CoolMOS™ 1) Power MOSFET
in ISOPLUS247™ Package

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

Preliminary data

### 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 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.

### MOSFET

#### Symbol | Conditions | Maximum Ratings
--- | --- | ---
$V_{DSS}$ | $T_{J} = 25°C$ to $150°C$ | 600 V
$V_{GS}$ | - | ±20 V
$I_{DSS}$ | $T_{C} = 25°C$ | 38 A
$I_{D90}$ | $T_{C} = 90°C$ | 25 A
$dv/dt$ | $V_{GS} < V_{DSS}$, $I_{D} \leq 50A$; $|di/dt| \leq 100A/\mu s$ | $T_{J} = 150°C$, 6 V/ns
$E_{AS}$ | $I_{D} = 10 A$; $L = 36 mH$; $T_{C} = 25°C$ | 1.8 J
$E_{AIR}$ | $I_{D} = 20 A$; $L = 5 \mu H$; $T_{C} = 25°C$ | 1 mJ

#### Symbol | Conditions | Characteristic Values
--- | --- | ---
$R_{DS(on)}$ | $V_{DS} = 10 V$; $I_{D} = I_{DSS}$ | 70 mΩ
$V_{GSth}$ | $V_{DS} = 20 V$; $I_{D} = 3 mA$; | 2.1
$I_{DSS}$ | $V_{DS} = V_{DSS}$; $V_{GS} = 0 V$; $T_{J} = 25°C$ | 60 µA
$I_{GSS}$ | $V_{GS} = ±20 V$; $V_{DS} = 0 V$ | 100 nA
$Q_{g}$ | $V_{GS} = 10 V$; $V_{DS} = 350 V$; $I_{D} = 50 A$ | 250 nC
$Q_{gs}$ | - | 25 nC
$Q_{gd}$ | $V_{GS} = 10 V$; $V_{DS} = 380 V$; $I_{D} = 50 A$; $R_{G} = 1.8 \Omega$ | 120 nC
$Q_{on}$ | $V_{GS} = 10 V$; $V_{DS} = 380 V$; $I_{D} = 50 A$; $R_{G} = 1.8 \Omega$ | 20 ns
$Q_{off}$ | $V_{GS} = 10 V$; $V_{DS} = 350 V$; | 30 ns
$Q_{th}$ | $V_{GS} = 10 V$; $V_{DS} = 380 V$; $I_{D} = 50 A$; $R_{G} = 1.8 \Omega$ | 110 ns
$Q_{th}$ | - | 10 ns
$V_{F}$ (reverse conduction) | $I_{F} = 20 A$; $V_{GS} = 0 V$ | 0.9 1.1 V
$R_{thJC}$ | $V_{GS} = 10 V$; $V_{DS} = 350 V$; $I_{D} = 50 A$ | 0.45 K/W

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

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# Component

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Conditions</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{\text{isol}}$</td>
<td>$I_{\text{isol}} \leq 1$ mA; 50/60 Hz</td>
<td>2500 V~</td>
</tr>
<tr>
<td>$T_{\text{uj}}$</td>
<td></td>
<td>$-40...+150$ °C</td>
</tr>
<tr>
<td>$T_{\text{sig}}$</td>
<td></td>
<td>$-40...+125$ °C</td>
</tr>
<tr>
<td>$T_L$</td>
<td>1.6 mm from case for 10 s</td>
<td>300 °C</td>
</tr>
<tr>
<td>$F_C$</td>
<td>mounting force with clip</td>
<td>20 ... 120 N</td>
</tr>
</tbody>
</table>

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<tr>
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<th>Conditions</th>
<th>Characteristic Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C_p$</td>
<td>coupling capacity between shorted pins and mounting tab in the case</td>
<td>min. typ. max.</td>
</tr>
<tr>
<td>$R_{\text{inh}}$</td>
<td>with heatsink compound</td>
<td>0.25 K/W</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>6 g</td>
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</tbody>
</table>

### ISOPLUS247™ OUTLINE

The convex bow of substrate is typ. $< 0.04$ mm over plastic surface level of device bottom side.

This drawing will meet all dimensions requirement of JEDEC outline TO-247 AD except screw hole and except Lmax.