



| ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | |
|--|--------------------------------|-------|------------|-------------|--------------------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | VALUE | UNIT |
| INPUT | | | | | |
| Reverse voltage | | | V_R | 6 | V |
| Forward current | | | I_F | 20 | mA |
| Surge forward current | | | I_{FSM} | 1.5 | A |
| Power dissipation | $t \leq 10\text{ }\mu\text{s}$ | | P_{diss} | 30 | mW |
| OUTPUT | | | | | |
| Repetitive peak off-state voltage | | BRT11 | V_{DRM} | 400 | V |
| | | BRT12 | V_{DRM} | 600 | V |
| | | BRT13 | V_{DRM} | 800 | V |
| RMS on-state current | | | I_{TRMS} | 300 | mA |
| Single cycle surge current | 50 Hz | | I_{TSM} | 3 | A |
| Power dissipation | | | P_{diss} | 600 | mW |
| COUPLER | | | | | |
| Maximum power dissipation | | | P_{tot} | 630 | mW |
| Reference voltage in accordance with VDE 0110 b | | | V_{ref} | 500 | V_{RMS} |
| Reference voltage in accordance with VDE 0110 b (insulation group C) | | | V_{ref} | 600 | V_{DC} |
| Storage temperature range | | | T_{stg} | -40 to +150 | $^{\circ}\text{C}$ |
| Ambient temperature range | | | T_{amb} | -40 to +100 | $^{\circ}\text{C}$ |

Notes

- 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

⁽¹⁾ Test AC voltage in accordance with DIN 57883, June 1980

| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | |
|--|--|-------|---------------|------|------|------|-----------------------------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| INPUT | | | | | | | |
| Forward voltage | $I_F = 10\text{ mA}$ | | V_F | - | 1.1 | 1.35 | V |
| Reverse current | $V_R = 6\text{ V}$ | | I_R | - | - | 10 | μA |
| Thermal resistance, junction to ambient ⁽¹⁾ | | | R_{thJA} | - | - | 750 | $^{\circ}\text{C}/\text{W}$ |
| OUTPUT | | | | | | | |
| Peak off-state voltage | $I_{D(RMS)} = 100\text{ }\mu\text{A}$ | BRT11 | V_{DM} | - | 400 | - | μA |
| | | BRT12 | | - | 600 | - | μA |
| | | BRT13 | | - | 800 | - | μA |
| Off-state current | $T_C = 80\text{ }^{\circ}\text{C}, V_{DRM}$ | | I_D | - | 0.5 | 100 | μA |
| On-state voltage | $I_T = 300\text{ mA}$ | | V_T | - | - | 2.3 | V |
| Pulse current | $t_p \leq 5\text{ }\mu\text{s}, f = 100\text{ Hz}, dl_{tp}/dt \leq 8\text{ A}/\mu\text{s}$ | | I_{tp} | - | - | 2 | A |
| Critical rate of rise of off-state voltage | $V_D = 0.67 V_{DRM}, T_j = 25\text{ }^{\circ}\text{C}$ | | dV/dt_{cr} | 10 | - | - | $\text{kV}/\mu\text{s}$ |
| | $V_D = 0.67 V_{DRM}, T_j = 80\text{ }^{\circ}\text{C}$ | | dV/dt_{cr} | 5 | - | - | $\text{kV}/\mu\text{s}$ |
| Critical rate of rise of voltage at current commutation | $V_D = 0.67 V_{DRM}, T_j = 25\text{ }^{\circ}\text{C}, dl/dt_{crq} \leq 15\text{ A}/\text{ms}$ | | dV/dt_{crq} | 10 | - | - | $\text{kV}/\mu\text{s}$ |
| | $V_D = 0.67 V_{DRM}, T_j = 80\text{ }^{\circ}\text{C}, dl/dt_{crq} \leq 15\text{ A}/\text{ms}$ | | dV/dt_{crq} | 5 | - | - | $\text{kV}/\mu\text{s}$ |
| Critical rate of rise of on-state at current | | | dl/dt_{cr} | 8 | - | - | $\text{A}/\mu\text{s}$ |
| Holding current | $V_D = 10\text{ V}$ | | I_H | - | 80 | 500 | μA |
| Thermal resistance, junction to ambient | | | R_{thJA} | - | - | 125 | $^{\circ}\text{C}/\text{W}$ |

| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | |
|--|---|------|----------------------------|------|------|------|--------------------------------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| COUPLER | | | | | | | |
| Trigger current | $V_D = 10\text{ V}$, F - versions | | I_{FT} | - | - | 1.2 | mA |
| | $V_D = 10\text{ V}$, H - versions | | I_{FT} | 0.4 | - | 2 | mA |
| | $V_D = 10\text{ V}$, M - versions | | I_{FT} | 0.8 | - | 3 | mA |
| Trigger current temperature gradient | | | $\Delta I_{FT}/\Delta T_j$ | - | 7 | 14 | $\mu\text{A}/^{\circ}\text{C}$ |
| Capacitance (input to output) | $f = 1\text{ MHz}$, $V_R = 0\text{ V}$ | | C_{IO} | - | - | 2 | pF |

Notes

- Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluation. Typical values are for information only and are not part of the testing requirements
- (1) Static air, SITAC soldered in PCB or base plate

| SAFETY AND INSULATION RATINGS | | | | |
|--|---|------------|----------------|--------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Climatic classification | According to IEC 68 part 1 | | 55 / 100 / 21 | |
| Comparative tracking index | | CTI | 175 | |
| Maximum rated withstanding isolation voltage | $t = 1\text{ min}$ | V_{ISO} | 4420 | V_{RMS} |
| Maximum transient isolation voltage | | V_{IOTM} | 10 000 | V_{peak} |
| Maximum repetitive peak isolation voltage | | V_{IORM} | 890 | V_{peak} |
| Isolation resistance | $V_{IO} = 500\text{ V}$, $T_{amb} = 25\text{ }^{\circ}\text{C}$ | R_{IO} | $\geq 10^{12}$ | Ω |
| | $V_{IO} = 500\text{ V}$, $T_{amb} = 100\text{ }^{\circ}\text{C}$ | R_{IO} | $\geq 10^{11}$ | Ω |
| Output safety power | | P_{SO} | 400 | mW |
| Input safety current | | I_{SI} | 275 | mA |
| Safety temperature | | T_S | 175 | $^{\circ}\text{C}$ |
| Creepage distance | | | ≥ 7.2 | mm |
| Clearance distance | | | ≥ 7.2 | mm |
| Insulation thickness | | DTI | ≥ 0.4 | mm |

Note

- As per IEC 60747-5-5, § 7.4.3.8.2, this optocoupler is suitable for "safe electrical insulation" only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits

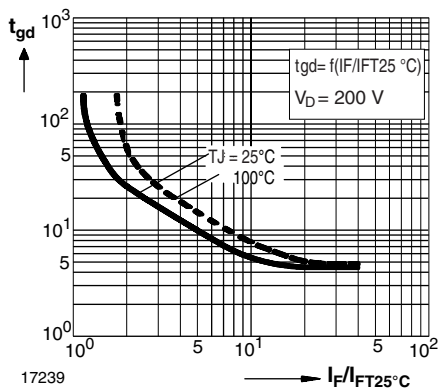
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Typical Trigger Delay Time

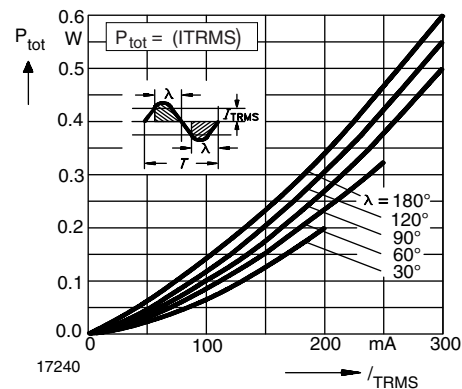


Fig. 2 - Power Dissipation 60 Hz to 60 Hz Line Operation

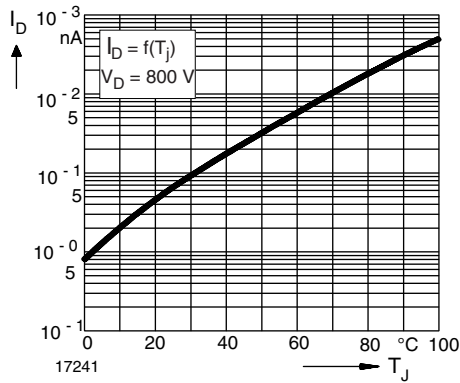


Fig. 3 - Typical Off-State Current

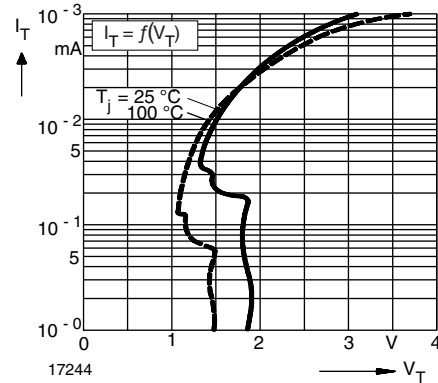


Fig. 6 - Typical Output Characteristics

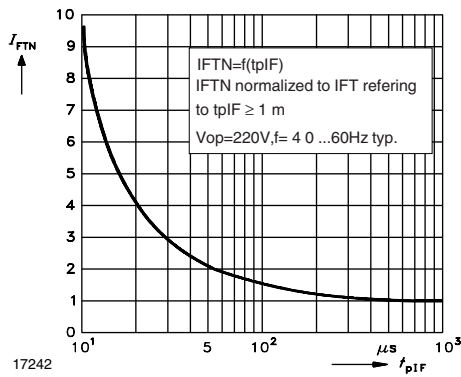


Fig. 4 - Pulse Trigger Current

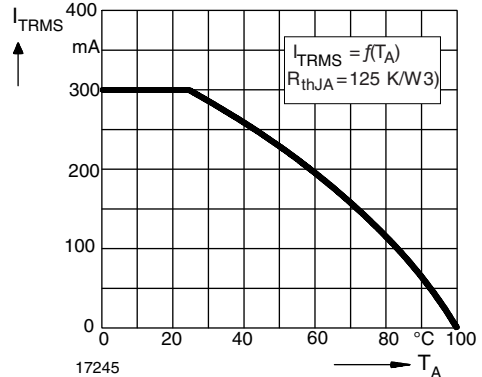


Fig. 7 - Current Reduction

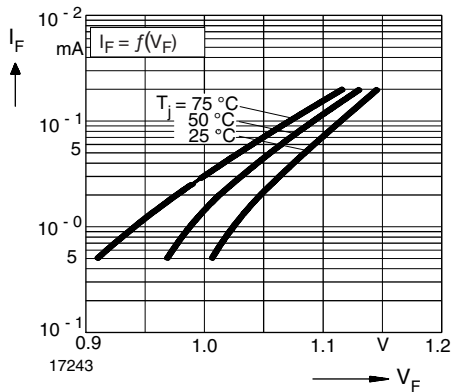


Fig. 5 - Typical Input Characteristics

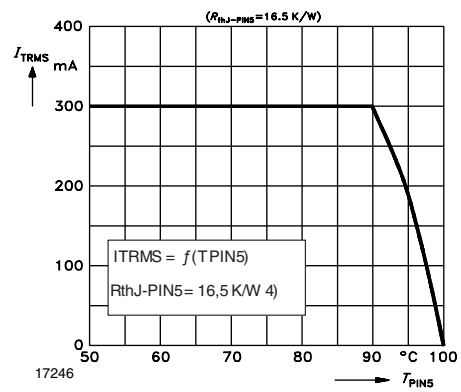
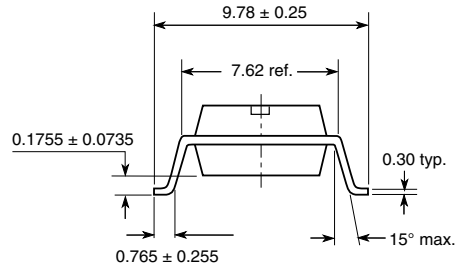
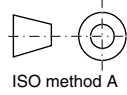
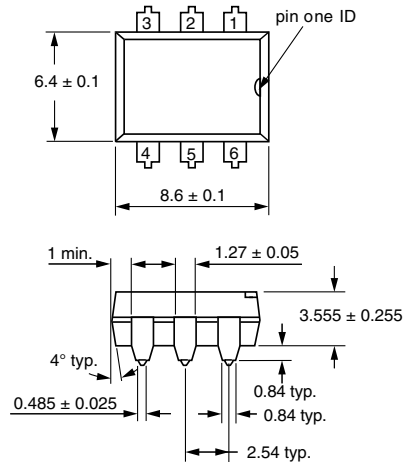


Fig. 8 - Current Reduction

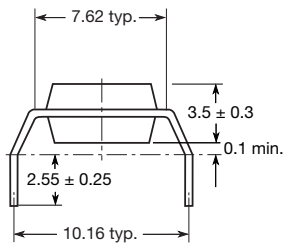


PACKAGE DIMENSIONS in millimeters

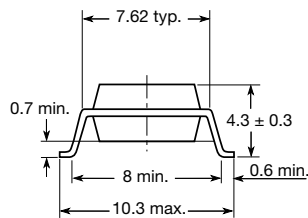


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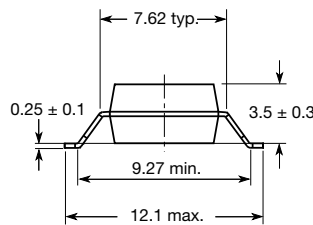
Option 6



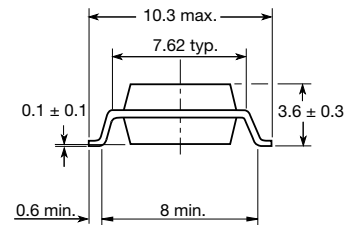
Option 7



Option 8

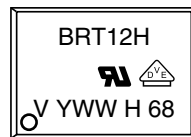


Option 9



20802-40

PACKAGE MARKING (example)



Notes

- Only options 1, and 7 are reflected in the package marking
- The VDE logo is only marked on option 1 parts
- Tape and reel suffix (T) is not part of the package marking



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