

STANDARD SCR

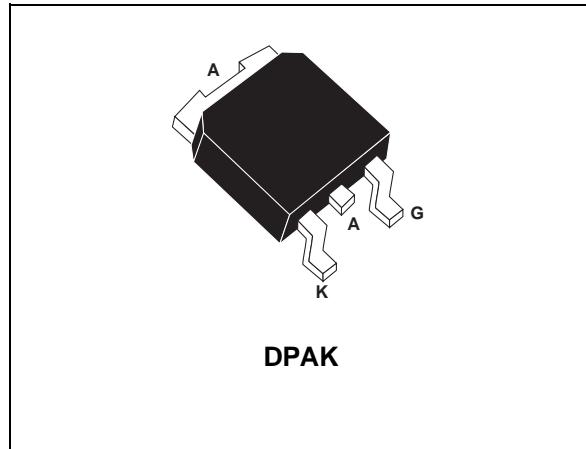
FEATURES

- $I_{TRMS} = 12 \text{ A}$
- $V_{DRM} / V_{RRM} = 600 \text{ V}$
- $I_{GT} < 15 \text{ mA}$
- $I_{TSM} = 110 \text{ A}$

DESCRIPTION

The TN1215-600B SCR uses a high performance TOPGLASS PNPN technology.

This part is intended for general purpose applications using surface mount technology and requiring high surge capability (power tools, crowbar protection, voltage regulation, etc...).



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|------------------------|--|--------------------------------|------------------------|
| V_{DRM} V_{RRM} | Repetitive peak off-state voltage | 600 | V |
| $I_{T(RMS)}$ | RMS on-state current (180° conduction angle) | 12 | A |
| $I_{T(AV)}$ | Average on-state current (180° conduction angle) | 8 | A |
| I_{TSM} | Non repetitive surge peak on-state current (T_j initial = 25°C) | $t_p = 8.3 \text{ ms}$ | A |
| | | $t_p = 10 \text{ ms}$ | |
| I^2t | I^2t Value for fusing | 60 | A^2s |
| dl/dt | Critical rate of rise of on-state current $I_G = 20 \text{ mA}$ $dl_G/dt = 1 \text{ A}/\mu\text{s}$. | 50 | $\text{A}/\mu\text{s}$ |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | - 40 to + 150 - 40 to + 125 | °C |
| T | Maximum temperature for soldering during 10s | 260 | °C |

TN1215-600B

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|----------------------|--|-------|------|
| R _{th(j-a)} | Junction to ambient ($S=0.5\text{cm}^2$) | 70 | °C/W |
| R _{th(j-c)} | Junction to case for D.C | 1.5 | °C/W |

GATE CHARACTERISTICS

P_{G (AV)}= 1W P_{GM} = 10 W (tp = 20 μs) I_{GM} = 4 A (tp = 20 μs) V_{RGM} = 5 V

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | | Type | Value | Unit |
|------------------|---|------------------------|------|-------|------|
| I _{GT} | V _D = 12V (DC) R _L = 33Ω | T _j = 25°C | MIN | 2 | mA |
| | | | MAX | 15 | |
| V _{GT} | V _D = 12V (DC) R _L = 33Ω | T _j = 25°C | MAX | 1.5 | V |
| V _{GD} | V _D = V _{DRM} R _L = 3.3kΩ | T _j = 125°C | MIN | 0.2 | V |
| I _H | I _T = 100mA Gate open | T _j = 25°C | MAX | 40 | mA |
| V _{TM} | I _{TM} = 24A tp = 380μs | T _j = 25°C | MAX | 1.6 | V |
| I _{DRM} | V _D = V _{DRM} | T _j = 25°C | MAX | 10 | μA |
| I _{RRM} | | T _j = 125°C | MAX | 2 | mA |
| dV/dt | Linear slope up to V _D = 67%V _{DRM} Gate open | T _j = 125°C | MIN | 200 | V/μs |

ORDERING INFORMATION

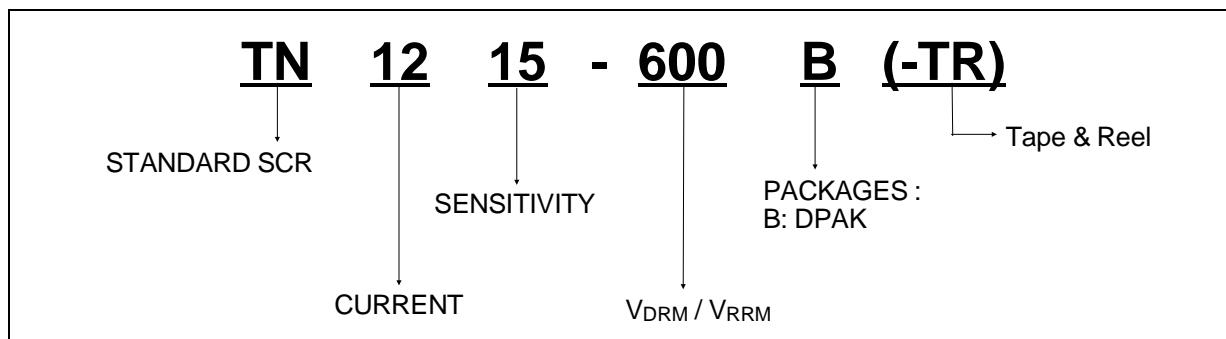


Fig. 1: Maximum average power dissipation versus average on-state current .

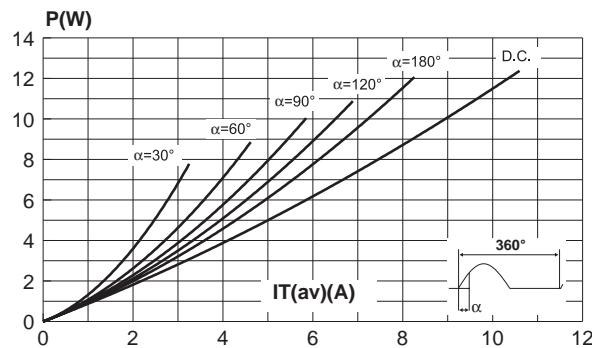


Fig. 2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances.

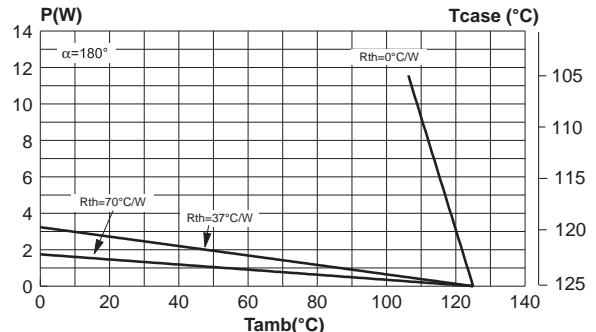


Fig. 3: Average and D.C. on-state current versus case temperature.

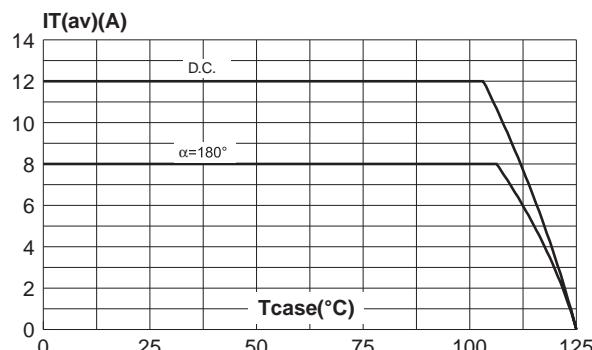


Fig. 4: Average and D.C. on-state current versus ambient temperature (Printed circuit board FR4, SCu=0.5cm²).

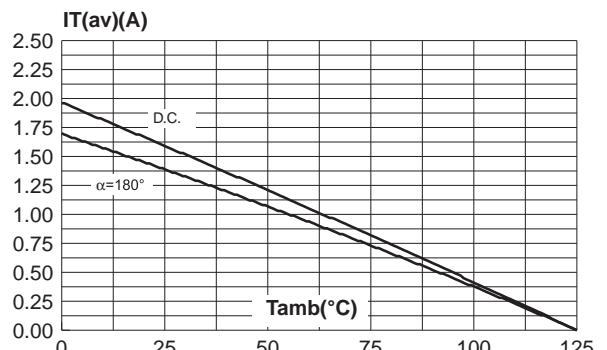


Fig. 5: Relative variation of thermal impedance junction to ambient versus pulse duration (recommended pad layout).

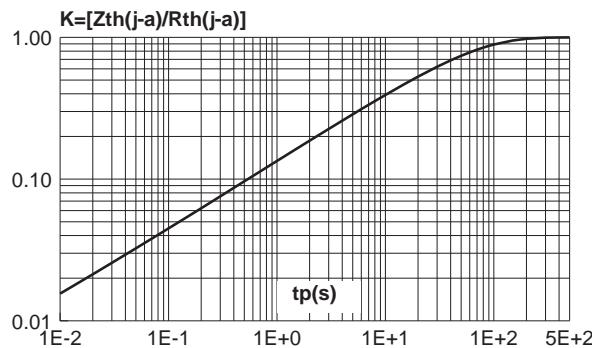
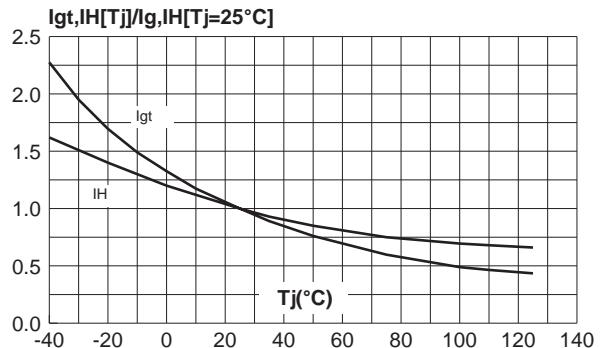


Fig. 6: Relative variation of gate trigger current and holding current versus junction temperature



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Fig 7: Non repetitive surge peak on-state current versus number of cycles.

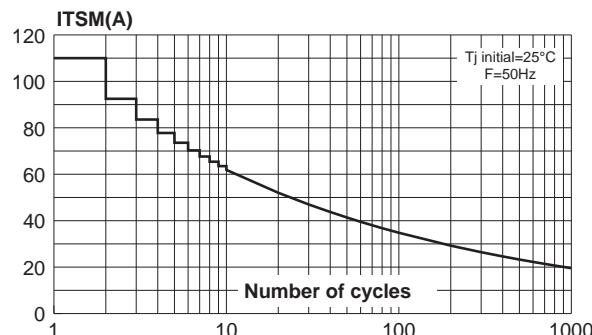


Fig 8: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

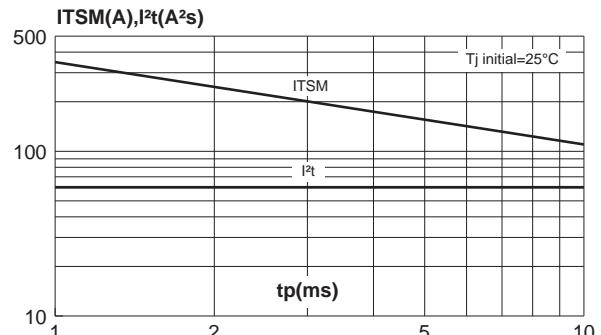


Fig 9: On-state characteristics (maximum values).

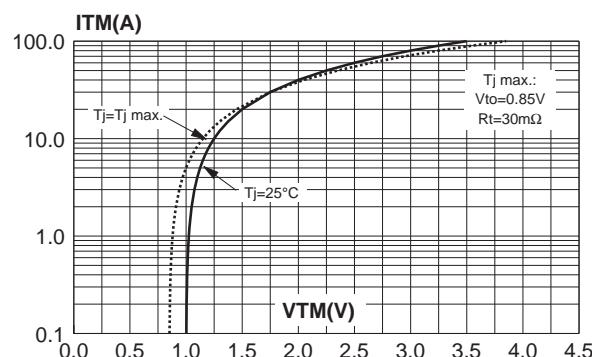
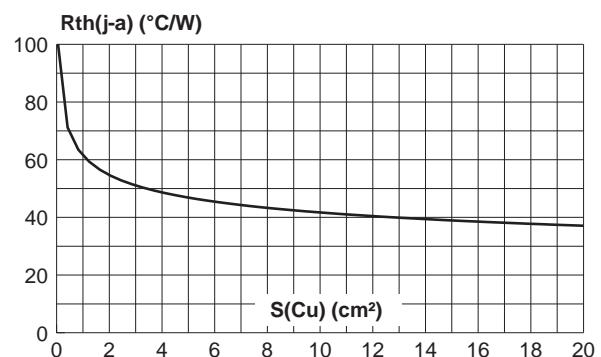
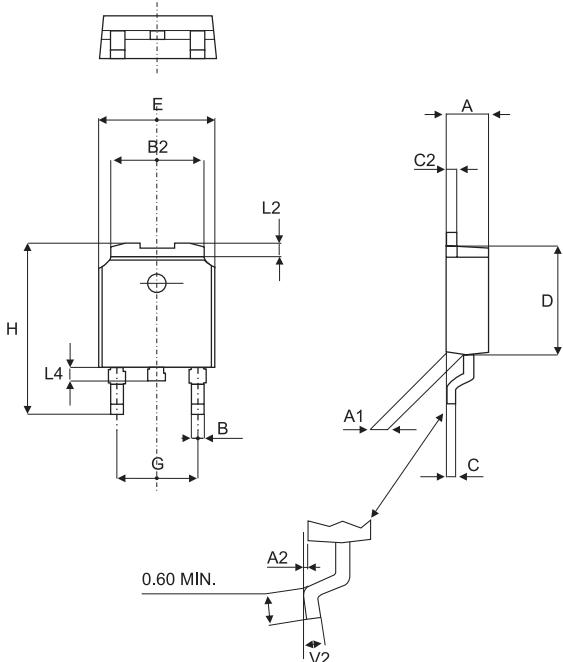
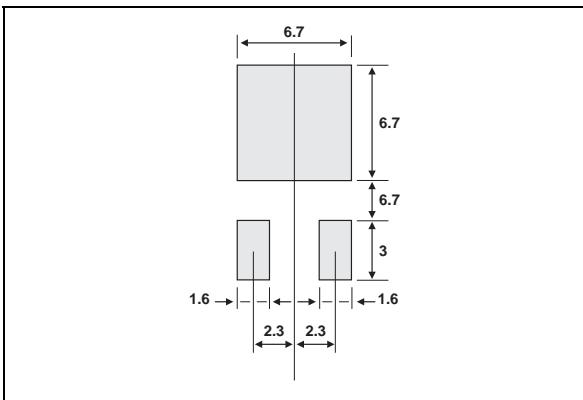


Fig 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 μm).



PACKAGE MECHANICAL DATA
DPAK

| REF. | DIMENSIONS | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max | Min. | Typ. | Max. |
| A | 2.20 | | 2.40 | 0.086 | | 0.094 |
| A1 | 0.90 | | 1.10 | 0.035 | | 0.043 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.64 | | 0.90 | 0.025 | | 0.035 |
| B2 | 5.20 | | 5.40 | 0.204 | | 0.212 |
| C | 0.45 | | 0.60 | 0.017 | | 0.023 |
| C2 | 0.48 | | 0.60 | 0.018 | | 0.023 |
| D | 6.00 | | 6.20 | 0.236 | | 0.244 |
| E | 6.40 | | 6.60 | 0.251 | | 0.259 |
| G | 4.40 | | 4.60 | 0.173 | | 0.181 |
| H | 9.35 | | 10.10 | 0.368 | | 0.397 |
| L2 | | 0.80 | | | 0.031 | |
| L4 | 0.60 | | 1.00 | 0.023 | | 0.039 |
| V2 | 0° | | 8° | 0° | | 8° |


FOOT PRINT DIMENSIONS (in millimeters)


WEIGHT : 0.30g

MARKING

| TYPE | MARKING |
|-------------|--------------------------|
| TN1215-600B | TN 1215 6 |

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