

CoolMOS Power MOSFET in ECO-PAC 2

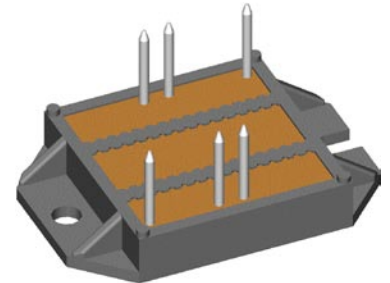
N-Channel Enhancement Mode
Low R_{DSon} , High V_{DSS} MOSFET

Package with Electrically Isolated Base

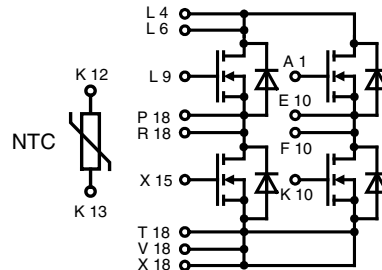
Preliminary data

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

COOLMOS¹⁾
Power Semiconductors



Pin arrangement see outlines



MOSFET		Maximum Ratings	
Symbol	Conditions		
V_{DSS}	$T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	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}	$I_D = 20 \text{ A}; L = 5 \text{ mH}; T_C = 25^\circ\text{C}$	1	mJ

Applications

- 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
- fast CoolMOS power MOSFET
 - 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			
		min.	typ.	max.	
$(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$					
R_{DSon}	$V_{GS} = 10 \text{ V}; I_D = I_{D90}$			70	m Ω
$V_{GS(th)}$	$V_{DS} = 20 \text{ V}; I_D = 3 \text{ mA}$	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 Q_{gs} Q_{gd}	$V_{GS} = 10 \text{ V}; V_{DS} = 350 \text{ V}; I_D = 50 \text{ A}$		220		nC
			55		nC
			125		nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}; V_{DS} = 380 \text{ V}$ $I_D = 25 \text{ A}; R_G = 1.8 \Omega$		30		ns
			95		ns
			100		ns
			10		ns
R_{thJC}	per MOSFET			0.45	K/W

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

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.

Source-Drain Diode

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)					
I_S	Inverse diode forward current			47	A
I_{SM}	Inverse diode direct current pulsed			141	A
V_{SD}	Inverse diode forward voltage $V_{GS} = 0\text{ V}; I_F = I_S$		1	1.2	V
t_{rr}	$\left. \begin{array}{l} V_R = 350\text{ V} \\ I_F = I_S \\ di_F/dt = 100\text{ A}/\mu\text{s} \end{array} \right\}$		580		ns
Q_{rr}			23		μC
I_{RM}			73		A
di_{rr}/dt			900		$\text{A}/\mu\text{s}$

Temperature Sensor NTC

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
R_{25} $B_{25/50}$	$T = 25^{\circ}\text{C}$	4.75	5.0	5.25	$\text{k}\Omega$ 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 14 - 18	Nm 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")

