

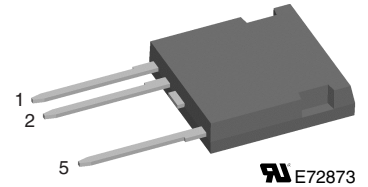
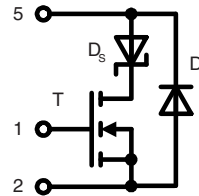
CoolMOS™ 1) Power MOSFET

with Series Schottky Diode and
Ultra Fast Antiparallel Diode

in High Voltage ISOPLUS i4-PAC™

I_{D25} = 38 A
 V_{DSS} = 600 V
 $R_{DSon\ typ.}$ = 60 mΩ
 t_{rr} = 70 ns

Preliminary data



MOSFET T			
Symbol	Conditions	Maximum Ratings	
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

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)			
		min.	typ.	max.	
R_{DSon}	$V_{GS} = 10\text{ V}; I_D = I_{D90}$		60	70 mΩ	
V_{GSth}	$V_{DS} = 20\text{ V}; I_D = 3\text{ mA}$	2.1		3.9 V	
I_{DSS}	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.5	0.3 mA mA	
I_{GSS}	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			100 nA	
Q_g Q_{gs} Q_{gd}	$V_{GS} = 10\text{ V}; V_{DS} = 350\text{ V}; I_D = 50\text{ A}$		250	nC	
			25	nC	
			120	nC	
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10\text{ V}; V_{DS} = 380\text{ V}$ $I_D = 50\text{ A}; R_G = 1.8\ \Omega$		20	ns	
				30	ns
				110	ns
				10	ns
R_{thJC} R_{thJH}	with heat transfer paste		0.9	0.45 K/W K/W	

Features

- fast CoolMOS™ 1) power MOSFET 3rd generation
 - High blocking voltage
 - Low on resistance
 - Low thermal resistance due to reduced chip thickness
- Series Schottky diode prevents current flow through MOSFET's body diode
 - very low forward voltage
 - fast switching
- Ultra fast HiPerFRED™ anti parallel diode
 - low operating forward voltage
 - fast and soft reverse recovery - low switching losses
- ISOPLUS i4-PAC™ high voltage package
 - isolated back surface
 - low coupling capacity between pins and heatsink
 - enlarged creepage towards heatsink
 - enlarged creepage between high voltage pins
 - application friendly pinout
 - high reliability
 - industry standard outline
 - UL registered E 72873

Applications

- Converters with
- circuit operation leading to current flow through switches in reverse direction - e. g.
 - phaseleg with inductive load
 - resonant circuits
 - high switching frequency

Examples

- switched mode power supplies (SMPS)
- uninterruptable power supplies (UPS)
- DC-DC converters
- welding converters
- converters for inductive heating
- drive converters

1) CoolMOS™ is a trademark of Infineon Technologies AG.

Series Schottky Diode D_S

Symbol	Conditions	Maximum Ratings	
I_{F25}	$T_C = 25^\circ\text{C}$	60	A
I_{F90}	$T_C = 90^\circ\text{C}$	40	A

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = 20\text{ A}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	0.7	0.9	V V
R_{thJC} R_{thJH}	with heat transfer paste	2.9	2	K/W K/W

Anti Parallel Diode D_F

Symbol	Conditions	Maximum Ratings	
I_{F25}	$T_C = 25^\circ\text{C}$	52	A
I_{F90}	$T_C = 90^\circ\text{C}$	31	A

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = 20\text{ A}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	2.1 1.4	2.5	V V
I_{RM} t_{rr}	$I_F = 30\text{ A}; di_F/dt = -500\text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}$ $V_R = 600\text{ V}; V_{GE} = 0\text{ V}$	15	70	A ns
R_{thJC} R_{thJH}	with heat transfer paste	2.6	1.3	K/W K/W

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{stg}		-40...+125	$^\circ\text{C}$
V_{ISOL}	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$	2500	V~
F_C	mounting force with clip	20 ... 120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
C_p	coupling capacity between shorted pins and mounting tab in the case		40	pF
d_S, d_A d_S, d_A	D pin - S pin pin - backside metal	7 5.5		mm mm
Weight			9	g

Dimensions in mm (1 mm = 0.0394")
