

SKM 75GB128D

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SEMITRANS[®] 2

SPT IGBT Module

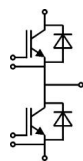
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Features

- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz



GB

| Absolute Maximum Ratings | | $T_c = 25^\circ\text{C}$, unless otherwise specified | | | |
|--------------------------|--|---|-----|--|------------------|
| Symbol | Conditions | Values | | | Units |
| IGBT | | | | | |
| V_{CES} | $T_j = 25^\circ\text{C}$ | 1200 | | | V |
| I_C | $T_j = 150^\circ\text{C}$ | $T_c = 25^\circ\text{C}$ | 100 | | A |
| | | $T_c = 80^\circ\text{C}$ | 70 | | A |
| I_{CRM} | $I_{CRM} = 2 \times I_{Cnom}$ | 100 | | | A |
| V_{GES} | | ± 20 | | | V |
| t_{psc} | $V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$ | 10 | | | μs |
| Inverse Diode | | | | | |
| I_F | $T_j = 150^\circ\text{C}$ | $T_{case} = 25^\circ\text{C}$ | 75 | | A |
| | | $T_{case} = 80^\circ\text{C}$ | 50 | | A |
| I_{FRM} | $I_{FRM} = 2 \times I_{Fnom}$ | 100 | | | A |
| I_{FSM} | $t_p = 10\text{ ms}; \sin.$ | $T_j = 150^\circ\text{C}$ | 550 | | A |
| Module | | | | | |
| $I_{t(RMS)}$ | | 200 | | | A |
| T_{vj} | | - 40...+ 150 | | | $^\circ\text{C}$ |
| T_{stg} | | - 40...+ 125 | | | $^\circ\text{C}$ |
| V_{isol} | AC, 1 min. | 4000 | | | V |

| Characteristics | | $T_c = 25^\circ\text{C}$, unless otherwise specified | | | | |
|-----------------|--|---|------|------|----------|------------|
| Symbol | Conditions | min. | typ. | max. | Units | |
| IGBT | | | | | | |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}; I_C = 2\text{ mA}$ | 4,5 | 5,5 | 6,5 | V | |
| I_{CES} | $V_{GE} = 0\text{ V}; V_{CE} = V_{CES}$ | | 0,1 | 0,3 | mA | |
| V_{CE0} | | $T_j = 25^\circ\text{C}$ | 1 | | 1,15 | V |
| | | $T_j = 125^\circ\text{C}$ | 0,9 | | 1,05 | V |
| r_{CE} | $V_{GE} = 15\text{ V}$ | $T_j = 25^\circ\text{C}$ | 18 | | 24 | m Ω |
| | | $T_j = 125^\circ\text{C}$ | 24 | | 30 | m Ω |
| $V_{CE(sat)}$ | $I_{Cnom} = 50\text{ A}; V_{GE} = 15\text{ V}$ | $T_j = 25^\circ\text{C}_{chiplev.}$ | 1,9 | | 2,35 | V |
| | | $T_j = 125^\circ\text{C}_{chiplev.}$ | 2,1 | | 2,55 | V |
| C_{ies} | $V_{CE} = 25; V_{GE} = 0\text{ V}$ | $f = 1\text{ MHz}$ | 4,5 | | nF | |
| C_{oes} | | | 0,6 | | nF | |
| C_{res} | | | 0,55 | | nF | |
| Q_G | $V_{GE} = -8\text{ V} - +20\text{ V}$ | 600 | | | nC | |
| R_{Gint} | $T_j = 25^\circ\text{C}$ | 5 | | | Ω | |
| $t_{d(on)}$ | $R_{Gon} = 6\ \Omega$ | $V_{CC} = 600\text{ V}$ $I_{Cnom} = 50\text{ A}$ | 160 | | ns | |
| t_r | | | 35 | | ns | |
| E_{on} | | | 6 | | mJ | |
| $t_{d(off)}$ | $R_{Goff} = 6\ \Omega$ | $T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$ | 310 | | ns | |
| t_f | | | 65 | | ns | |
| E_{off} | | | 8 | | mJ | |
| $R_{th(j-c)}$ | per IGBT | 0,3 | | | K/W | |

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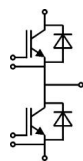
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Typical Applications

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- UPS
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GB

Characteristics

| Symbol | Conditions | min. | typ. | max. | Units | |
|----------------------|--|------|---|------|-------|-----|
| Inverse Diode | | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$ | | $T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$ | 2 | 2,5 | V |
| | | | $T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$ | 1,8 | | V |
| V_{F0} | | | $T_j = 25 \text{ }^\circ\text{C}$ | 1,1 | 1,2 | V |
| r_F | | | $T_j = 25 \text{ }^\circ\text{C}$ | 18 | 26 | mΩ |
| I_{RRM} | $I_{Fnom} = 50 \text{ A}$ | | $T_j = 125 \text{ }^\circ\text{C}$ | 55 | | A |
| Q_{rr} | $di/dt = 2100 \text{ A}/\mu\text{s}$ | | | 7,3 | | μC |
| E_{rr} | $V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$ | | | 2,6 | | mJ |
| $R_{th(j-c)D}$ | per diode | | | 0,6 | | K/W |
| Module | | | | | | |
| L_{CE} | | | | 30 | | nH |
| $R_{CC'+EE'}$ | res., terminal-chip | | $T_{case} = 25 \text{ }^\circ\text{C}$ | 0,75 | | mΩ |
| | | | $T_{case} = 125 \text{ }^\circ\text{C}$ | 1 | | mΩ |
| $R_{th(c-s)}$ | per module | | | 0,05 | | K/W |
| M_s | to heat sink M6 | | | 3 | 5 | Nm |
| M_t | to terminals M5 | | | 2,5 | 5 | Nm |
| w | | | | 160 | | g |

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

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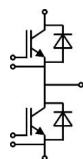
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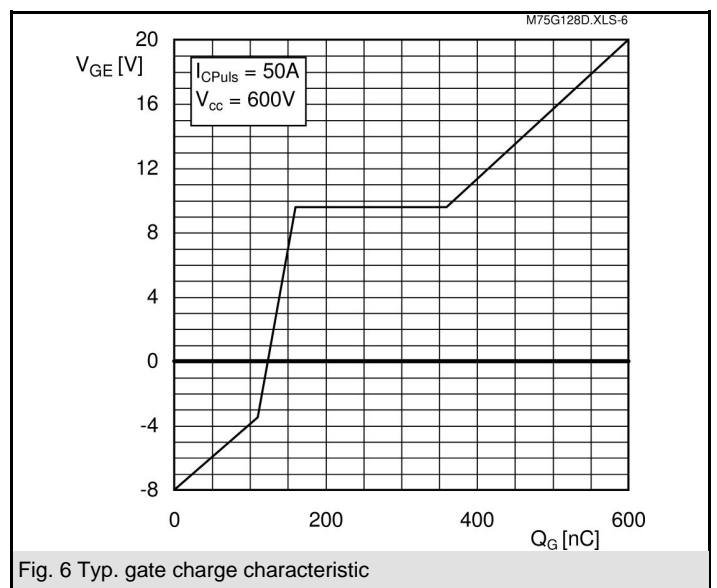
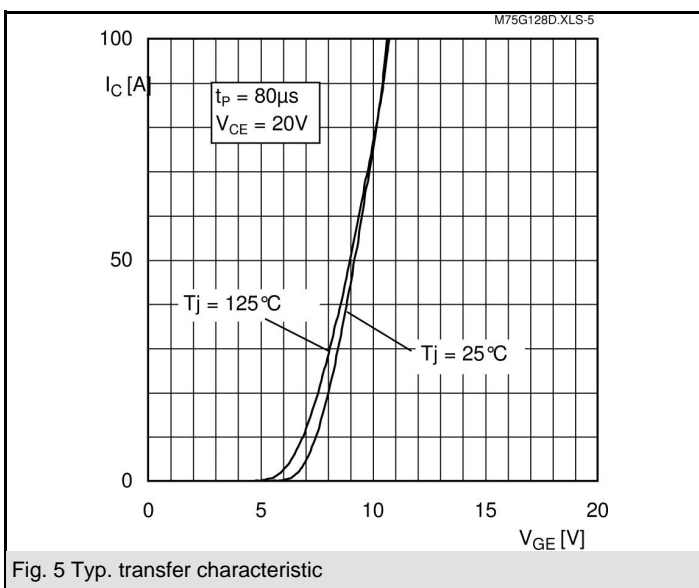
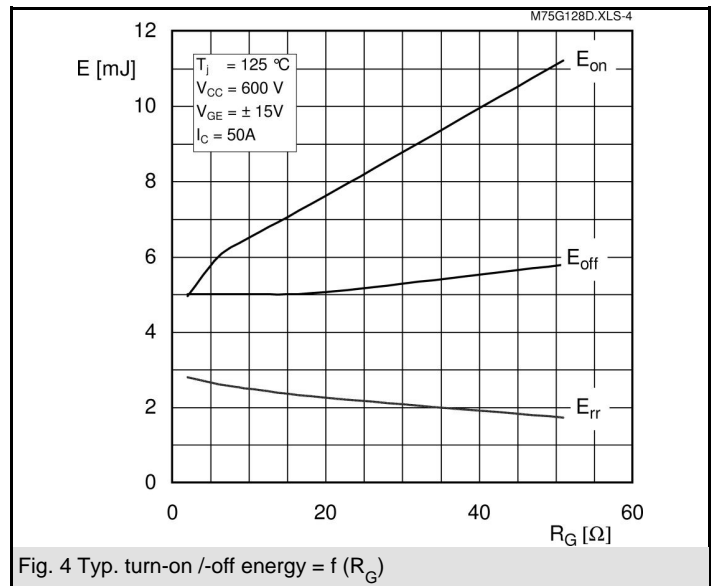
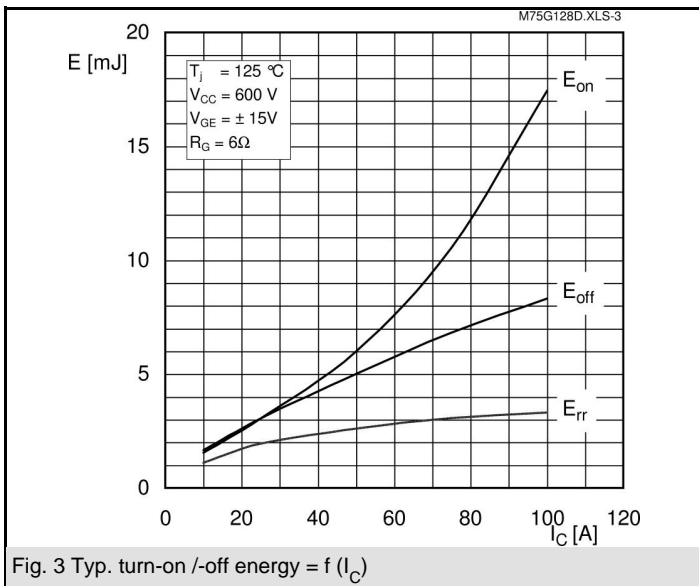
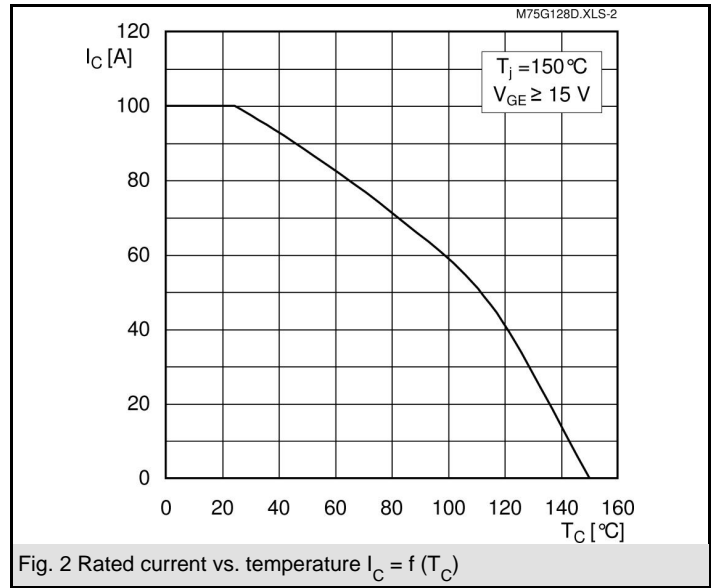
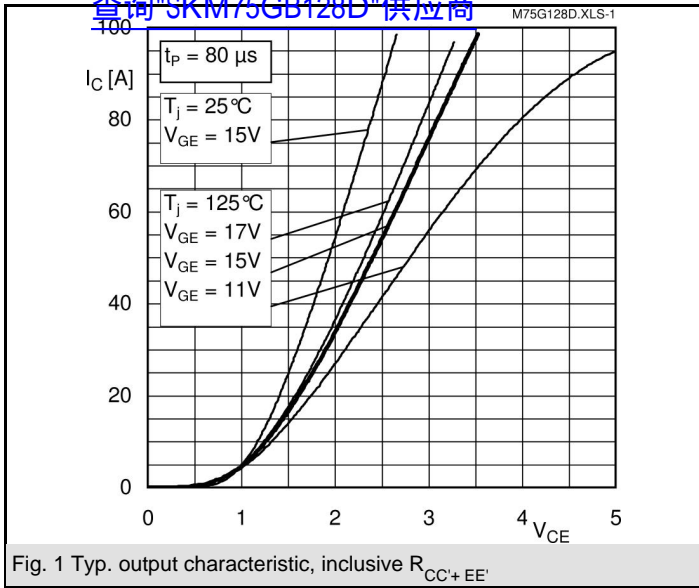
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| Symbol | Conditions | Values | Units |
|----------------------------------|------------|--------|-------|
| Z_{th} | | | |
| $Z_{th(j-c)I}$ | | | |
| $R_{\theta j-c}$ | $i = 1$ | 210 | mk/W |
| $R_{\theta j-c}$ | $i = 2$ | 70 | mk/W |
| $R_{\theta j-c}$ | $i = 3$ | 17 | mk/W |
| $R_{\theta j-c}$ | $i = 4$ | 3 | mk/W |
| $\tau_{th j-c}$ | $i = 1$ | 0,0382 | s |
| $\tau_{th j-c}$ | $i = 2$ | 0,0242 | s |
| $\tau_{th j-c}$ | $i = 3$ | 0,0013 | s |
| $\tau_{th j-c}$ | $i = 4$ | 0,0002 | s |
| $Z_{th(j-c)D}$ | | | |
| $R_{\theta j-c}$ | $i = 1$ | 400 | mk/W |
| $R_{\theta j-c}$ | $i = 2$ | 160 | mk/W |
| $R_{\theta j-c}$ | $i = 3$ | 35,5 | mk/W |
| $R_{\theta j-c}$ | $i = 4$ | 4,5 | mk/W |
| $\tau_{th j-c}$ | $i = 1$ | 0,0831 | s |
| $\tau_{th j-c}$ | $i = 2$ | 0,0063 | s |
| $\tau_{th j-c}$ | $i = 3$ | 0,0022 | s |
| $\tau_{th j-c}$ | $i = 4$ | 0,08 | s |

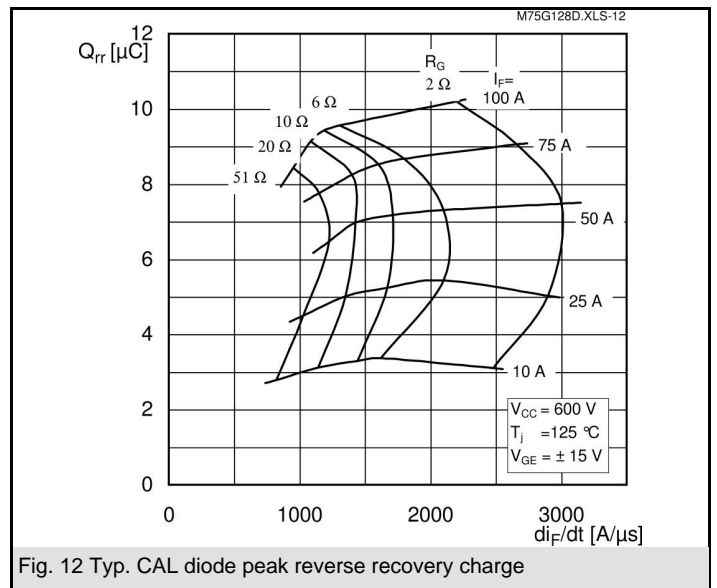
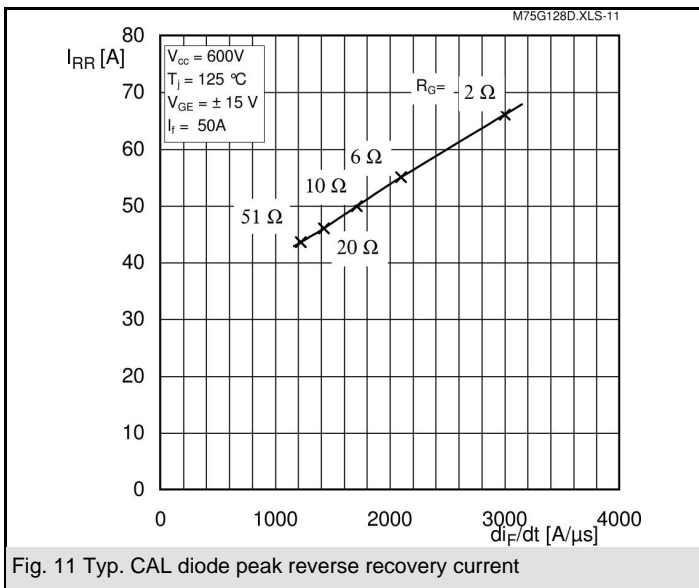
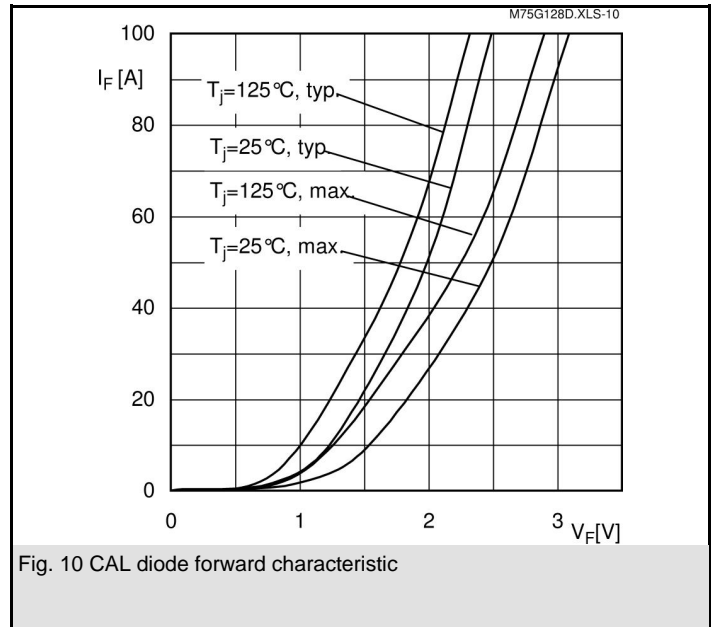
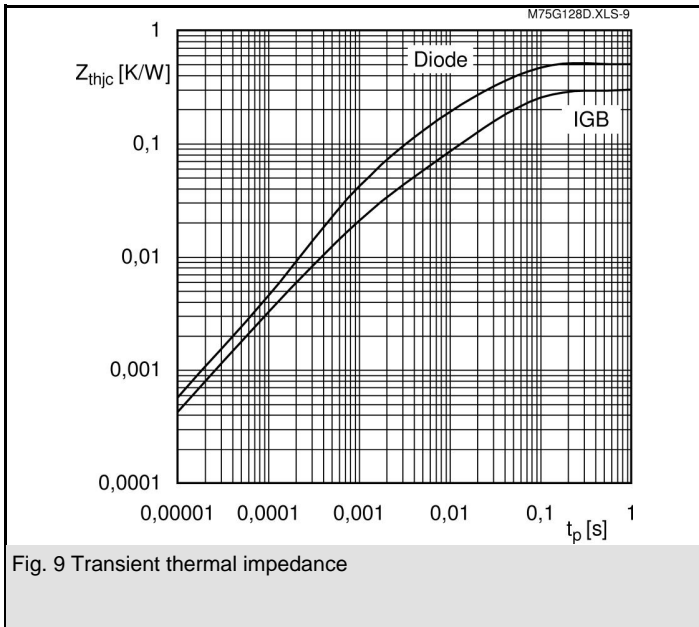
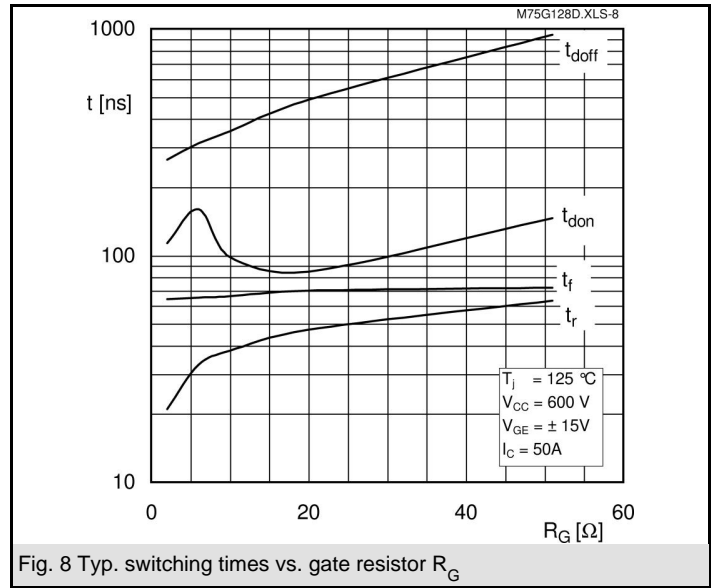
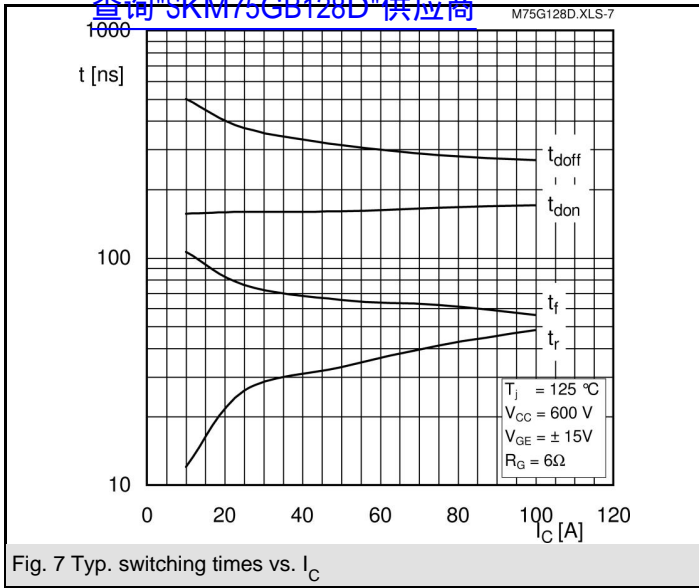


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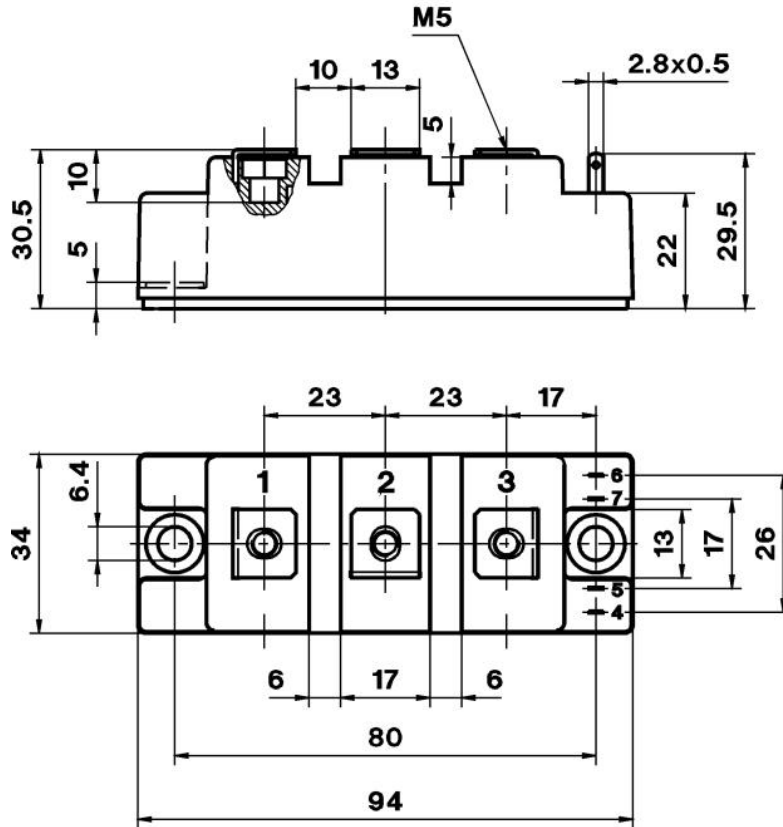
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UL Recognized

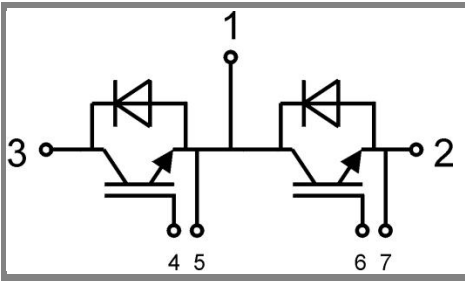
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CASED61

File no. 63 532



Case D 61



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