

CoolMOS Power MOSFET in ECO-PAC 2

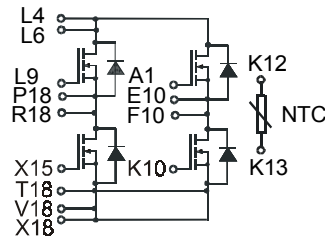
PSHM 40/06

$I_{D25} = 38 \text{ A}$
 $V_{DSS} = 600 \text{ V}$
 $R_{DSon} = 70 \text{ m}\Omega$

N-Channel Enhancement Mode
 Low R_{DSon} , High V_{DSS} MOSFET
 Package with Electrically Isolated Base



Preliminary Data Sheet



MOSFET

| Symbol | Conditions | Maximum Ratings | |
|-----------|---|-----------------|------|
| V_{DSS} | $T_{VJ} = 25^{\circ}\text{C}$ to 150°C | 600 | V |
| V_{GS} | | ± 20 | V |
| I_{D25} | $T_C = 25^{\circ}\text{C}$ | 38 | A |
| I_{D90} | $T_C = 90^{\circ}\text{C}$ | 25 | A |
| dv/dt | $V_{DS} < V_{DSS}$; $I_F \leq 50 \text{ A}$; $ di_F/dt \leq 200 \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 |

| Symbol | Conditions | Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified) | | |
|--------------|---|--|------|-----------------------------------|
| | | min. | typ. | max. |
| R_{DSon} | $V_{GS} = 10 \text{ V}$; $I_D = I_{D90}$ | | | 70 m Ω |
| V_{GSth} | $V_{DS} = 20 \text{ V}$; $I_D = 3 \text{ mA}$ | 3.5 | | 5.5 V |
| I_{DSS} | $V_{DS} = V_{DSS}$; $V_{GS} = 0 \text{ V}$; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | | 60 | 25 μA μA |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V}$; $V_{DS} = 0 \text{ V}$ | | | 100 nA |
| Q_g | $V_{GS} = 10 \text{ V}$; $V_{DS} = 350 \text{ V}$; $I_D = 50 \text{ A}$ | | 220 | nC |
| Q_{gs} | | | 55 | nC |
| Q_{gd} | | | 125 | nC |
| $t_{d(on)}$ | $V_{GS} = 10 \text{ V}$; $V_{DS} = 380 \text{ V}$; $I_D = 25 \text{ A}$; $R_G = 1.8 \Omega$ | | 30 | ns |
| t_r | | | 95 | ns |
| $t_{d(off)}$ | | | 100 | ns |
| t_f | | | 10 | ns |
| V_F | (reverse conduction) $I_F = 20 \text{ A}$; $V_{GS} = 0 \text{ V}$ | | 0.9 | 1.1 V |
| R_{thJC} | per MOSFET | | | 0.45 K/W |

Data according to IEC 60747 refer to a single diode or transistor unless otherwise stated

Caution: These Devices are sensitive to electrostatic discharge. Users should observe proper ESD handling precautions.

Features

- ECO-PAC 2 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
 - solderable pins for DCB mounting
- fastCoolMOS power MOSFET-2nd 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
- UL registered, E 148688

Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- High power density
- Small and light weight

¹⁾ CoolMOS is a trademark of Infineon Technologies AG.

Temperature Sensor NTC

| Symbol | Conditions | Characteristic Values | | |
|-------------|--------------------------|-----------------------|------|-----------------|
| | | min. | typ. | max. |
| R_{25} | $T = 25^{\circ}\text{C}$ | 4.75 | 5.0 | 5.25 k Ω |
| $B_{25/50}$ | | | 3375 | K |

Module

| Symbol | Conditions | Maximum Ratings | |
|------------|---|-----------------|--------------------|
| T_{VJ} | | -40...+150 | $^{\circ}\text{C}$ |
| T_{stg} | | -40...+125 | $^{\circ}\text{C}$ |
| V_{ISOL} | $I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}; t = 1 \text{ s}$ | 3600 | V~ |
| M_d | Mounting torque (M4) | 1.5 - 2.0 | Nm |
| | | 14 - 18 | lb.in. |
| a | Max. allowable acceleration | 50 | m/s^2 |

| Symbol | Conditions | Characteristic Values | | |
|---------------|--|-----------------------|------|------|
| | | min. | typ. | max. |
| d_s | Creepage distance on surface (Pin to heatsink) | 11.2 | | mm |
| d_A | Strike distance in air (Pin to heatsink) | 11.2 | | mm |
| Weight | | | 24 | g |

Dimensions in mm (1 mm = 0.0394")

