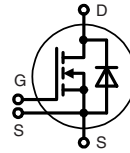


CoolMOS™ 1) Power MOSFET

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

Preliminary data

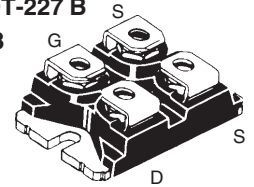


| | | |
|--------------|-------------|--------------|
| V_{DSS} | I_{D25} | $R_{DS(on)}$ |
| 600 V | 40 A | 70 mΩ |

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} | | ±20 | V |
| I_{D25} | $T_C = 25^{\circ}\text{C}$ | 40 | A |
| I_{D90} | $T_C = 90^{\circ}\text{C}$ | 27 | A |
| dv/dt | $V_{DS} < V_{DSS}; I_F \leq 47 \text{ A}; di_F/dt \leq 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 150^{\circ}\text{C}$ | 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 3rd 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

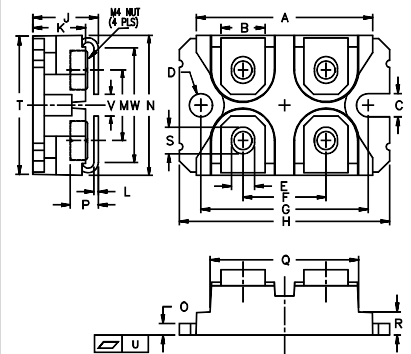
¹⁾ CoolMOS™ is a trademark of Infineon Technologies AG.

| Symbol | Conditions | Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, 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} | $V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | | 50 | 25 μA μA |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$ | | | 100 nA |
| Q_g Q_{gs} Q_{gd} | } $V_{GS} = 10 \text{ V}; V_{DS} = 350 \text{ V}; I_D = 50 \text{ A}$ | | 250 | nC |
| | | | 25 | nC |
| | | | 120 | nC |
| $t_{d(on)}$ t_r $t_{d(off)}$ t_f | } $V_{GS} = 10 \text{ V}; V_{DS} = 380 \text{ V};$ $I_D = 50 \text{ A}; R_G = 1.8 \Omega$ | | 20 | ns |
| | | | 30 | ns |
| | | | 110 | ns |
| | | | 10 | 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 |