

CoolMOS Power MOSFET

in ECO-PAC 2

N-Channel Enhancement Mode

Low $R_{DS(on)}$, High V_{DSS} MOSFET

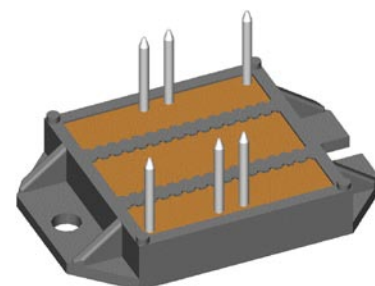
Package with Electrically Isolated Base

Preliminary data

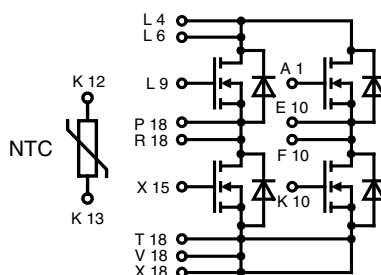
$$I_{D25} = 38 \text{ A}$$

$$V_{DSS} = 600 \text{ V}$$

$$R_{DSon} = 70 \text{ m}\Omega$$



Pin arrangement see outlines



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
d_i/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

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 T _{VJ} = 125°C		60	25	μA μA	
I _{GSS}	V _{GS} = ± 20 V; V _{DS} = 0 V			100	nA	
Q _g Q _{gs} Q _{gd}	} V _{GS} = 10 V; V _{DS} = 350 V; I _D = 50 A		220 55 125		nC nC nC	
t _{d(on)} t _r t _{d(off)} t _f		} V _{GS} = 10 V; V _{DS} = 380 V I _D = 25 A; R _G = 1.8 Ω		30 95 100 10		ns ns ns ns
R _{thJC}			per MOSFET			0.45

Data according to 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

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}	$\left. \begin{array}{l} V_R = 350 \text{ V} \\ I_F = I_S \\ di_F/dt = 100 \text{ A}/\mu\text{s} \end{array} \right\}$		580		ns
Q _{rr}			23		μC
I _{RM}			73		A
di _{rr} /dt			900		A/μs

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} ≤ 1 mA; 50/60 Hz; t = 1 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")

