# TYN80J-1200TN

## SCR

Rev.01 - 15 September 2026 Product data sheet

## 1. General description

Planar passivated Silicon Controlled Rectifier in a TO3PF plastic package intended for use in applications requiring very high bidirectional blocking voltage capability, high junction temperature capability and high thermal cycling performance.

## 2. Features and benefits

- High junction operating temperature capability
- High thermal cycling performance
- Planar passivated for voltage ruggedness and reliability
- Very high bidirectional blocking voltage capability

## 3. Applications

- Capacitive Discharge Ignition (CDI)
- Crowbar protection
- Inrush protection
- Motor control
- Voltage regulation

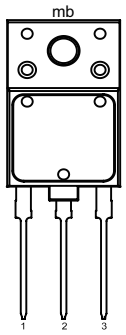
## 4. Quick reference data

**Table 1. Quick reference data**

| Symbol | Parameter | Conditions | Notes | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| $V_{DRM}$ | repetitive peak off-state voltage | | | 1200 | | | V |
| $I_{T(AV)}$ | average on-state current | half sine wave | | 80 | | | A |
| $I_{T(RMS)}$ | RMS on-state current | half sine wave; Fig. 1; Fig. 2 | | 126 | | | A |
| $I_{TSM}$ | non-repetitive peak on-state current | half sine wave; $T_{j(init)}$ = 25 °C; $t_p$ = 10 ms; Fig. 3; Fig. 4 | | 1100 | | | A |
| | | half sine wave; $T_{j(init)}$ = 25 °C; $t_p$ = 8.3 ms | | 1210 | | | A |
| $T_j$ | operating junction temperature | | | -40 to 150 | | | °C |
| **Symbol** | **Parameter** | **Conditions** | **Notes** | **Min** | **Typ** | **Max** | **Unit** |
| **Static characteristics** | | | | | | | |
| $I_{GT}$ | gate trigger current | $V_D$ = 12 V; $I_T$ = 0.1 A; $T_j$ = 25 °C; Fig. 6 | | - | - | 80 | mA |
| $I_H$ | holding current | $V_D$ = 12 V; $T_j$ = 25 °C; Fig. 8 | | - | - | 200 | mA |
| $V_T$ | on-state voltage | $I_T$ = 80 A; $T_j$ = 25 °C; Fig. 9 | | - | - | 1.4 | V |
| **Dynamic characteristics** | | | | | | | |
| $dV_D/dt$ | rate of rise of off-state voltage | $V_{DM}$ = 804 V; $T_j$ = 150 °C; ($V_{DM}$ = 67% of $V_{DRM}$); exponential waveform; gate open circuit | | 3000 | - | - | V/µs |

## 5. Pinning information

**Table 2. Pinning information**

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|---|---|---|---|---|
| 1 | K | cathode |  |  |
| 2 | A | anode | | |
| 3 | G | gate | | |
| mb | n.c. | mounting base; isolated | | |

## 6. Ordering information

**Table 3. Ordering information**

| Type number | Package Name | Orderable part number | Packing method | Small packing quantity | Package version | Package issue date |
|---|---|---|---|---|---|---|
| TYN80J-1200TN | TO3PF | TYN80J-1200TNQ | Tube | 30 | SOT1293 | 01-Mar-2017 |

## 7. Marking

**Table 4. Marking codes**

| Type number | Marking codes | |
|---|---|---|
| | Assembly factory: A | Assembly factory: d |
| TYN80J-1200TN | TYN80J<br>1200TN<br>PJAxxxx xx | TYN80J<br>1200TN<br>PJdxxxx xx |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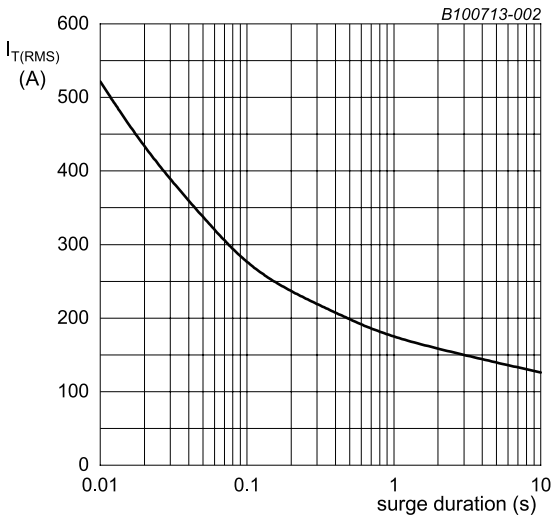
# 8. Limiting values

**Table 5. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134).*

| Symbol | Parameter | Conditions | Notes | Values | Unit |
|---|---|---|---|---|---|
| $V_{DRM}$ | repetitive peak off-state voltage | | | 1200 | V |
| $V_{RRM}$ | repetitive peak reverse voltage | | | 1200 | V |
| $I_{T(AV)}$ | average on-state current | half sine wave | | 80 | A |
| $I_{T(RMS)}$ | RMS on-state current | half sine wave; Fig. 1; Fig. 2 | | 126 | A |
| $I_{TSM}$ | non-repetitive peak on-state current | half sine wave; $T_{j(init)}$ = 25 °C; $t_p$ = 10 ms; Fig. 3; Fig. 4 | | 1100 | A |
| | | half sine wave; $T_{j(init)}$ = 25 °C; $t_p$ = 8.3 ms | | 1210 | A |
| $I^2t$ | $I^2t$ for fusing | $t_p$ = 10 ms; sine-wave pulse | | 6050 | $A^2s$ |
| $dI_T/dt$ | rate of rise of on-state current | $I_G$ = 150 mA | | 500 | A/µs |
| $I_{GM}$ | peak gate current | | | 8 | A |
| $V_{GM}$ | peak gate voltage | | | 5 | V |
| $P_{GM}$ | peak gate power | | | 20 | W |
| $P_{G(AV)}$ | average gate power | over any 20 ms period | | 1 | W |
| $T_{stg}$ | storage temperature | | | -40 to 150 | °C |
| $T_j$ | operating junction temperature | | | -40 to 150 | °C |




f = 50 Hz;

**Fig. 1. RMS on-state current as a function of surge duration; maximum values**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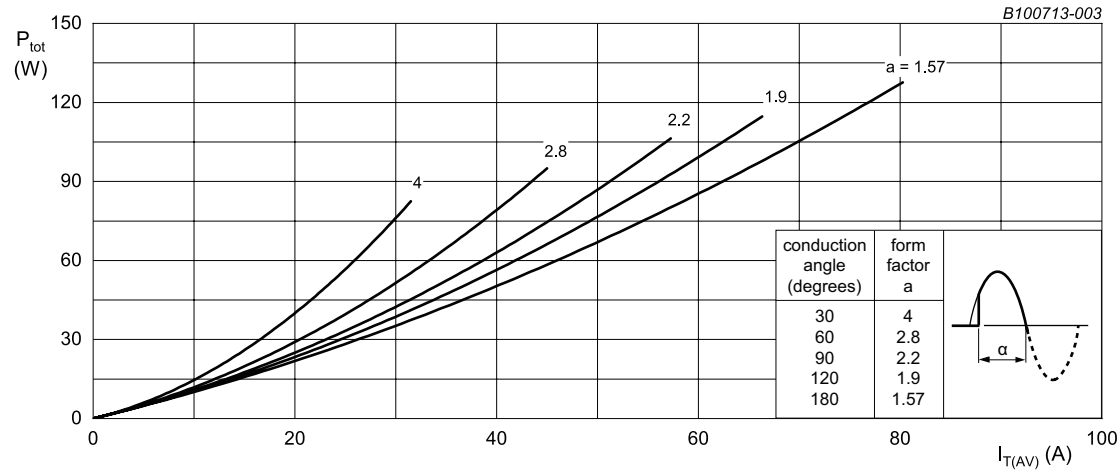
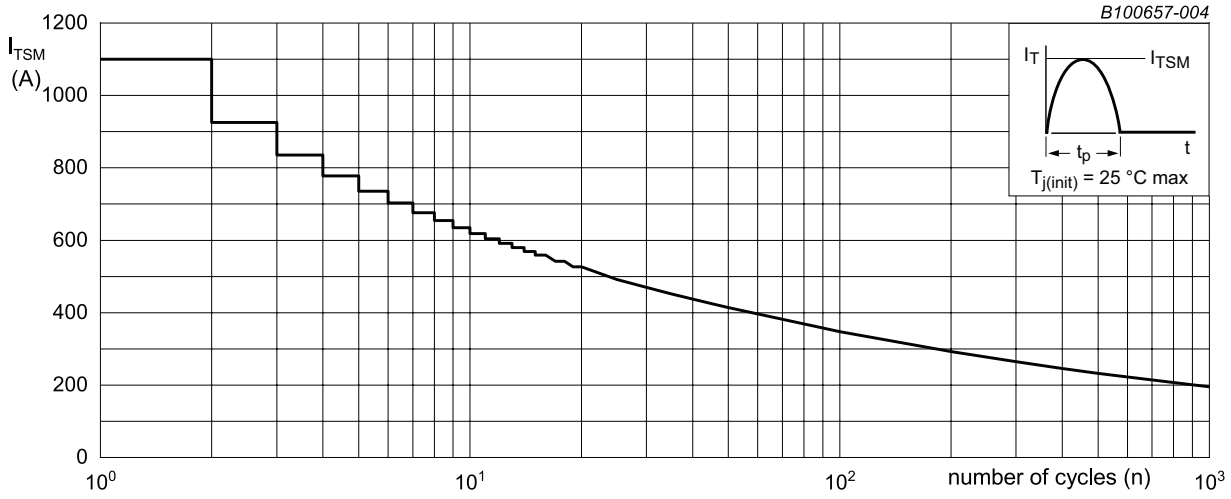


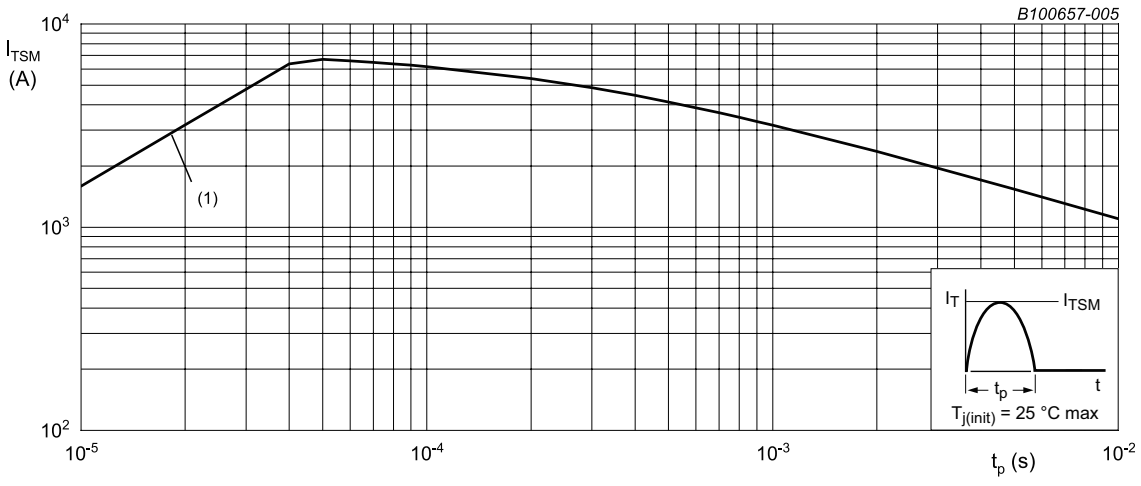

α = conduction angle
a = form factor = $I_{T(RMS)}$ / $I_{T(AV)}$

**Fig. 2. Total power dissipation as a function of RMS on-state current; maximum values**




f = 50 Hz

**Fig. 3. Non-repetitive peak on-state current as a function of the number of sinusoidal current cycles; maximum values**




$t_p \leq 10$ ms
(1) $dI_T/dt$ limit

**Fig. 4. Non-repetitive peak on-state current as a function of pulse duration; maximum values**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# 9. Thermal characteristics

**Table 6. Thermal characteristics**

| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $R_{th(j-h)}$ | thermal resistance from junction to heatsink | Fig. 5 | | - | - | 1.4 | K/W |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | | - | 35 | - | K/W |

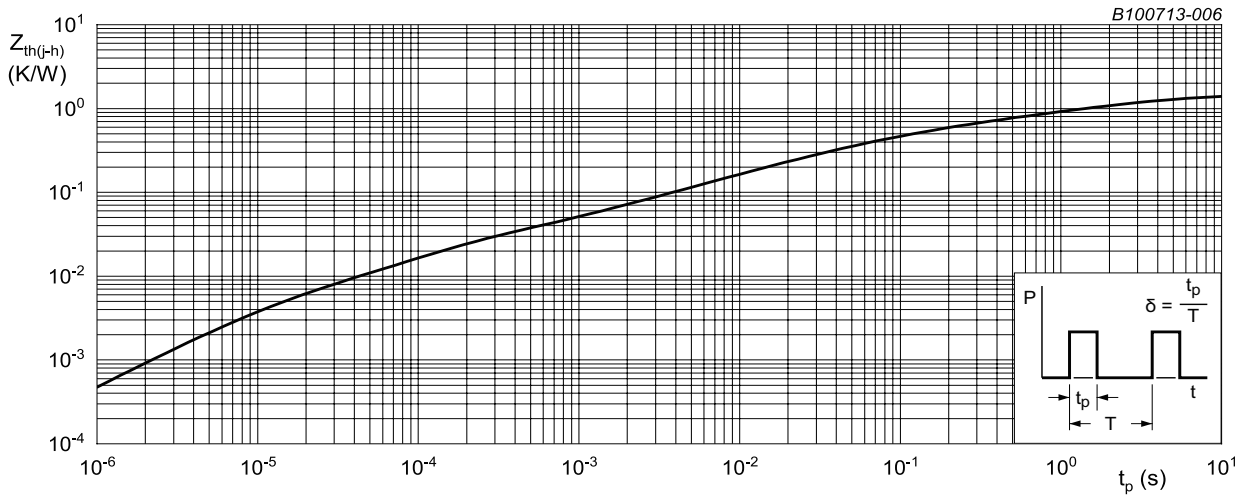


**Fig. 5. Transient thermal impedance from junction to heatsink as a function of pulse duration**

# 10. Isolation characteristics

**Table 7. Isolation characteristics**

| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{isol(RMS)}$ | RMS isolation voltage | from all pins to external heatsink; sinusoidal waveform; clean and dust free; 50 Hz ≤ f ≤ 60 Hz; RH ≤ 65 %; $T_{mb}$ = 25 °C | | - | - | 2500 | V |


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# 11. Characteristics

**Table 8. Characteristics**

| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Static characteristics** | | | | | | | |
| $I_{GT}$ | gate trigger current | $V_D$ = 12 V; $I_T$ = 0.1 A; $T_j$ = 25 °C; Fig. 6 | | - | - | 80 | mA |
| $I_L$ | latching current | $V_D$ = 12 V; $I_G$ = 0.1 A; $T_j$ = 25 °C; Fig. 7 | | - | - | 300 | mA |
| $I_H$ | holding current | $V_D$ = 12 V; $T_j$ = 25 °C; Fig. 8 | | - | - | 200 | mA |
| $V_T$ | on-state voltage | $I_T$ = 80 A; $T_j$ = 25 °C; Fig. 9 | | - | - | 1.4 | V |
| $V_{GT}$ | gate trigger voltage | $V_D$ = 12 V; $I_T$ = 0.1 A; $T_j$ = 25 °C; Fig. 10 | | - | - | 1.5 | V |
| | | $V_D$ = 800 V; $I_T$ = 0.1 A; $T_j$ = 150 °C | | 0.25 | - | - | V |
| $I_D$ | off-state current | $V_D$ =1200 V; $T_j$ = 25 °C | | - | - | 10 | µA |
| | | $V_D$ = 1200 V; $T_j$ = 125 °C | | - | - | 3 | mA |
| $I_R$ | reverse current | $V_R$ = 1200 V; $T_j$ = 25 °C | | - | - | 10 | µA |
| | | $V_R$ = 1200 V; $T_j$ = 125 °C | | - | - | 3 | mA |
| **Dynamic characteristics** | | | | | | | |
| $dV_D/dt$ | rate of rise of off-state voltage | $V_{DM}$ = 804 V; $T_j$ = 150 °C; ($V_{DM}$ = 67% of $V_{DRM}$); exponential waveform; gate open circuit | | 3000 | - | - | V/µs |
| $t_{gt}$ | gate-controlled turn-on time | $I_{TM}$ = 40 A; $V_D$ = 800 V; $I_G$ = 0.1 A; $dI_G/dt$ = 5 A/µs; $T_j$ = 25 °C | | - | 2 | - | µs |
| $t_q$ | commutated turn-off time | $V_{DM}$ = 804 V; ($V_{DM}$ = 67% of $V_{DRM}$); $I_{TM}$ = 20 A; $V_R$ = 25 V; $(d_{IT}/d_t)M$ = 30 A/µs; $dV_D/dt$ = 50 V/µs; $R_{GK(ext)}$ = 100 kΩ; $T_j$ = 125 °C | | - | 150 | - | µs |

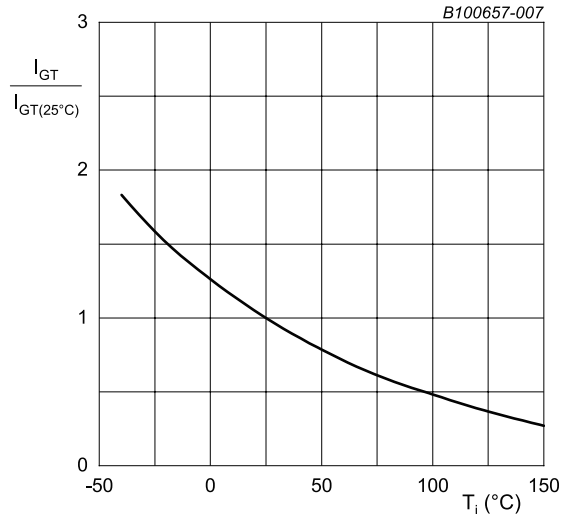


**Fig. 6. Normalized gate trigger current as a function of junction temperature**

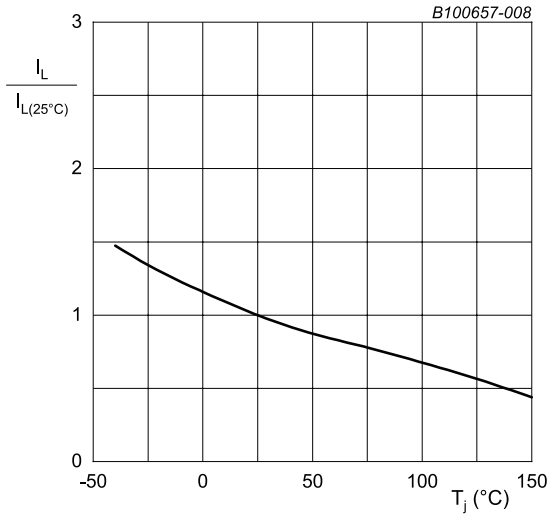


**Fig. 7. Normalized latching current as a function of junction temperature**


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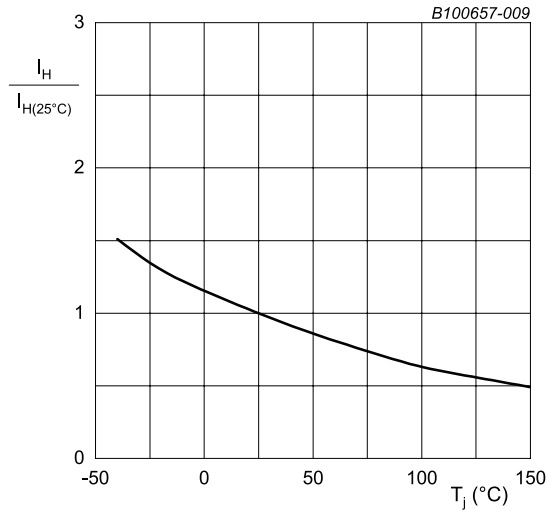
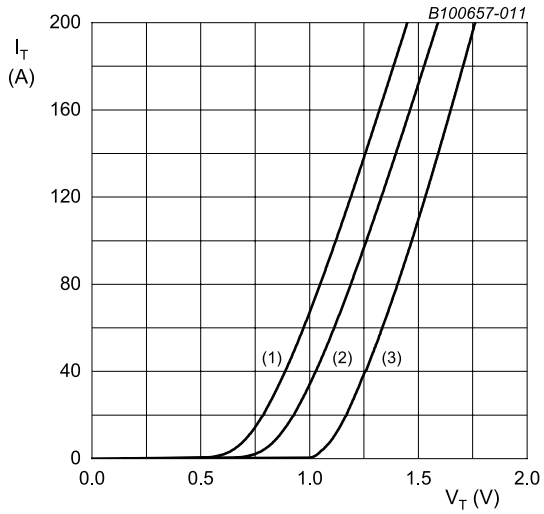



**Fig. 8. Normalized holding current as a function of junction temperature**




$V_o$ = 0.926 V; $R_s$ = 0.0034 Ω
(1) $T_j$ = 150 °C; typical values
(2) $T_j$ = 150 °C; maximum values
(3) $T_j$ = 25 °C; maximum values

**Fig. 9. On-state current as a function of on-state voltage**

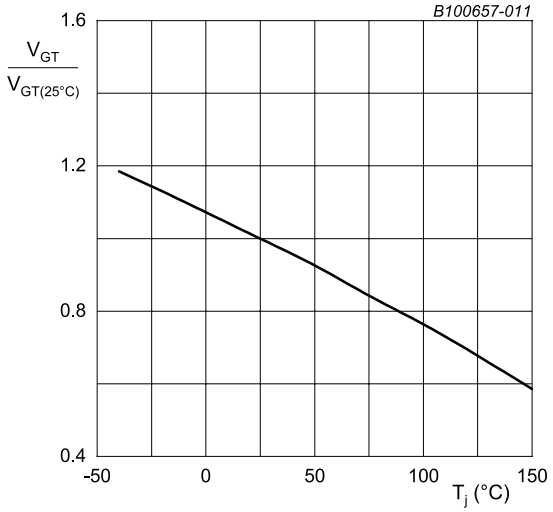



**Fig. 10. Normalized gate trigger voltage as a function of junction temperature**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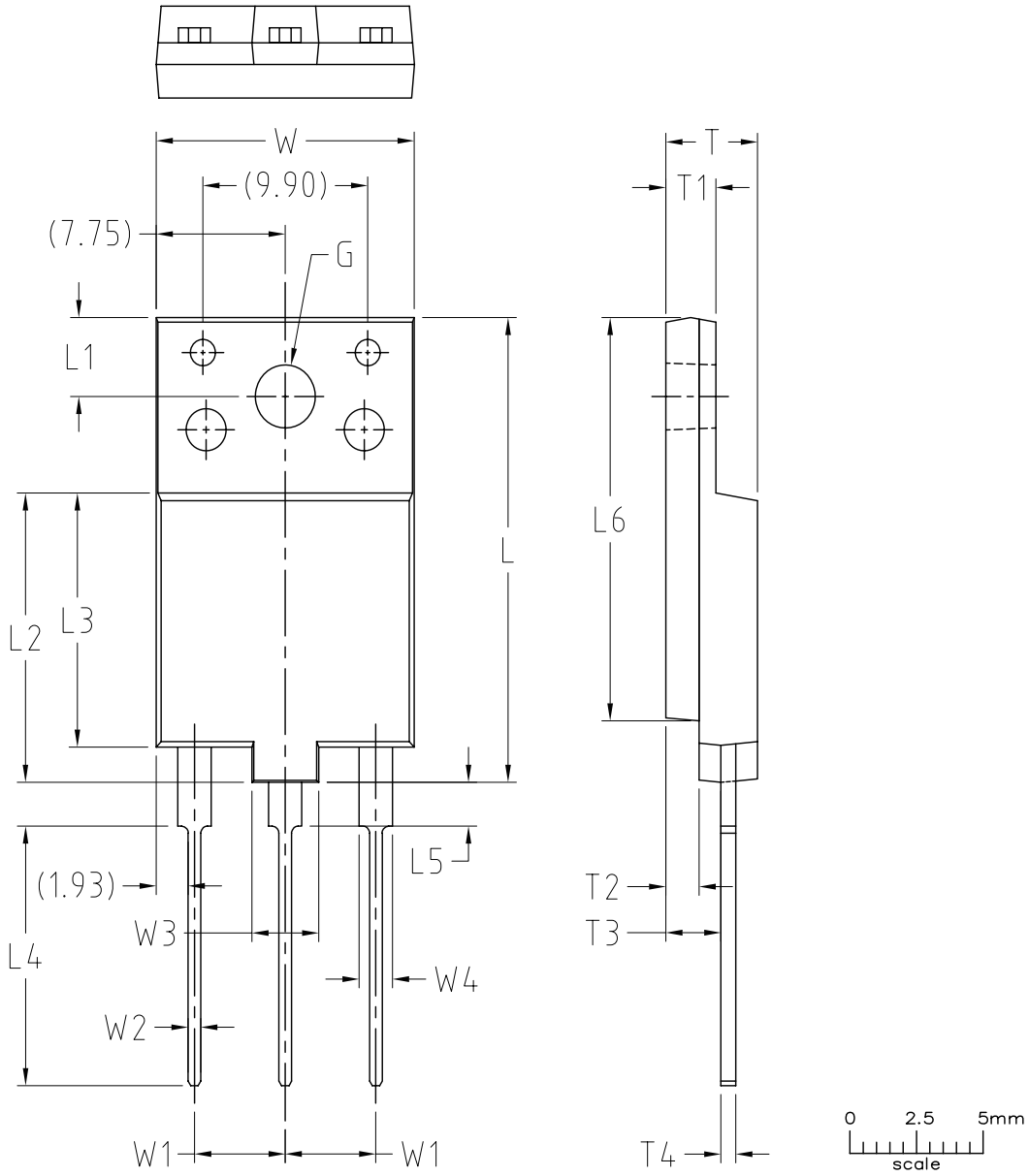
## 12. Package outline

Plastic single-ended package; isolated heatsink mounted; 1 mounting hole; 3-lead TO-3P 'full pack' TO3PF




RemarK : (X) the dimension X in blackets is for reference

| UNIT | W | W1 | W2 | W3 | W4 | L | L1 | L2 | L3 | L4 | L5 | L6 | T | T1 | T2 | T3 | T4 | G(ø) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 15.7 | 5.75 | 0.95 | 4.20 | 2.20 | 26.7 | 4.6 | 16.7 | 14.7 | 15.0 | 2.7 | 23.2 | 5.7 | 3.2 | 2.2 | 3.5 | 1.1 | 3.8 |
| | 15.3 | 5.15 | 0.65 | 3.80 | 1.80 | 26.3 | 4.4 | 16.3 | 14.3 | 14.6 | 2.3 | 22.8 | 5.3 | 2.8 | 1.8 | 3.1 | 0.8 | 3.4 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| | | TO−3PF | | | | |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**Date of release: 15 September 2026**