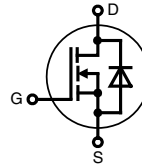


# CoolMOS™ 1) Power MOSFET in ISOPLUS247™ Package

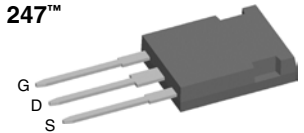
N-Channel Enhancement Mode  
Low  $R_{DS(on)}$ , High  $V_{DSS}$  MOSFET  
Package with Electrically Isolated Base



$$I_{D25} = 25 \text{ A}$$

$$V_{DSS} = 800 \text{ V}$$

$$R_{DS(on)} = 125 \text{ m}\Omega$$

**ISOPLUS 247™**


G = Gate, D = Drain, S = Source

| MOSFET    |   |                 |      |
|-----------|---|-----------------|------|
| Symbol    | Conditions  | Maximum Ratings |      |
| $V_{DSS}$ | $T_{VJ} = 25^\circ\text{C}$ to $150^\circ\text{C}$  | 800             | V    |
| $V_{GS}$  |   | $\pm 20$        | V    |
| $I_{D25}$ | $T_C = 25^\circ\text{C}$  | 25              | A    |
| $I_{D90}$ | $T_C = 90^\circ\text{C}$  | 18              | A    |
| $dv/dt$   | $V_{DS} < V_{DSS}$ ; $I_F \leq 17 \text{ A}$   $ di_F/dt  \leq 100 \text{ A}/\mu\text{s}$<br>$T_{VJ} = 150^\circ\text{C}$ | 6               | V/ns |
| $E_{AS}$  | $I_D = 4 \text{ A}$ ; $L = 80 \text{ mH}$ ; $T_C = 25^\circ\text{C}$  | 0.67            | mJ   |
| $E_{AR}$  | $I_D = 17 \text{ A}$ ; $L = 3.3 \text{ mH}$ ; $T_C = 25^\circ\text{C}$  | 0.5             | mJ   |

### Features

- ISOPLUS247™ package with DCB Base
  - Electrical isolation towards the heatsink
  - Low coupling capacitance to the heatsink for reduced EMI
  - High power dissipation
  - High temperature cycling capability of chip on DCB
  - JEDEC TO-247AD compatible
  - Easy clip 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

| Symbol       | Conditions  | Characteristic Values   |      |      |                                |
|--------------|---|---|------|------|--------------------------------|
|              |   | $(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$ |      |      |                                |
|              |   | min.  | typ. | max. |                                |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$ ; $I_D = I_{D90}$   |   | 125  | 150  | m $\Omega$                     |
| $V_{GS(th)}$ | $V_{DS} = 20 \text{ V}$ ; $I_D = 2 \text{ mA}$  | 2   |      | 4    | V                              |
| $I_{DSS}$    | $V_{DS} = V_{DSS}$ ; $V_{GS} = 0 \text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 125^\circ\text{C}$ |   | 100  | 50   | $\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{GSS}$    | $V_{GS} = \pm 20 \text{ V}$ ; $V_{DS} = 0 \text{ V}$  |   |      | 200  | nA                             |
| $Q_g$        | $V_{GS} = 10 \text{ V}$ ; $V_{DS} = 640 \text{ V}$ ; $I_D = 34 \text{ A}$                                 |   | 180  | 355  | nC                             |
| $Q_{gs}$     |   |   | 24   |      | nC                             |
| $Q_{gd}$     |   |   | 92   |      | nC                             |
| $t_{d(on)}$  | $V_{GS} = 10 \text{ V}$ ; $V_{DS} = 640 \text{ V}$<br>$I_D = 34 \text{ A}$ ; $R_G = 2.2 \Omega$           |   | 25   |      | ns                             |
| $t_r$        |   |   | 15   |      | ns                             |
| $t_{d(off)}$ |   |   | 72   |      | ns                             |
| $t_f$        |   |   | 6    |      | ns                             |
| $V_F$        | (reverse conduction) $I_F = 12.5 \text{ A}$ ; $V_{GS} = 0 \text{ V}$                                      |   | 1    | 1.3  | V                              |
| $R_{thJC}$   |   |   |      | 0.5  | K/W                            |

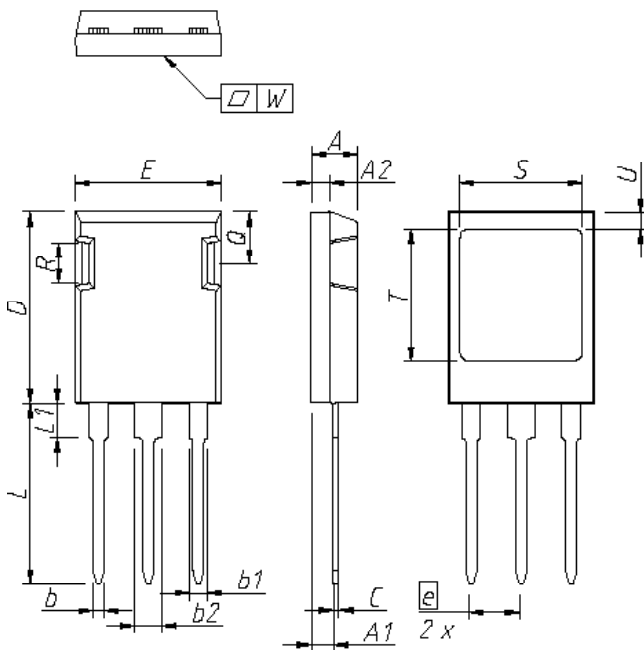
### Applications

- 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.

| 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...+125      | °C |
| $T_L$      | 1.6 mm from case for 10 s                      | 300             | °C |
| $F_c$      | mounting force with clip                       | 20 ... 120      | N  |

| Symbol        | Conditions   | Characteristic Values |      |      |
|---------------|--|-----------------------|------|------|
|               |  | min.                  | typ. | max. |
| $C_P$         | coupling capacity between shorted pin and mounting tab in the case |                       | 30   | pF   |
| $R_{thCH}$    | with heatsink compound   |                       | 0.25 | K/W  |
| <b>Weight</b> |  |                       | 6    | g    |



| DIM. | MILLIMETER |       | INCHES    |       |
|------|------------|-------|-----------|-------|
|      | MIN        | MAX   | MIN       | MAX   |
| A    | 4,83       | 5,21  | 0,190     | 0,205 |
| A1   | 2,29       | 2,54  | 0,090     | 0,100 |
| A2   | 1,91       | 2,16  | 0,075     | 0,085 |
| b    | 1,14       | 1,40  | 0,045     | 0,055 |
| b1   | 1,91       | 2,15  | 0,075     | 0,085 |
| b2   | 2,92       | 3,20  | 0,115     | 0,126 |
| C    | 0,61       | 0,83  | 0,024     | 0,033 |
| D    | 20,80      | 21,34 | 0,819     | 0,840 |
| E    | 15,75      | 16,13 | 0,620     | 0,635 |
| e    | 5,45 BSC   |       | 0,215 BSC |       |
| L    | 19,81      | 20,60 | 0,780     | 0,811 |
| L1   | 3,81       | 4,38  | 0,150     | 0,172 |
| Q    | 5,59       | 6,20  | 0,220     | 0,244 |
| R    | 4,32       | 4,85  | 0,170     | 0,191 |
| S    | 13,21      | 13,72 | 0,520     | 0,540 |
| T    | 15,75      | 16,26 | 0,620     | 0,640 |
| U    | 1,65       | 2,03  | 0,065     | 0,080 |
| W    | -          | 0,10  | -         | 0,004 |

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststoffoberfläche der Bauteilunterseite  
The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side

Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und  $L_{max}$ .  
This drawing will meet all dimensions requirement of JEDEC outline TO-247 AD except screw hole and except  $L_{max}$ .



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