

### CoolMOS Power MOSFET

in ECO-PAC 2

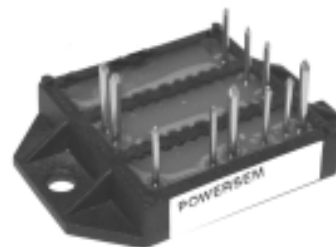
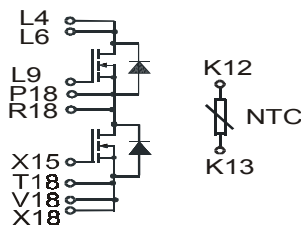
### PSMI 40/06

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

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



Preliminary Data Sheet



### MOSFET

Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
$V_{GS}$		$\pm 20$	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

### 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 - 2<sup>nd</sup> generation
  - High blocking capability
  - Low on resistance
  - Avalanche rated for unclamped inductive switching (UIS)
  - Low thermal resistance due to reduced chip thickness

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 $\Omega$
$V_{GSth}$	$V_{DS} = 20 \text{ V}; I_D = 3 \text{ mA};$	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 $\mu\text{A}$ $\mu\text{A}$
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			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.

- 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

<sup>1)</sup> 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 $\Omega$
$B_{25/50}$			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.
<b>a</b>	Max. allowable acceleration	50		$\text{m/s}^2$

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
<b>Weight</b>		24		g

Dimensions in mm (1 mm = 0.0394")

