



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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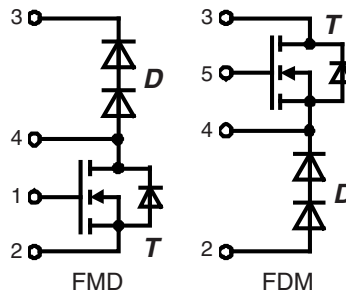
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# CoolMOS™<sup>1)</sup> Power MOSFET with HiPerDyn™ FRED

## Buck and Boost Topologies

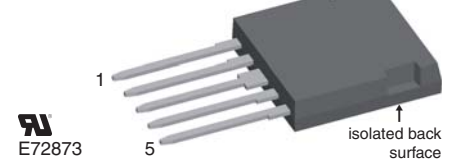
Electrically isolated back surface  
2500 V electrical isolation  
N-Channel Enhancement Mode  
Low  $R_{DS(on)}$ , high  $V_{DSS}$  MOSFET  
Ultra low gate charge



$$I_{D25} = 47 \text{ A}$$

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

$$R_{DS(on) \text{ max}} = 0.045 \text{ } \Omega$$

**ISOPLUS i4™**

**Features**

- Silicon chip on Direct-Copper-Bond substrate
  - high power dissipation
  - isolated mounting surface
  - 2500 V electrical isolation
  - low drain to tab capacitance (< 40 pF)
- Fast CoolMOS™<sup>1)</sup> power MOSFET 4<sup>th</sup> generation
  - high blocking capability
  - lowest resistance
  - avalanche rated for unclamped inductive switching (UIS)
  - low thermal resistance due to reduced chip thickness
- Enhanced total power density
- HiPerDyn™ FRED
  - consisting of series connected diodes
  - enhanced dynamic behaviour for high frequency operation

**Applications**

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)

**Advantages**

- Easy assembly: no screws or isolation foils required
- Space savings
- High power density
- High reliability

<sup>1)</sup> CoolMOS™ is a trademark of Infineon Technologies AG.

MOSFET T		Maximum Ratings	
Symbol	Conditions		
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C}$	600	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	47	A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	32	A
$E_{AS}$ $E_{AR}$	single pulse repetitive } $I_D = 11 \text{ A}; T_C = 25^{\circ}\text{C}$	1950 3	mJ mJ
$dV/dt$	MOSFET $dV/dt$ ruggedness $V_{DS} = 0 \dots 480 \text{ V}$	50	V/ns

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 44 \text{ A}$		40	45	m $\Omega$
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 3 \text{ mA}$	2.5	3	3.5	V
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}$			10	$\mu\text{A}$
				50	$\mu\text{A}$
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
$C_{iss}$ $C_{oss}$	$V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		6800 320		pF pF
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 44 \text{ A}$		150 35 50	190	nC nC nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$ $E_{on}$ $E_{off}$ $E_{rec off}$	$V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 44 \text{ A}; R_G = 3.3 \text{ } \Omega$		30 20 100 10 tbd tbd tbd		ns ns ns ns mJ mJ mJ
$R_{thJC}$ $R_{thCH}$	with heat transfer paste		0.25	0.45	K/W K/W

$(T_{VJ} = 25^{\circ}\text{C}, \text{ unless otherwise specified})$

**MOSFET T Source-Drain Diode**

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)					
$I_S$	$V_{GS} = 0\text{ V}$			44	A
$V_{SD}$	$I_F = 44\text{ A}; V_{GS} = 0\text{ V}$		0.9	1.2	V
$t_{rr}$	$I_F = 44\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 400\text{ V}$		600		ns
$Q_{RM}$			17		$\mu\text{C}$
$I_{RM}$			60		A

**Diode D (data for series connection)**

Symbol	Conditions	Maximum Ratings	
$V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V
$I_{F25}$	$T_C = 25^{\circ}\text{C}$	95	A
$I_{F90}$	$T_C = 90^{\circ}\text{C}$	56	A

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
$V_F$	$I_F = 30\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$		2.48	V
				3.02	V
	$I_F = 60\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$		1.89	A
				2.45	A
$I_R$	$V_R = V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C}$		1	$\mu\text{A}$
		$T_{VJ} = 150^{\circ}\text{C}$		0.2	mA
$I_{FSM}$	$t = 10\text{ ms (50 Hz), sine};$	$T_{VJ} = 45^{\circ}\text{C}$		450	A
$I_{RM}$	$I_F = 30\text{ A}; V_R = 100\text{ V};$ $-di_F/dt = 200\text{ A}/\mu\text{s}$	$T_{VJ} = 25^{\circ}\text{C}$		2	A
$t_{rr}$				30	ns
$R_{thJC}$	with heat transfer paste		0.25	0.55	K/W
$R_{thCH}$					K/W

**Component**

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$	operating	-55...+150	$^{\circ}\text{C}$
$T_{stg}$	storage	-55...+125	$^{\circ}\text{C}$
$V_{ISOL}$	$I_{ISOL} < 1\text{ mA}; 50/60\text{ Hz}$	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
$d_S, d_A$	pin - pin	1.7			mm
$d_S, d_A$	pin - backside metal	5.5			mm
Weight			9		g

ISOPLUS i4™ Outline

