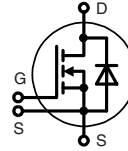


## CoolMOS™ 1) Power MOSFET

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

Preliminary data

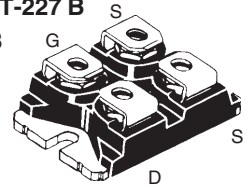


| $V_{DSS}$ | $I_{D25}$ | $R_{DS(on)}$ |
|-----------|-----------|--------------|
| 600 V     | 40 A      | 70 mΩ        |

miniBLOC, SOT-227 B



E72873



G = Gate D = Drain S = Source

Either source terminal at miniBLOC can be used as main or kelvin source

| MOSFET    |                                                                                                                       |                 |      |
|-----------|-----------------------------------------------------------------------------------------------------------------------|-----------------|------|
| Symbol    | Conditions                                                                                                            | Maximum Ratings |      |
| $V_{DSS}$ | $T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$                                                                 | 600             | V    |
| $V_{GS}$  |                                                                                                                       | $\pm 20$        | V    |
| $I_{D25}$ | $T_C = 25^{\circ}\text{C}$                                                                                            | 40              | A    |
| $I_{D90}$ | $T_C = 90^{\circ}\text{C}$                                                                                            | 27              | A    |
| $dv/dt$   | $V_{DS} < V_{DSS}; I_F \leq 47 \text{ A};  di_F/dt  \leq 100 \text{ A}/\mu\text{s}$<br>$T_{VJ} = 150^{\circ}\text{C}$ | 6               | V/ns |
| $E_{AS}$  | $I_D = 10 \text{ A}; L = 36 \text{ mH}; T_C = 25^{\circ}\text{C}$                                                     | 1.8             | J    |
| $E_{AR}$  | $I_D = 20 \text{ A}; L = 5 \mu\text{H}; T_C = 25^{\circ}\text{C}$                                                     | 1               | mJ   |

### Features

- miniBLOC package
  - Electrically isolated copper base
  - Low coupling capacitance to the heatsink for reduced EMI
  - International standard package SOT-227
  - Easy screw assembly
- 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.

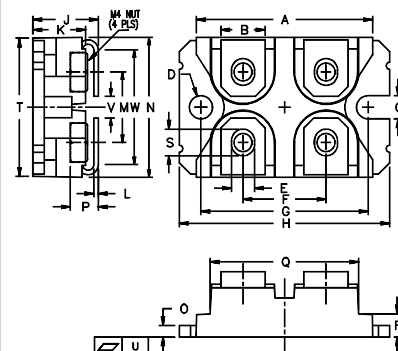
| Symbol                                        | Conditions                                                                                              | Characteristic Values<br>( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified) |                       |                                   |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------|-----------------------------------|
|                                               |                                                                                                         | min.                                                                                   | typ.                  | max.                              |
| $R_{DS(on)}$                                  | $V_{GS} = 10 \text{ V}; I_D = 0.5 \cdot I_{D25}$                                                        |                                                                                        | 60                    | 70 mΩ                             |
| $V_{GS(th)}$                                  | $V_{DS} = 20 \text{ V}; I_D = 2.5 \text{ mA};$                                                          | 2.1                                                                                    |                       | 3.9 V                             |
| $I_{DSS}$                                     | $V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$<br>$T_{VJ} = 125^{\circ}\text{C}$ |                                                                                        | 50                    | 25 $\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{GSS}$                                     | $V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$                                                       |                                                                                        |                       | 100 nA                            |
| $Q_g$<br>$Q_{gs}$<br>$Q_{gd}$                 | $V_{GS} = 10 \text{ V}; V_{DS} = 350 \text{ V}; I_D = 50 \text{ A}$                                     |                                                                                        | 250<br>25<br>120      | nC<br>nC<br>nC                    |
| $t_{d(on)}$<br>$t_r$<br>$t_{d(off)}$<br>$t_f$ | $V_{GS} = 10 \text{ V}; V_{DS} = 380 \text{ V};$<br>$I_D = 50 \text{ A}; R_G = 1.8 \Omega$              |                                                                                        | 20<br>30<br>110<br>10 | ns<br>ns<br>ns<br>ns              |
| $V_F$                                         | (reverse conduction) $I_F = 20 \text{ A}; V_{GS} = 0 \text{ V}$                                         |                                                                                        | 0.9                   | 1.1 V                             |
| $R_{thJC}$                                    |                                                                                                         |                                                                                        |                       | 0.43 K/W                          |

## Component

| Symbol     | Conditions                                     | Maximum Ratings |    |
|------------|------------------------------------------------|-----------------|----|
| $V_{ISOL}$ | $I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$ | 2500            | V~ |
| $T_{VJ}$   |                                                | -40...+150      | °C |
| $T_{stg}$  |                                                | -40...+150      | °C |
| $M_d$      | mounting torque                                | 1.5             | Nm |
|            | terminal connection torque (M4)                | 1.5             | Nm |

| Symbol     | Conditions             | Characteristic Values |      |      |
|------------|------------------------|-----------------------|------|------|
|            |                        | min.                  | typ. | max. |
| $R_{thCH}$ | with heatsink compound |                       | 0.05 | K/W  |
| Weight     |                        |                       | 30   | g    |

## miniBLOC, SOT-227 B



M4 screws (4x) supplied

| Dim. | Millimeter |       | Inches |       |
|------|------------|-------|--------|-------|
|      | Min.       | Max.  | Min.   | Max.  |
| A    | 31.50      | 31.88 | 1.240  | 1.255 |
| B    | 7.80       | 8.20  | 0.307  | 0.323 |
| C    | 4.09       | 4.29  | 0.161  | 0.169 |
| D    | 4.09       | 4.29  | 0.161  | 0.169 |
| E    | 4.09       | 4.29  | 0.161  | 0.169 |
| F    | 14.91      | 15.11 | 0.587  | 0.595 |
| G    | 30.12      | 30.30 | 1.186  | 1.193 |
| H    | 37.80      | 38.20 | 1.489  | 1.505 |
| J    | 11.68      | 12.22 | 0.460  | 0.481 |
| K    | 8.92       | 9.60  | 0.351  | 0.378 |
| L    | 0.76       | 0.84  | 0.030  | 0.033 |
| M    | 12.60      | 12.85 | 0.496  | 0.506 |
| N    | 25.15      | 25.42 | 0.990  | 1.001 |
| O    | 1.98       | 2.13  | 0.078  | 0.084 |
| P    | 4.95       | 5.97  | 0.195  | 0.235 |
| Q    | 26.54      | 26.90 | 1.045  | 1.059 |
| R    | 3.94       | 4.42  | 0.155  | 0.174 |
| S    | 4.72       | 4.85  | 0.186  | 0.191 |
| T    | 24.59      | 25.07 | 0.968  | 0.987 |
| U    | -0.05      | 0.1   | -0.002 | 0.004 |
| V    | 3.30       | 4.57  | 0.130  | 0.180 |
| W    | 0.780      | 0.830 | 0.031  | 0.033 |