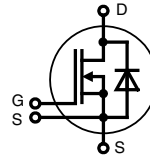


# CoolMOS™ 1) Power MOSFET

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

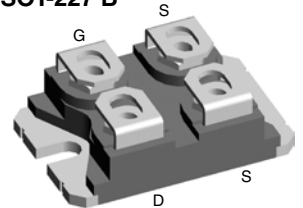
$$\begin{aligned} V_{DSS} &= 800 \text{ V} \\ I_{D25} &= 44 \text{ A} \\ R_{DS(on) \text{ max}} &= 74 \text{ m}\Omega \end{aligned}$$



miniBLOC, SOT-227 B

E72873

G = Gate  
S = Source  
D = Drain



Either source terminal at miniBLOC can be used as main or Kelvin Source

| MOSFET    |                                                                                    |                 |      |  |
|-----------|------------------------------------------------------------------------------------|-----------------|------|--|
| Symbol    | Conditions                                                                         | Maximum Ratings |      |  |
| $V_{DSS}$ | $T_{VJ} = 25^\circ\text{C}$                                                        | 800             | V    |  |
| $V_{GS}$  |                                                                                    | $\pm 20$        | V    |  |
| $I_{D25}$ | $T_C = 25^\circ\text{C}$                                                           | 44              | A    |  |
| $I_{D90}$ | $T_C = 90^\circ\text{C}$                                                           | 30              | A    |  |
| $dV/dt$   | $V_{DS} < V_{DSS}$ ; $I_F = 17 \text{ A}$ ; $ di_F/dt  < 100 \text{ A}\mu\text{s}$ | 6               | V/ns |  |
| $E_{AS}$  | $I_D = 4 \text{ A}$ ; $L = 80 \text{ mH}$ ; $T_C = 25^\circ\text{C}$               | 670             | mJ   |  |
| $E_{AR}$  | $I_D = 17 \text{ A}$ ; $L = 3 \text{ mH}$ ; $T_C = 25^\circ\text{C}$               | 0.5             | mJ   |  |

| Symbol                                        | Conditions                                                                                                                     | Characteristic Values                                             |                      |      |                                |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------|------|--------------------------------|
|                                               |                                                                                                                                | $(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$ |                      |      |                                |
|                                               |                                                                                                                                | min.                                                              | typ.                 | max. |                                |
| $R_{DS(on)}$                                  | $V_{GS} = 10 \text{ V}$ ; $I_D = I_{25}$                                                                                       |                                                                   | 63                   | 74   | m $\Omega$                     |
| $V_{GS(th)}$                                  | $V_{GS} = V_{DS}$ ; $I_D = 4 \text{ mA}$                                                                                       | 2.1                                                               |                      | 3.9  | V                              |
| $I_{DSS}$                                     | $V_{DS} = V_{DSS}$ ; $V_{GS} = 0 \text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 125^\circ\text{C}$                      |                                                                   | 200                  | 50   | $\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{GSS}$                                     | $V_{GS} = \pm 20 \text{ V}$ ; $V_{DS} = 0 \text{ V}$                                                                           |                                                                   |                      | 400  | nA                             |
| $Q_g$<br>$Q_{gs}$<br>$Q_{gd}$                 | $V_{GS} = 10 \text{ V}$ ; $V_{DS} = 640 \text{ V}$ ; $I_D = 70 \text{ A}$                                                      |                                                                   | 360<br>48<br>184     |      | nC<br>nC<br>nC                 |
| $t_{d(on)}$<br>$t_r$<br>$t_{d(off)}$<br>$t_f$ | $V_{GS} = 10 \text{ V}$ ; $V_{DS} = 400 \text{ V}$<br>$I_D = 70 \text{ A}$ ; $R_G = 1.2 \Omega$ ; $T_{VJ} = 125^\circ\text{C}$ |                                                                   | 25<br>15<br>75<br>10 |      | ns<br>ns<br>ns<br>ns           |
| $R_{thJC}$                                    |                                                                                                                                |                                                                   |                      | 0.33 | K/W                            |

## Features

- miniBLOC package
  - Electrically isolated copper base
  - Low coupling capacitance to the heatsink for reduced EMI
  - International standard package SOT-227
  - Easy screw assembly
- CoolMOS™ 1) power MOSFET 3<sup>rd</sup> generation
  - high blocking capability
  - lowest resistance
  - avalanche rated for unclamped inductive switching (UIS)
  - low thermal resistance due to reduced chip thickness
- fast CoolMOS™ 1) power MOSFET 3<sup>rd</sup> generation
  - High blocking capability
  - Low on 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

<sup>1)</sup> CoolMOS™ is a trademark of Infineon Technologies AG.

**Source-Drain Diode**

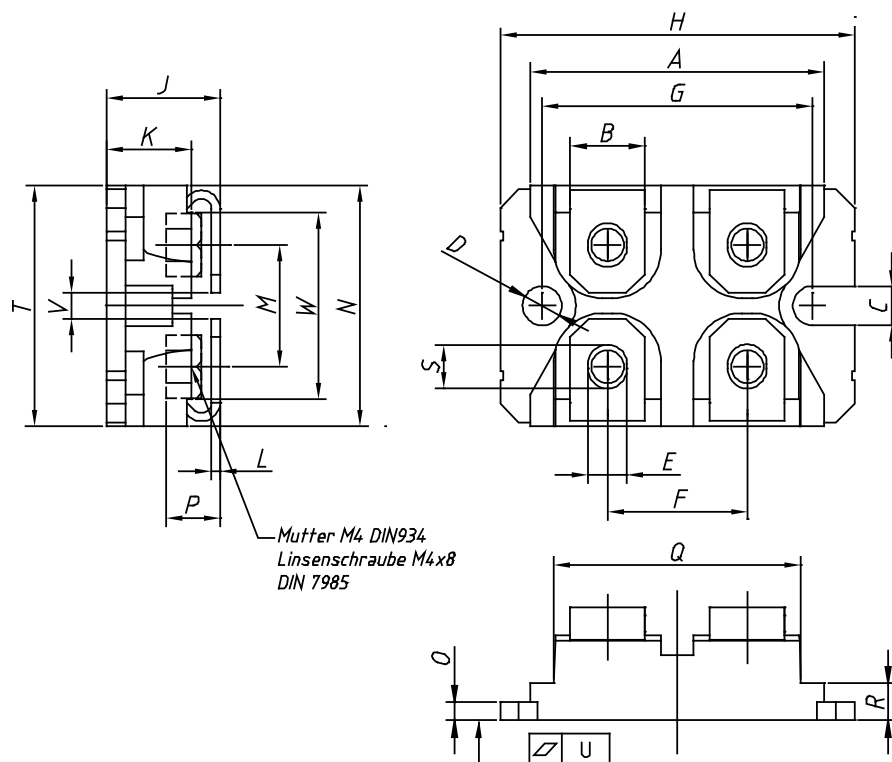
| Symbol   | Conditions                                                                   | Characteristic Values |      |      |               |
|----------|------------------------------------------------------------------------------|-----------------------|------|------|---------------|
|          |                                                                              | min.                  | typ. | max. |               |
| $I_S$    | $V_{GS} = 0\text{ V}$                                                        |                       |      | 60   | A             |
| $V_{SD}$ | $I_F = 65\text{ A}; V_{GS} = 0\text{ V}$                                     |                       | 0.9  | 1.2  | V             |
| $t_{rr}$ | $I_F = 80\text{ A}; -di_F/dt = 400\text{ A}/\mu\text{s}; V_R = 480\text{ V}$ |                       | 500  | 800  | ns            |
| $Q_{RM}$ |                                                                              |                       | 45   |      | $\mu\text{C}$ |
| $I_{RM}$ |                                                                              |                       | 280  |      | A             |

**Component**

| Symbol     | Conditions                                | Maximum Ratings |    |
|------------|-------------------------------------------|-----------------|----|
| $T_{VJ}$   | operating                                 | -55...+150      | °C |
| $T_{stg}$  | storage                                   | -55...+125      | °C |
| $V_{ISOL}$ | $I_{ISOL} < 1\text{ mA}, 50/60\text{ Hz}$ | 2500            | V~ |
| $M_d$      | mounting torque                           | 1.5             | Nm |
|            | terminal connection torque                | 1.5             | Nm |

| Symbol     | Conditions             | Characteristic Values |      |      |
|------------|------------------------|-----------------------|------|------|
|            |                        | min.                  | typ. | max. |
| $R_{thCH}$ | with heatsink compound |                       | 0.1  |      |
| Weight     |                        |                       | 30   |      |

## miniBLOC, SOT-227 B



| SYM | MILLIMETERS |       | INCHES |       |
|-----|-------------|-------|--------|-------|
|     | MIN         | MAX   | MIN    | MAX   |
| A   | 31.50       | 31.88 | 1.240  | 1.255 |
| B   | 7.80        | 8.20  | .307   | .323  |
| C   | 4.09        | 4.29  | .161   | .169  |
| D   | 4.09        | 4.29  | .161   | .169  |
| E   | 4.09        | 4.29  | .161   | .169  |
| F   | 14.91       | 15.11 | .587   | .595  |
| G   | 30.12       | 30.30 | 1.186  | 1.193 |
| H   | 37.80       | 38.23 | 1.489  | 1.505 |
| J   | 11.68       | 12.22 | .460   | .481  |
| K   | 8.92        | 9.60  | .351   | .378  |
| L   | 0.76        | 0.84  | .030   | .033  |
| M   | 12.60       | 12.85 | .496   | .506  |
| N   | 25.15       | 25.42 | .990   | 1.001 |
| O   | 1.98        | 2.13  | .078   | .084  |
| P   | 4.95        | 5.97  | .195   | .235  |
| Q   | 26.54       | 26.90 | 1.045  | 1.059 |
| R   | 3.94        | 4.42  | .155   | .174  |
| S   | 4.72        | 4.85  | .186   | .191  |
| T   | 24.59       | 25.07 | .968   | .987  |
| U   | -.05        | .10   | -.002  | .004  |
| V   | 3.30        | 4.57  | .130   | .180  |
| W   | 19.81       | 21.08 | .780   | .830  |

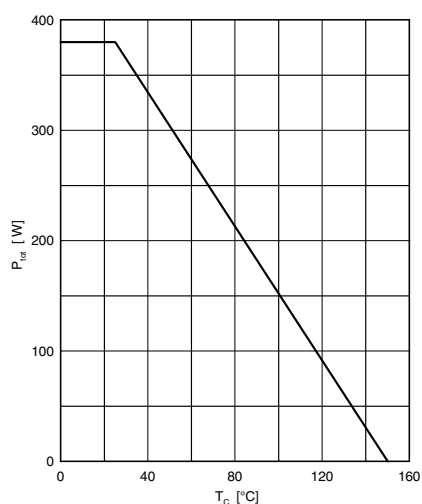


Fig. 1 Power dissipation

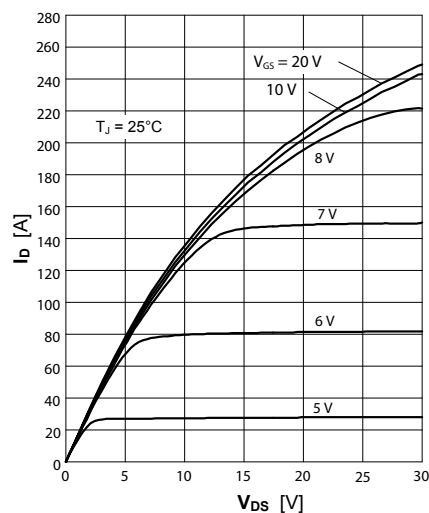


Fig. 2 Typ. output characteristics

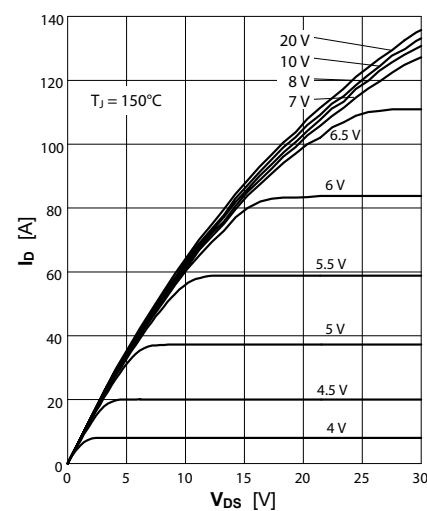


Fig. 3 Typ. output characteristics

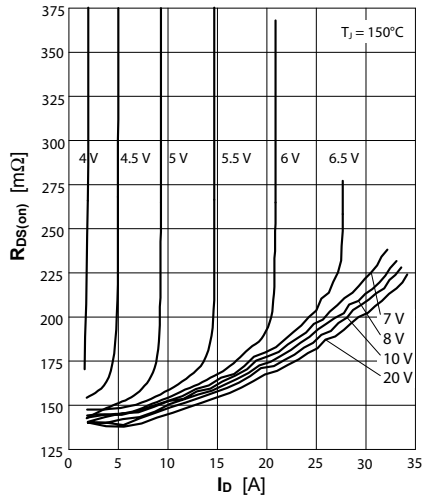


Fig. 4 Typ. drain-source on-state resistance

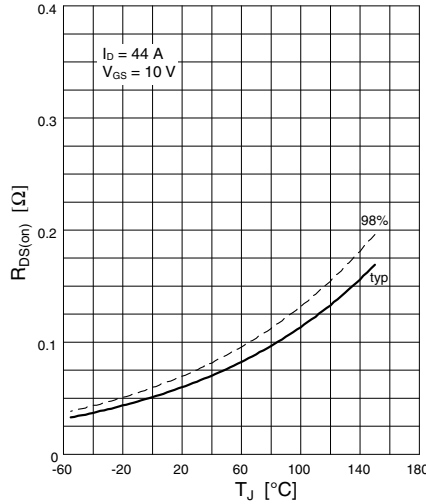


Fig. 5 Drain-source on-state resistance

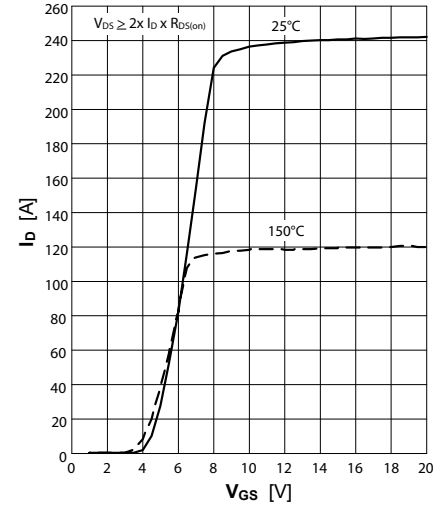


Fig. 6 Typ. transfer characteristics

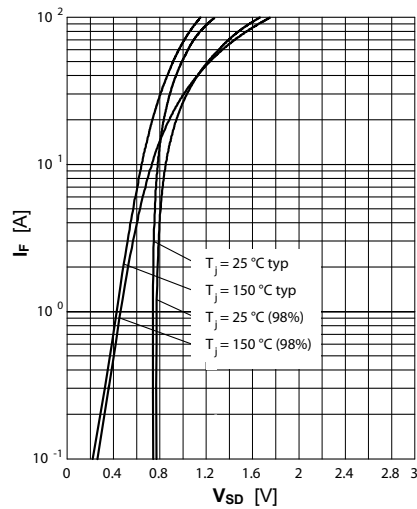


Fig. 7 Forward characteristic of reverse diode

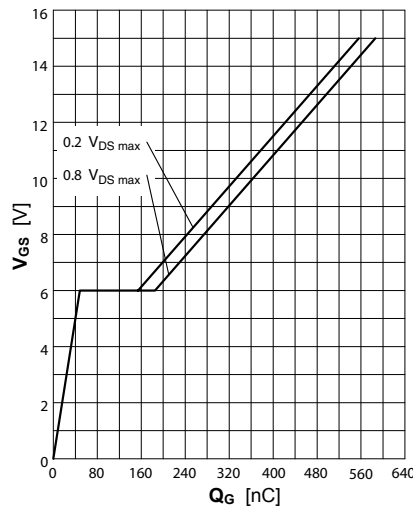


Fig. 8 Typ. gate charge

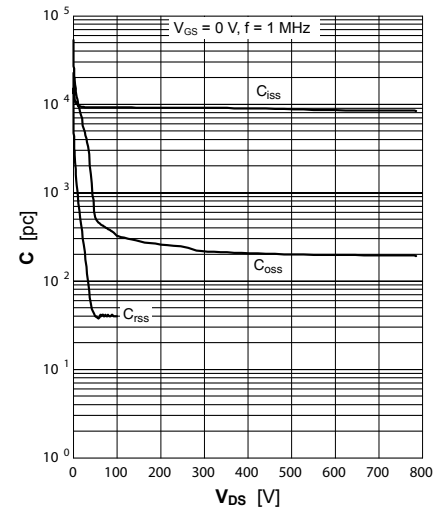


Fig. 9 Typ. capacitances

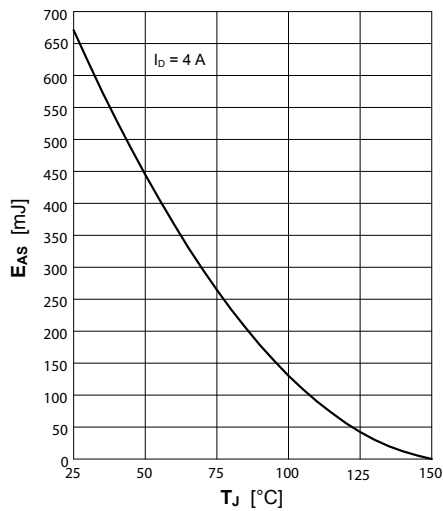


Fig. 10 Avalanche energy

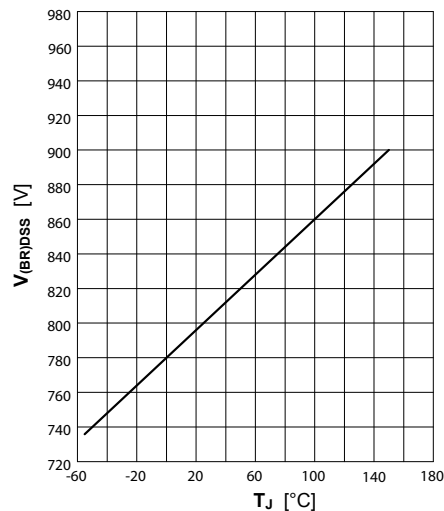


Fig. 11 Drain-source breakdown voltage