

Fig. 2 On-state voltage characteristics

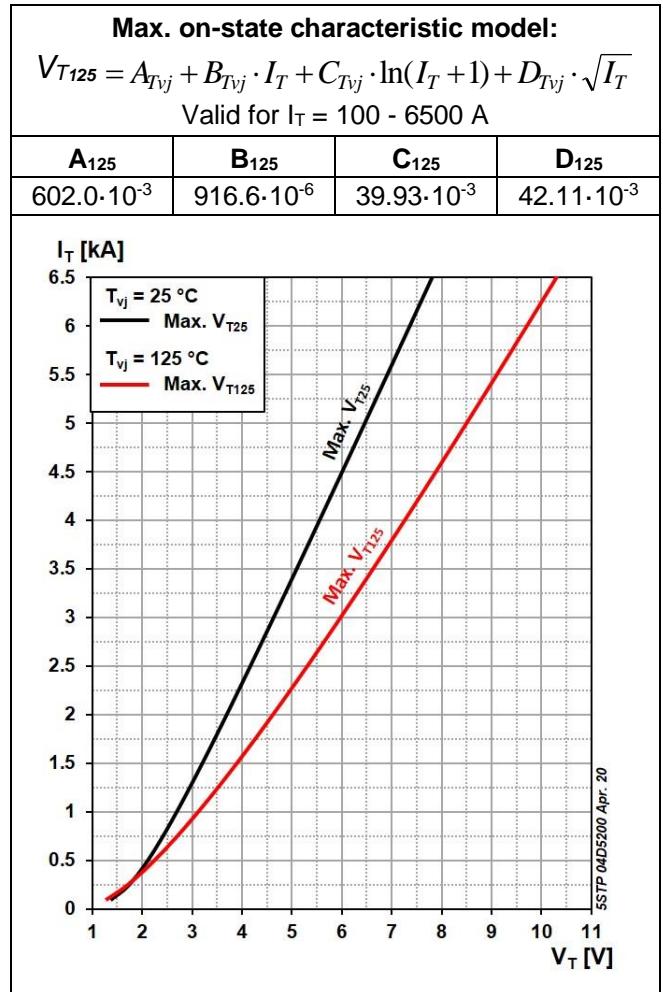


Fig. 3 On-state voltage characteristics

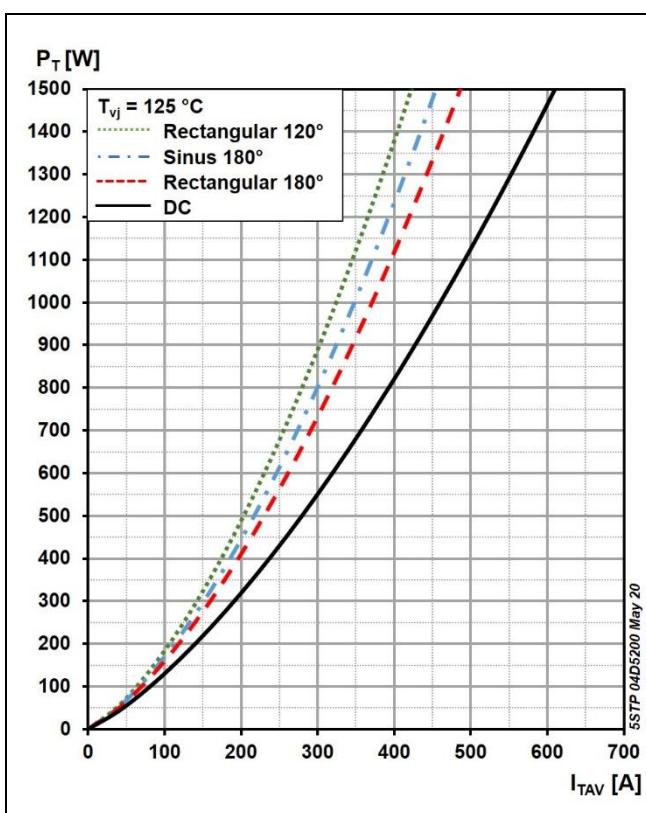


Fig. 4 On-state power dissipation vs. mean on-state current, turn-on losses excluded

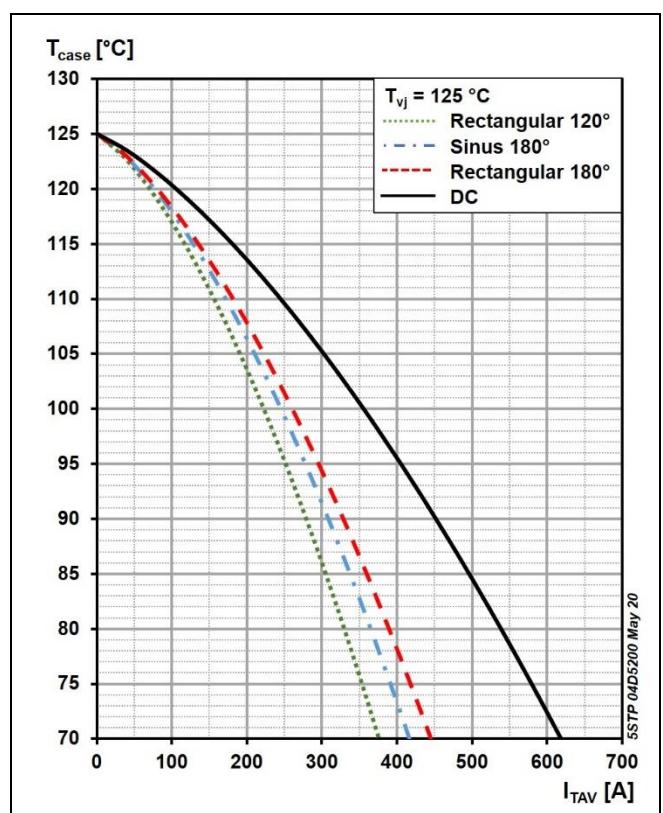
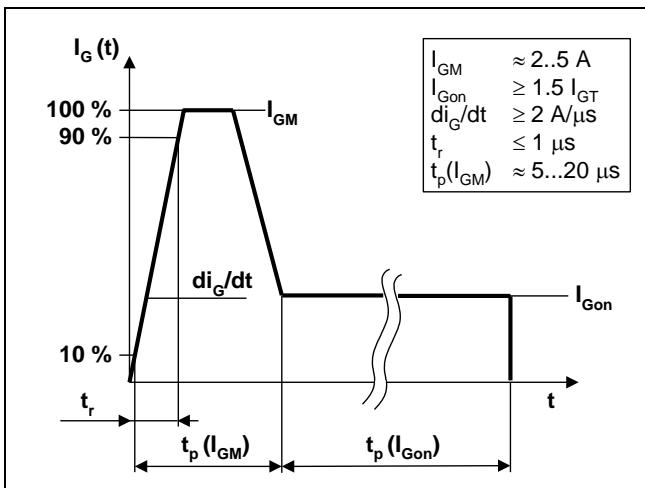
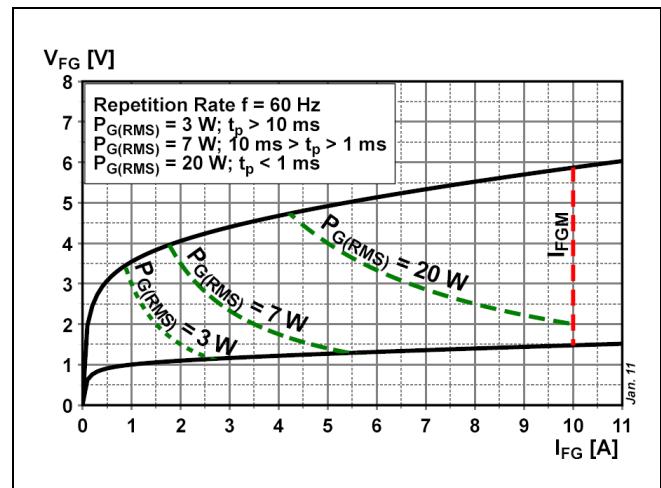
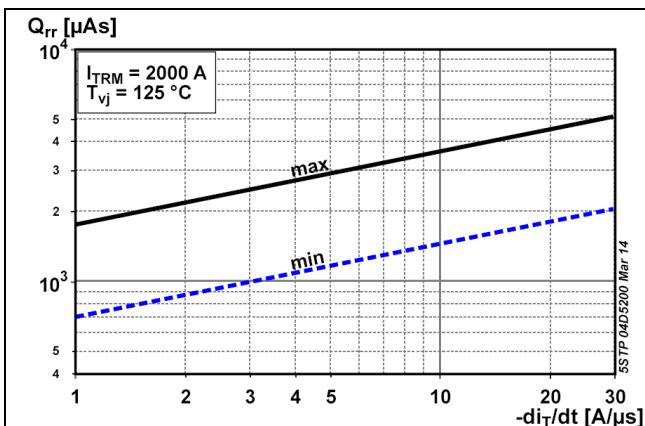
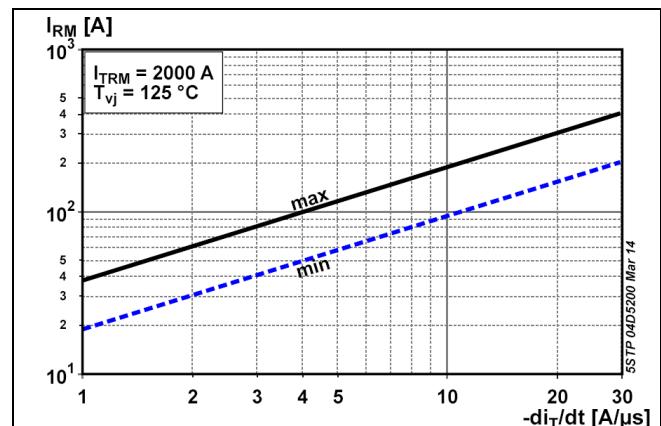


Fig. 5 Max. permissible case temperature vs. mean on-state current, switching losses ignored

**Fig. 6** Recommended gate current waveform**Fig. 7** Max. peak gate power loss**Fig. 8** Reverse recovery charge vs. decay rate of on-state current**Fig. 9** Peak reverse recovery current vs. decay rate of on-state current

Turn-on and Turn-off losses

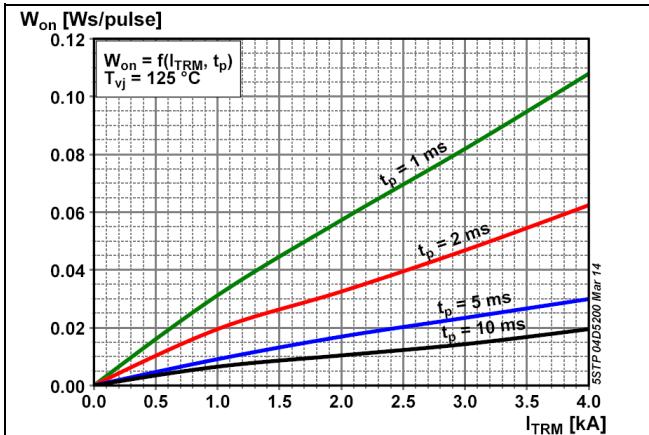


Fig. 10 Turn-on energy, half sinusoidal waves

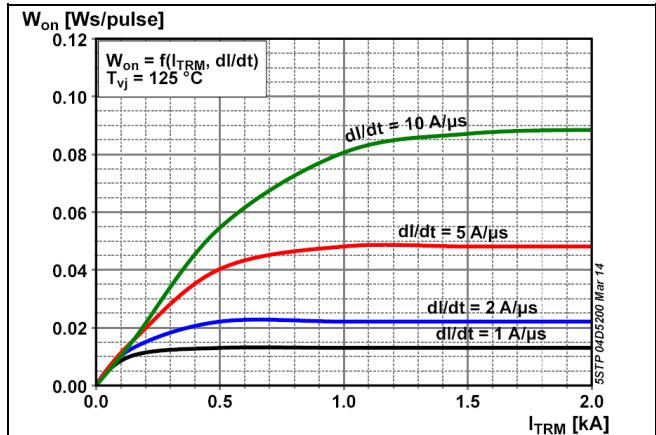


Fig. 11 Turn-on energy, rectangular waves

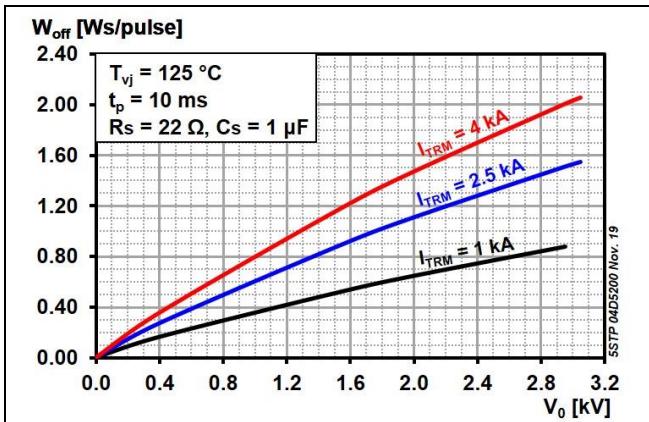


Fig. 12 Typical turn-off energy, half sinusoidal waves

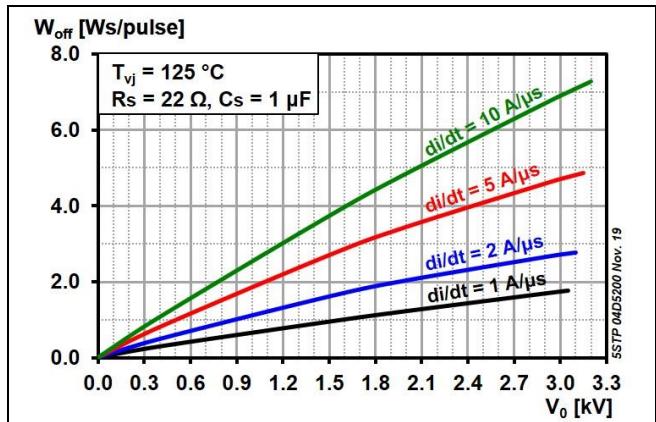


Fig. 13 Typical turn-off energy, rectangular waves

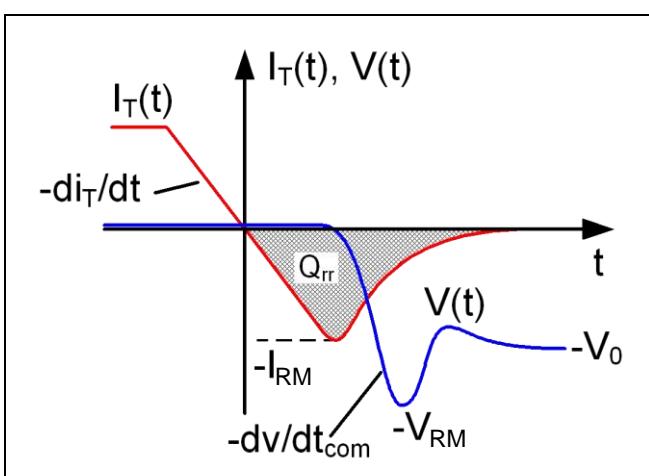


Fig. 14 Current and voltage waveforms at turn-off

Total power loss for repetitive waveforms:

$$P_{TOT} = P_T + W_{on} \cdot f + W_{off} \cdot f$$

where

$$P_T = \frac{1}{T} \int_0^T I_T \cdot V_T(I_T) dt$$

Fig. 15 Relationships for power loss

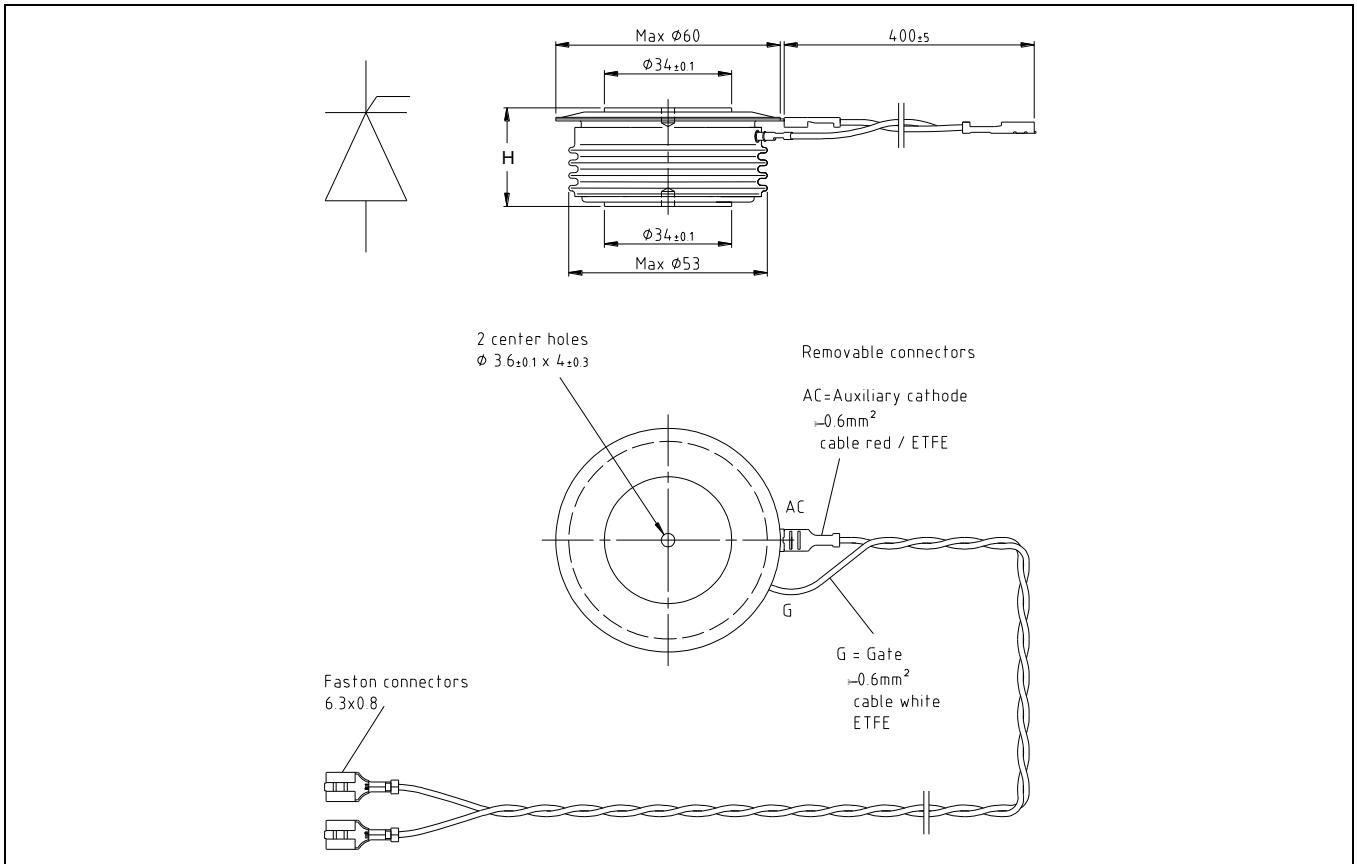


Fig. 16 Device Outline Drawing

Related documents:

- | | |
|-----------|---|
| 5SYA 2020 | Design of RC-Snubbers for Phase Control Applications |
| 5SYA 2049 | Voltage definitions for phase control and bi-directionally controlled thyristors |
| 5SYA 2051 | Voltage ratings of high power semiconductors |
| 5SYA 2034 | Gate-drive recommendations for phase control and bi-directionally controlled thyristors |
| 5SYA 2036 | Recommendations regarding mechanical clamping of Press-Pack High Power Semiconductors |
| 5SYA 2102 | Surge currents for Phase Control Thyristors |
| 5SZK 9118 | General Environmental Conditions for High Power Semiconductors |

Please refer to <http://www.abb.com/semiconductors> for current version of documents.

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