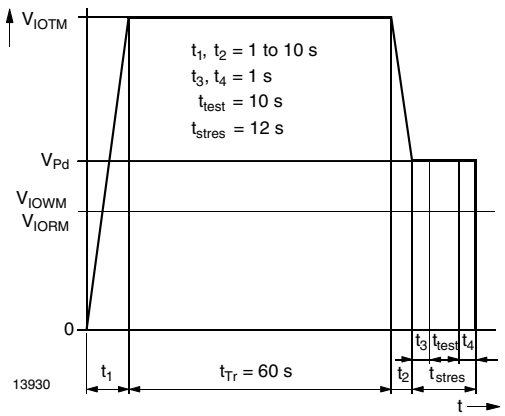



Fig. 1 - Test Pulse Diagram for Sample Test According to DIN EN 60747-5-5/DIN EN 60747-; IEC60747

| SWITCHING CHARACTERISTICS | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Delay time | $V_S$ = 5 V, $I_C$ = 5 mA, $R_L$ = 100 Ω, (see figure 2) | $t_d$ | | 4 | | µs |
| Rise time | $V_S$ = 5 V, $I_C$ = 5 mA, $R_L$ = 100 Ω, (see figure 2) | $t_r$ | | 7 | | µs |
| Fall time | $V_S$ = 5 V, $I_C$ = 5 mA, $R_L$ = 100 Ω, (see figure 2) | $t_f$ | | 6.7 | | µs |
| Storage time | $V_S$ = 5 V, $I_C$ = 5 mA, $R_L$ = 100 Ω, (see figure 2) | $t_s$ | | 0.3 | | µs |
| Turn-on time | $V_S$ = 5 V, $I_C$ = 5 mA, $R_L$ = 100 Ω, (see figure 2) | $t_{on}$ | | 11 | | µs |
| Turn-off time | $V_S$ = 5 V, $I_C$ = 5 mA, $R_L$ = 100 Ω, (see figure 2) | $t_{off}$ | | 7 | | µs |
| Turn-on time | $V_S$ = 5 V, $I_C$ = 10 mA, $R_L$ = 1 kΩ, (see figure 3) | $t_{on}$ | | 25 | | µs |
| Turn-off time | $V_S$ = 5 V, $I_C$ = 10 mA, $R_L$ = 1 kΩ, (see figure 3) | $t_{off}$ | | 42.5 | | µs |

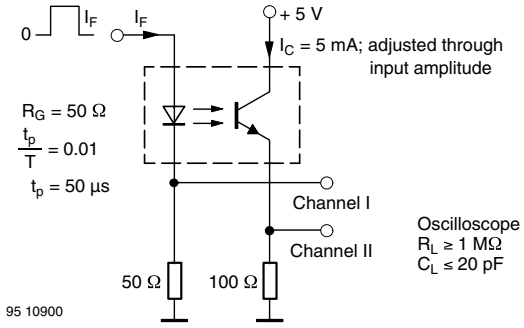



Fig. 2 - Test Circuit, Non-Saturated Operation

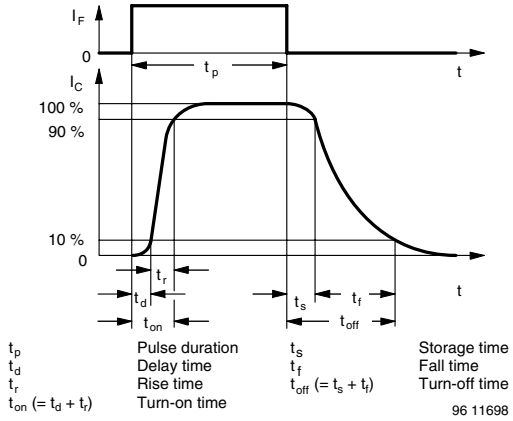



Fig. 4 - Switching Times

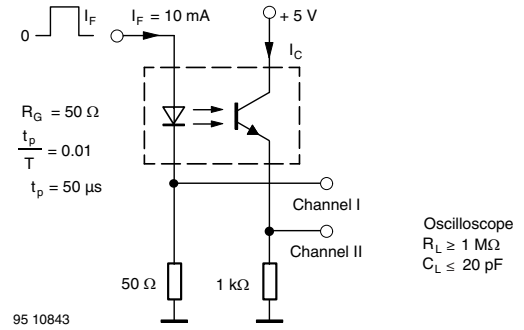
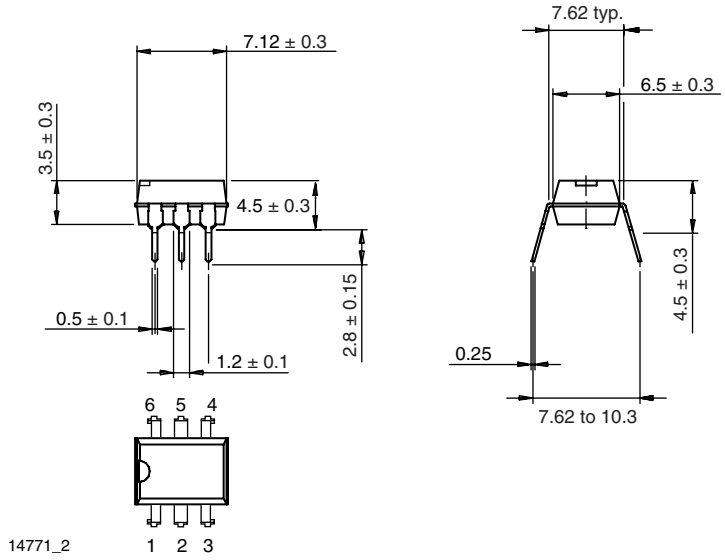


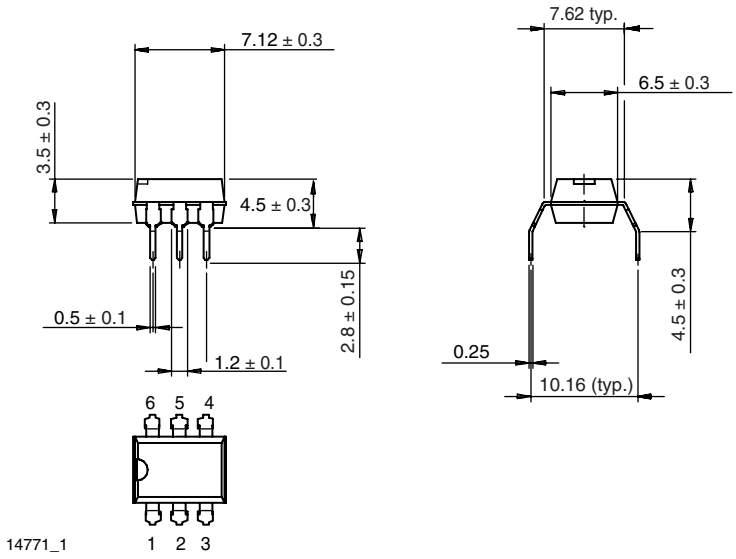

Fig. 3 - Test Circuit, Saturated Operation

## PACKAGE DIMENSIONS in millimeters

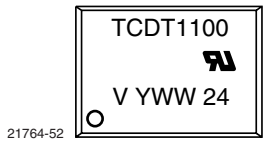
DIP-6




DIP-6, 400 mil




## PACKAGE MARKING



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