



TN4035-600G

40A SCRs

MAIN FEATURES:

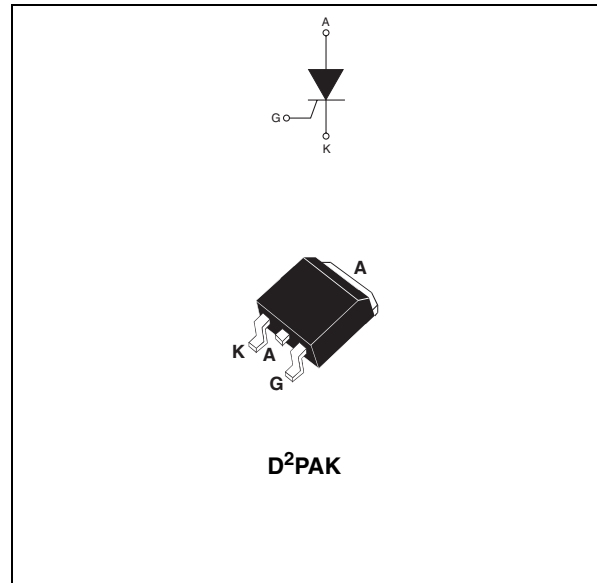
| Symbol | Value | Unit |
|-------------------|-------|------|
| $I_{T(RMS)}$ | 40 | A |
| V_{DRM}/V_{RRM} | 600 | V |
| I_{GT} | 35 | mA |

DESCRIPTION

The TN4035-600G is designed for applications where in-rush current conditions are critical, such as overvoltage crowbar protection circuits in power supplies.

Using clip assembly technology, provides higher fusing threshold than wires.

Mounting precautions detailed in application note AN533 on www.st.com.



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|--------------------|--|------------------------|----------------------------------|------------------------|
| $I_{T(RMS)}$ | RMS on-state current (180° conduction angle) | | $T_c = 95^\circ\text{C}$ 40 | A |
| $I_{T(AV)}$ | Average on-state current (180° conduction angle) | | $T_c = 95^\circ\text{C}$ 25 | A |
| I_{TSM} | Non repetitive surge peak on-state current | $t_p = 8.3 \text{ ms}$ | $T_j = 25^\circ\text{C}$ 480 | A |
| | | $t_p = 10 \text{ ms}$ | | |
| I^2t | I^2t Value for fusing | | $T_j = 25^\circ\text{C}$ 1060 | A^2s |
| di/dt | Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100 \text{ ns}$ | $F = 60 \text{ Hz}$ | $T_j = 125^\circ\text{C}$ 50 | $\text{A}/\mu\text{s}$ |
| I_{GM} | Peak gate current | $t_p = 20 \mu\text{s}$ | $T_j = 125^\circ\text{C}$ 4 | A |
| $P_{G(AV)}$ | Average gate power dissipation | | $T_j = 125^\circ\text{C}$ 1 | W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | - 40 to + 150 - 40 to + 125 | $^\circ\text{C}$ |
| V_{RGM} | Maximum peak reverse gate voltage | | 5 | V |

TN4035-600G

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

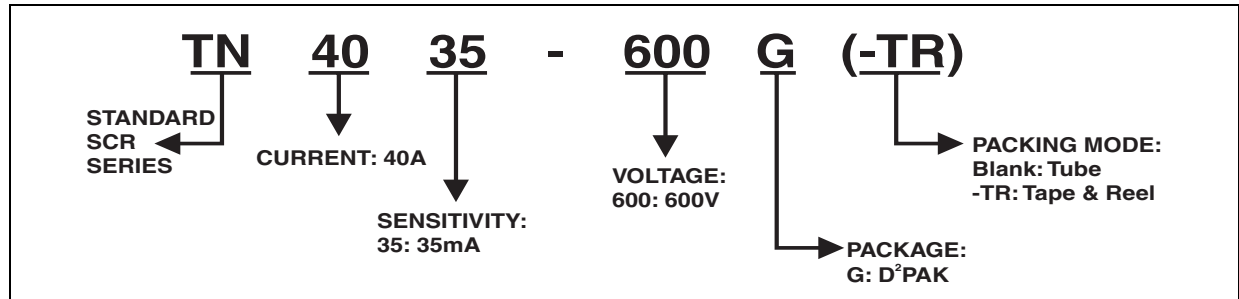
| Symbol | Test Conditions | | | Value | Unit | |
|--------------------------------------|--|-------------------------|------------------------|-------|------|------|
| I _{GT} | V _D = 12 V | R _L = 33 Ω | MIN. | 3.5 | mA | |
| | | | MAX. | 35 | | |
| V _{GT} | | | MAX. | 1.3 | V | |
| V _{GD} | V _D = V _{DRM} | R _L = 3.3 kΩ | T _j = 125°C | MIN. | 0.2 | V |
| I _H | I _T = 500 mA | | Gate open | MAX. | 75 | mA |
| I _L | I _G = 1.2 I _{GT} | | | MAX. | 150 | mA |
| dV/dt | V _D = 67 % V _{DRM} | Gate open | T _j = 125°C | MIN. | 1000 | V/μs |
| V _{TM} | I _{TM} = 80 A | tp = 380 μs | T _j = 25°C | MAX. | 1.6 | V |
| V _{t0} | Threshold voltage | | T _j = 125°C | MAX. | 0.85 | V |
| R _d | Dynamic resistance | | T _j = 125°C | MAX. | 10 | mΩ |
| I _{DRM} I _{RRM} | V _{DRM} = V _{RRM} | | T _j = 25°C | MAX. | 5 | μA |
| | | | T _j = 125°C | | 4 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|----------------------|---|-------|------|
| R _{th(j-c)} | Junction to case (DC) | 0.8 | °C/W |
| R _{th(j-a)} | Junction to ambient (DC) S = 1cm ² (*) | 45 | °C/W |

* Surface under tab/Epoxy printed circuit board FR4, copper thickness 85μm

ORDERING INFORMATION



OTHER INFORMATION

| Part Number | Marking | Weight | Base Quantity | Packing mode |
|----------------|-------------|--------|---------------|--------------|
| TN4035-600G | TN4035-600G | 1.5 g | 50 | Tube |
| TN4035-600G-TR | TN4035-600G | 1.5 g | 1000 | Tape & Reel |

- Epoxy meets UL94, V0

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

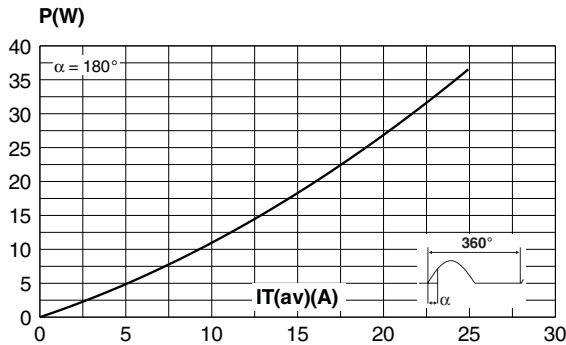


Fig. 2: Average and DC on-state current versus case temperature.

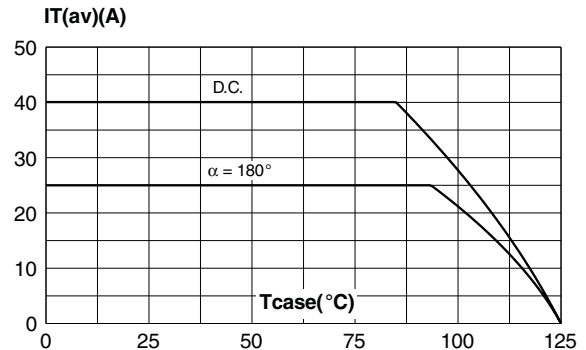


Fig. 3: Relative variation of thermal impedance versus pulse duration.

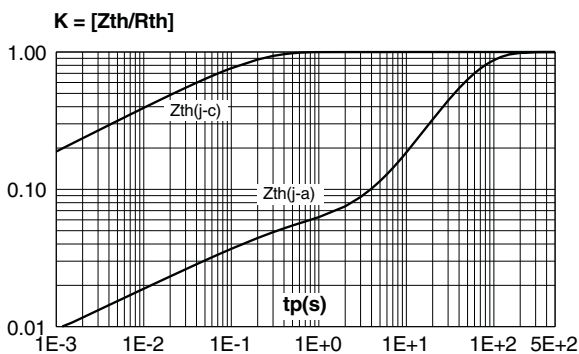


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature.

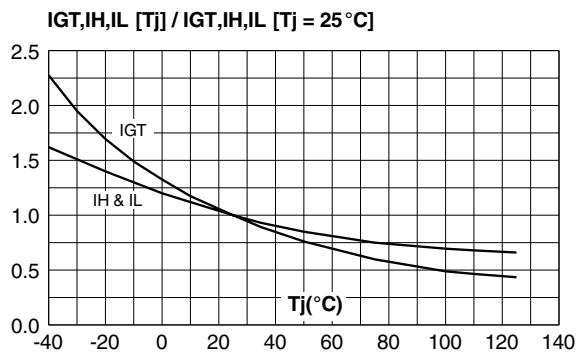


Fig. 5: Surge peak on-state current versus number of cycles.

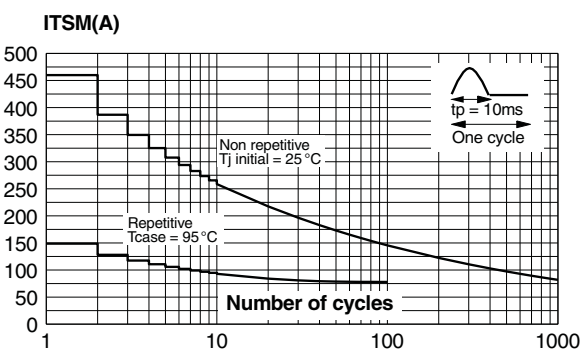


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding value of I^2t .

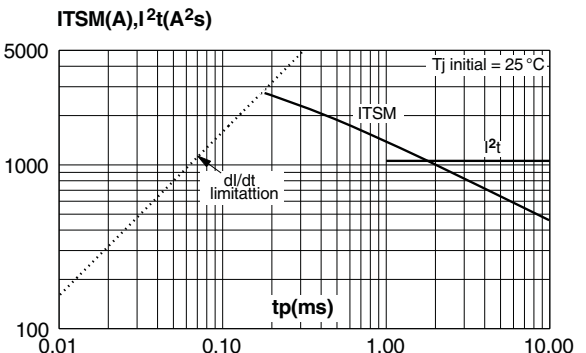


Fig. 7: On-state characteristics (maximum values).

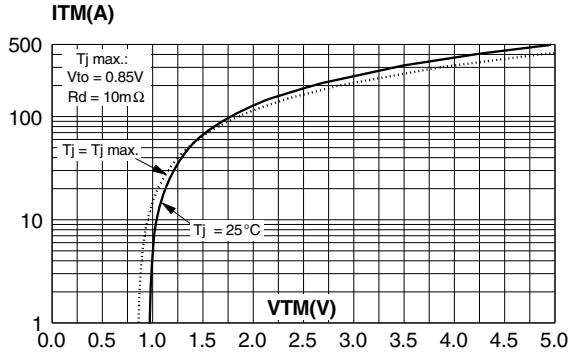
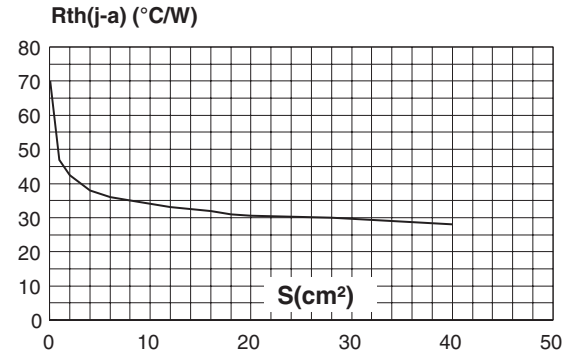


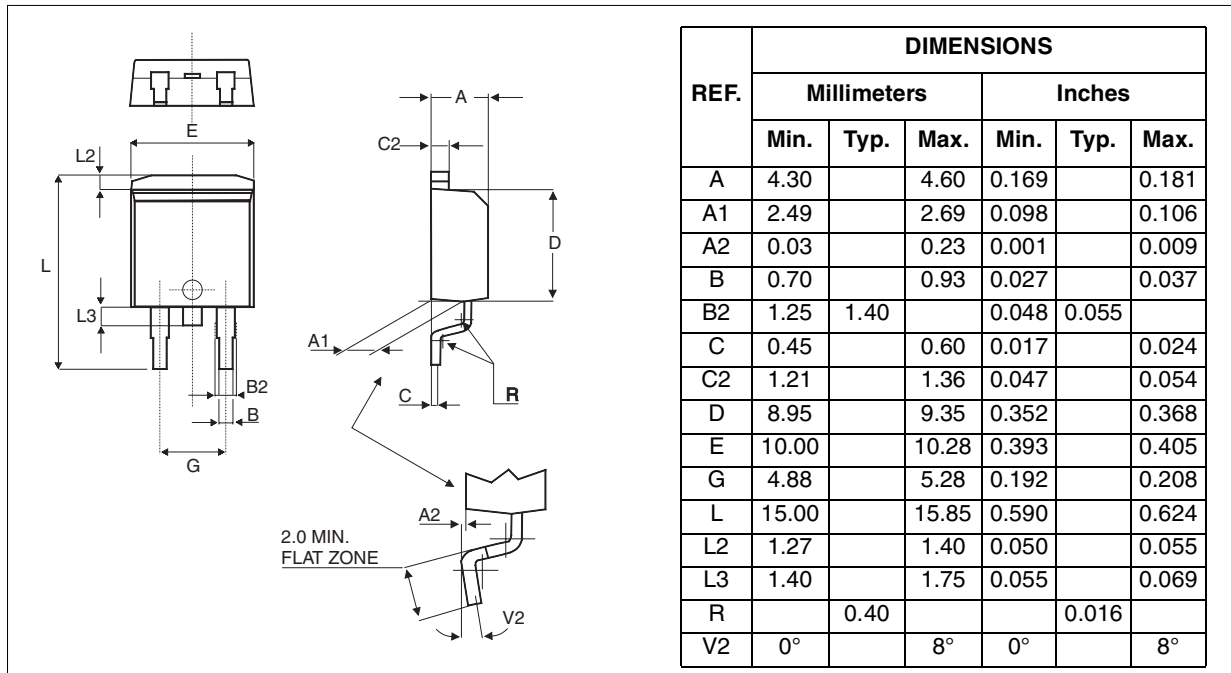
Fig. 8: Thermal resistance junction to ambient versus surface under tab (Epoxy printed circuit board FR4, copper thickness: 35μm)



PACKAGE MECHANICAL DATA

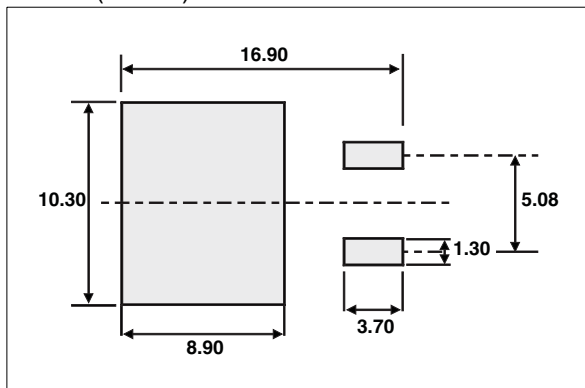
D²PAK

JEDEC REFERENCE: TO-263



FOOTPRINT DIMENSIONS (in millimeters)

D²PAK (Plastic)



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.
All other names are the property of their respective owners

© 2004 STMicroelectronics - All rights reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States

<http://www.st.com>

