

CoolMOS™ 1) Power MOSFET

N-Channel Enhancement Mode
 Low $R_{DS(on)}$, High V_{DSS} MOSFET
 Ultra low gate charge

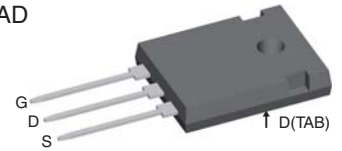
$$I_{D25} = 30 \text{ A}$$

$$V_{DSS} = 600 \text{ V}$$

$$R_{DS(on) \text{ max}} = 0.125 \Omega$$



TO-247 AD



| MOSFET | | | |
|-----------|---|-----------------|------|
| Symbol | Conditions | Maximum Ratings | |
| V_{DSS} | $T_{VJ} = 25^\circ\text{C}$ | 600 | V |
| V_{GS} | | ± 20 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 30 | A |
| I_{D90} | $T_C = 90^\circ\text{C}$ | 21 | A |
| E_{AS} | single pulse } $I_D = 11 \text{ A}; T_C = 25^\circ\text{C}$ repetitive | 708 | mJ |
| E_{AR} | | 1.2 | mJ |
| dV/dt | MOSFET dV/dt ruggedness $V_{DS} = 0 \dots 480 \text{ V}$ | 50 | V/ns |

Features

- fast CoolMOS™ 1) power MOSFET 4th generation
- High blocking capability
- Lowest resistance
- Avalanche rated for unclamped inductive switching (UIS)
- Low thermal resistance due to reduced chip thickness
- Enhanced total power density

Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating
- PDP and LCD adapter

| Symbol | Conditions | Characteristic Values | | | |
|--------------|---|---|------|------|---------------|
| | | $(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$ | | | |
| | | min. | typ. | max. | |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}; I_D = 16 \text{ A}$ | | 110 | 125 | mΩ |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}; I_D = 1.1 \text{ mA}$ | 2.5 | 3 | 3.5 | V |
| I_{DSS} | $V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$ | | | 2 | μA |
| | | | 20 | | μA |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$ | | | 100 | nA |
| C_{iss} | } $V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$ | | 2500 | | pF |
| C_{oss} | | | | 120 | |
| Q_g | } $V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 16 \text{ A}$ | | 53 | 70 | nC |
| Q_{gs} | | | 12 | | nC |
| Q_{gd} | | | 18 | | nC |
| $t_{d(on)}$ | } $V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 16 \text{ A}; R_G = 3.3 \Omega$ | | 15 | | ns |
| t_r | | | 5 | | ns |
| $t_{d(off)}$ | | | 50 | | ns |
| t_f | | | 5 | | ns |
| R_{thJC} | | | | 0.4 | K/W |

¹⁾ CoolMOS™ is a trademark of Infineon Technologies AG.

Source-Drain Diode

| Symbol | Conditions | Characteristic Values | | | |
|---|--|-----------------------|------|------|---------------|
| | | min. | typ. | max. | |
| ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified) | | | | | |
| I_S | $V_{GS} = 0\text{ V}$ | | | 16 | A |
| V_{SD} | $I_F = 16\text{ A}; V_{GS} = 0\text{ V}$ | | 0.9 | 1.2 | V |
| t_{rr} | } $I_F = 16\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$ | | 430 | | ns |
| Q_{RM} | | | 9 | | μC |
| I_{RM} | | | 42 | | A |

Component

| Symbol | Conditions | Maximum Ratings | | |
|-----------|-----------------|-----------------|-------------|--------------------|
| T_{VJ} | operating | | -55...+150 | $^{\circ}\text{C}$ |
| T_{stg} | | | -55...+150 | $^{\circ}\text{C}$ |
| M_d | mounting torque | | 0.8 ... 1.2 | Nm |

| Symbol | Conditions | Characteristic Values | | | |
|---------------|------------------------|-----------------------|------|------|-----|
| | | min. | typ. | max. | |
| R_{thCH} | with heatsink compound | | 0.25 | | K/W |
| Weight | | | 6 | | g |

TO-247 AD Outline

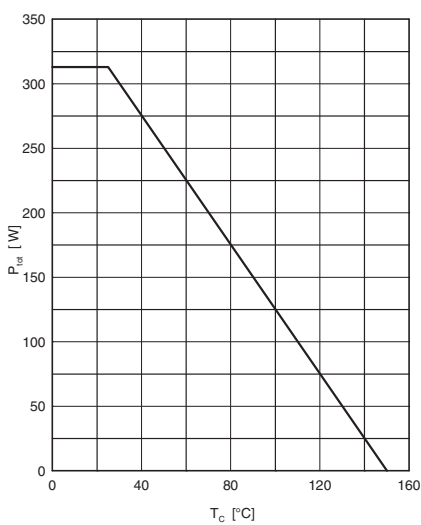
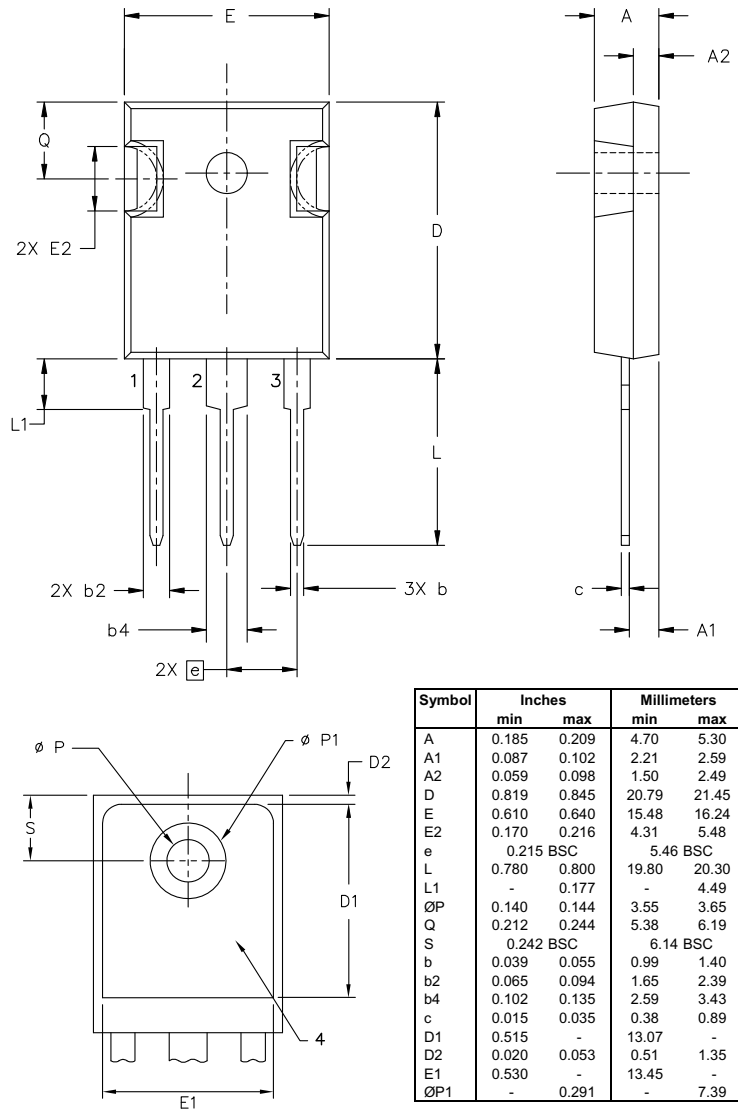


Fig. 1 Power dissipation

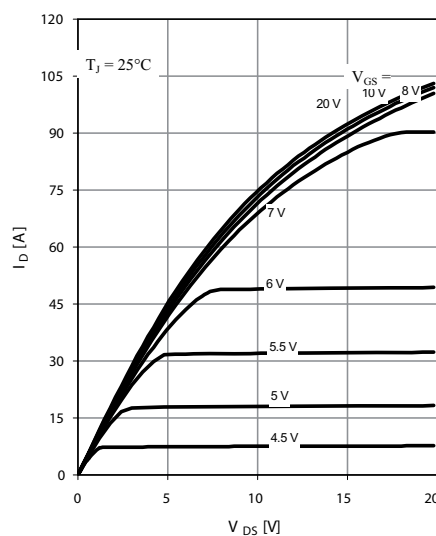


Fig. 2 Typ. output characteristics

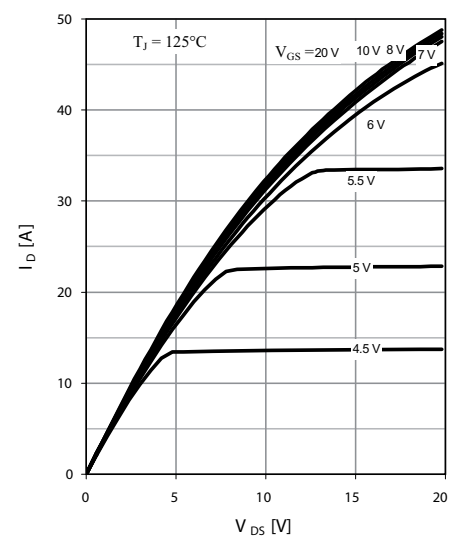


Fig. 3 Typ. output characteristics

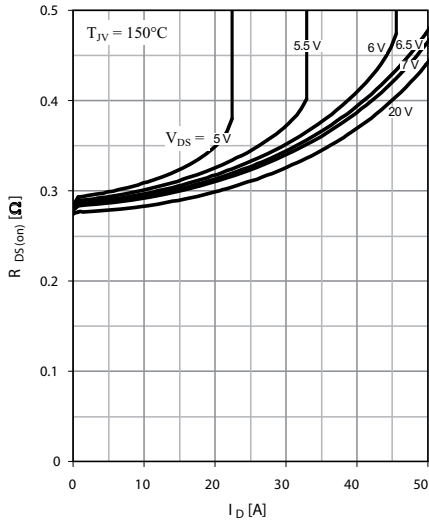


Fig. 4 Typ. drain-source on-state resistance characteristics of IGBT

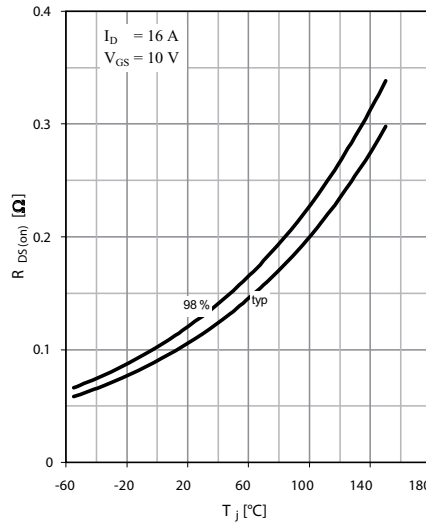


Fig. 5 Drain-source on-state resistance

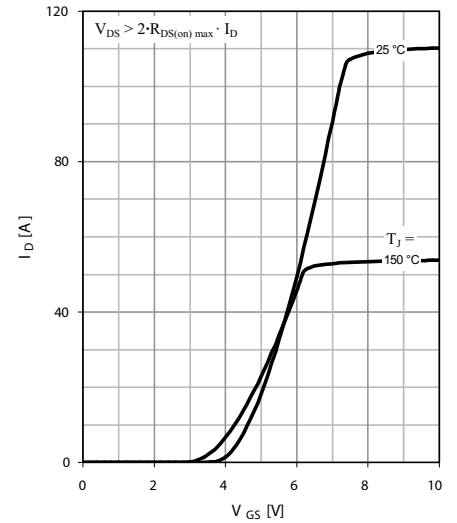


Fig. 6 Typ. transfer characteristics

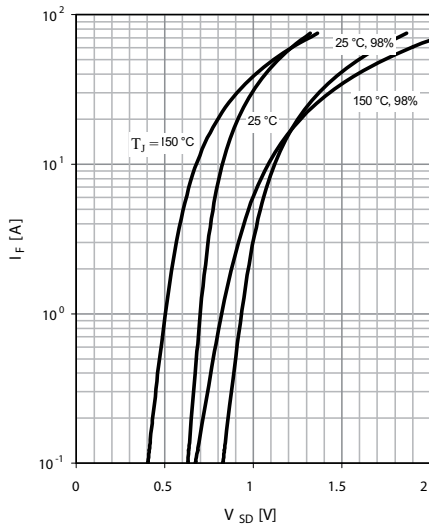


Fig. 7 Forward characteristic of reverse diode

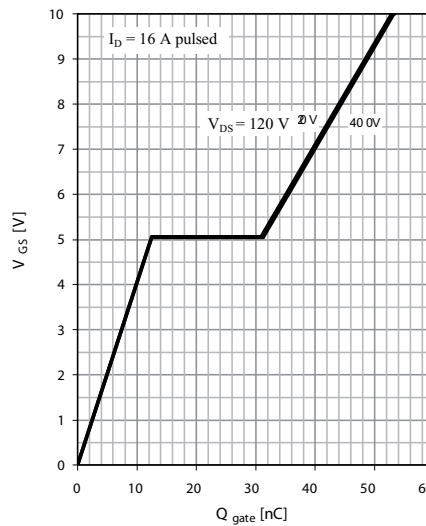


Fig. 8 Typ. gate charge

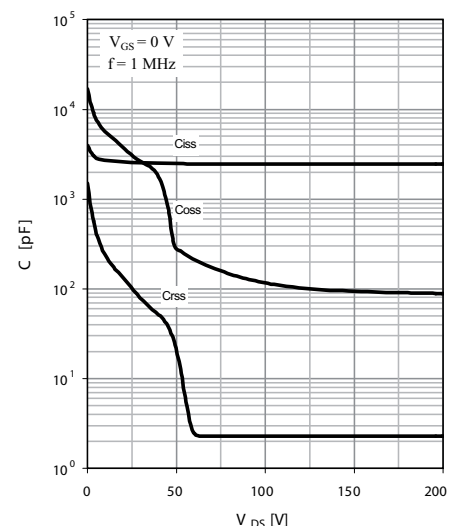


Fig. 9 Typ. capacitances

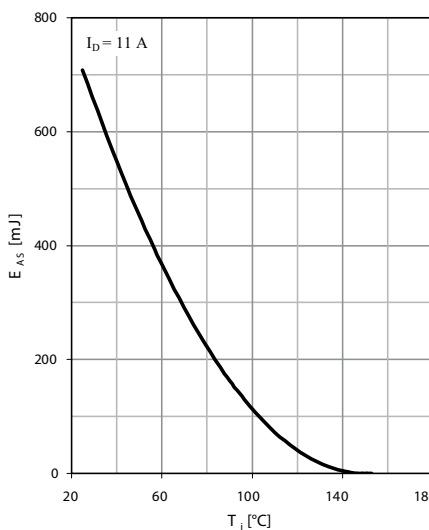


Fig. 10 Avalanche energy

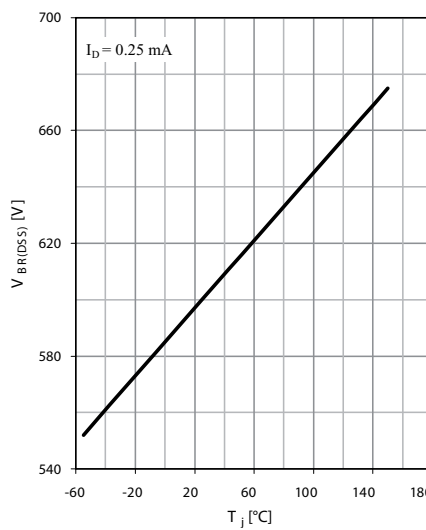


Fig. 11 Drain-source breakdown voltage

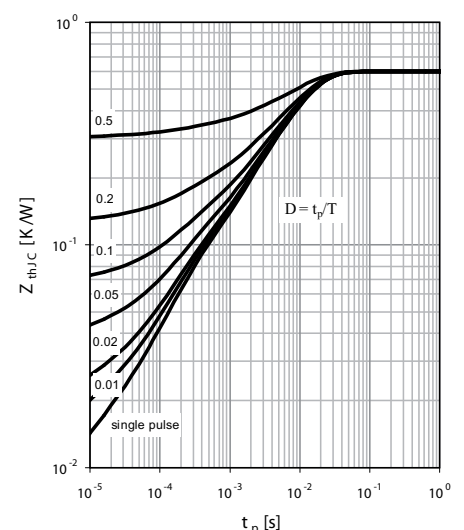


Fig. 12 Max. transient thermal impedance

IXYS reserves the right to change limits, test conditions and dimensions.

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