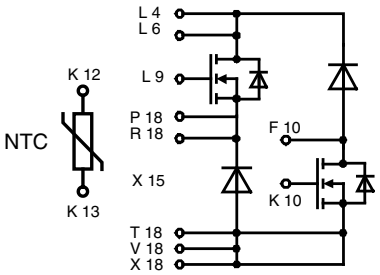
CoolMOS Power MOSFET
in ECO-PAC 2

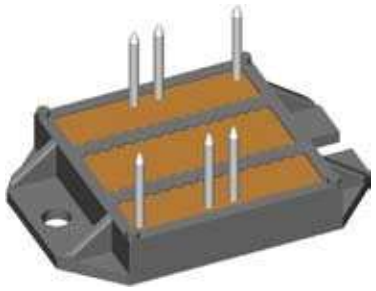
I_{D25} = 38 A
V_{DSS} = 600 V
R_{DSon} = 70 mΩ

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

Preliminary data



COOLMOS Power Semiconductors 1)



Pin arrangement see outlines

MOSFET			
Symbol	**Conditions**	**Maximum Ratings**	
V_{DSS}	T_{VJ} = 25°C to 150°C	600	V
V_{GS}		± 20	V
I_{D25}	T_C = 25°C	38	A
I_{D90}	T_C = 90°C	25	A
d_V/dt	$V_{DS} < V_{DSS}$; $I_F \leq 50$ A; $\lvert di_F/dt \rvert \leq 200$ A/µs; T_{VJ} = 150°C	6	V/ns
E_{AS}	I_D = 10 A; T_C = 25°C	1.8	J
E_{AR}	I_D = 20 A; T_C = 25°C	1	mJ

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified)			
		min.	typ.	max.	
R_{DSon}	V_{GS} = 10 V; $I_D = I_{D90}$			70	mΩ
$V_{GS(th)}$	V_{DS} = 20 V; I_D = 3 mA	3.5		5.5	V
I_{DSS}	$V_{DS} = V_{DSS}$; V_{GS} = 0 V; T_{VJ} = 25°C			25	µA
	T_{VJ} = 125°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		220		nC
Q_{gs}			55		nC
Q_{gd}			125		nC
$t_{d(on)}$	V_{GS} = 10 V; V_{DS} = 380 V; I_D = 25 A; R_G = 1.8 Ω		30		ns
t_r			95		ns
$t_{d(off)}$			100		ns
t_f			10		ns
R_{thJC}	per MOSFET			0.45	K/W

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

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

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 (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
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 V; $I_F = I_S$		1	1.2	V
t_{rr}	V_R = 350 V; $I_F = I_S$; di_F/dt = 100 A/µs		580		ns
Q_{rr}			23		µC
I_{RM}			73		A
di_{rr}/dt			900		A/µs

Reverse diodes (FRED)

Symbol	Conditions	Maximum Ratings	
I_{F25}	T = 25°C	18.5	A
I_{F80}	T = 80°C	12.0	A

Symbol	Conditions	Characteristic Values min.	typ.	max.	
V_F	I_F = 15 A; T = 25°C	11.2			mm
	T = 125°C	11.2			mm
I_{RM}	I_F = 10 A; di_F/dt = 400 A/µs; T = 125°C		7		A
t_{rr}	V_R = 300 V; V_{GE} = 0 V		70		ns
R_{thJC}				0.35	K/W
R_{thJH}	with heatsink compound (0.42 K/m.K; 50 µm)		7		K/W

Temperature Sensor NTC

Symbol	Conditions	Characteristic Values min.	typ.	max.	
R_{25}	T = 25°C	4.75	5.0	5.25	kΩ
$B_{25/50}$			3375		K

Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+150	°C
T_{stg}		-40...+125	°C
V_{ISOL}	$I_{ISOL} \leq$ 1 mA; 50/60 Hz; t = 1 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

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Dimensions in mm (1 mm = 0.0394")