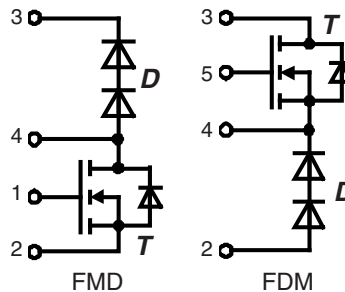


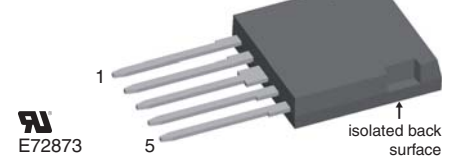
CoolMOS™¹⁾ Power MOSFET with HiPerDyn™ FRED Buck and Boost Topologies

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



$$\begin{aligned} I_{D25} &= 15 \text{ A} \\ V_{DSS} &= 600 \text{ V} \\ R_{DS(on) \text{ max}} &= 0.165 \Omega \end{aligned}$$

ISOPLUS i4™



MOSFET T			
Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^\circ\text{C}$	600	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	15	A
I_{D90}	$T_C = 90^\circ\text{C}$	11	A
E_{AS}	single pulse repetitive } $I_D = 7.9 \text{ A}; T_C = 25^\circ\text{C}$	522	mJ
E_{AR}		0.79	mJ
dV/dt	MOSFET dV/dt ruggedness $V_{DS} = 0 \dots 480 \text{ V}$	50	V/ns

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^\circ\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}; I_D = 12 \text{ A}$		150	165	m Ω
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 0.79 \text{ mA}$	2.5	3	3.5	V
I_{DSS}	$V_{DS} = 600 \text{ V}; V_{GS} = 0 \text{ V}$				
	$T_{VJ} = 25^\circ\text{C}$			1	μA
	$T_{VJ} = 125^\circ\text{C}$		10		μA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			100	nA
C_{iss}	$V_{GS} = 0 \text{ V}; V_{DS} = 100 \text{ V}$ $f = 1 \text{ MHz}$		2000		pF
C_{oss}			100		pF
Q_g	$V_{GS} = 0 \text{ to } 10 \text{ V}; V_{DS} = 400 \text{ V}; I_D = 12 \text{ A}$		40	52	nC
Q_{gs}			9		nC
Q_{gd}			13		nC
$t_{d(on)}$	$V_{GS} = 10 \text{ V}; V_{DS} = 400 \text{ V}$ $I_D = 12 \text{ A}; R_G = 3.3 \Omega$		12		ns
t_r			5		ns
$t_{d(off)}$			50		ns
t_f			5		ns
E_{on}			tbd		mJ
E_{off}			tbd		mJ
$E_{rec off}$			tbd		mJ
R_{thJC}	with heat transfer paste			1.1	K/W
R_{thCH}		0.35			K/W

Features

- Silicon chip on Direct-Copper-Bond substrate
 - high power dissipation
 - isolated mounting surface
 - 2500 V electrical isolation
 - low drain to tab capacitance ($< 40 \text{ pF}$)
- Fast CoolMOS™¹⁾ power MOSFET 4th 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

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

MOSFET T Source-Drain Diode

Symbol	Conditions	Characteristic Values			
		(T _{VJ} = 25°C, unless otherwise specified)			
		min.	typ.	max.	
I _S	V _{GS} = 0 V			12	A
V _{SD}	I _F = 12 A; V _{GS} = 0 V		0.9	1.2	V
t _{rr}	I _F = 12 A; -di _F /dt = 100 A/μs; V _R = 400 V		390		ns
Q _{RM}			7.5		μC
I _{RM}			38		A

Diode D (data for series connection)

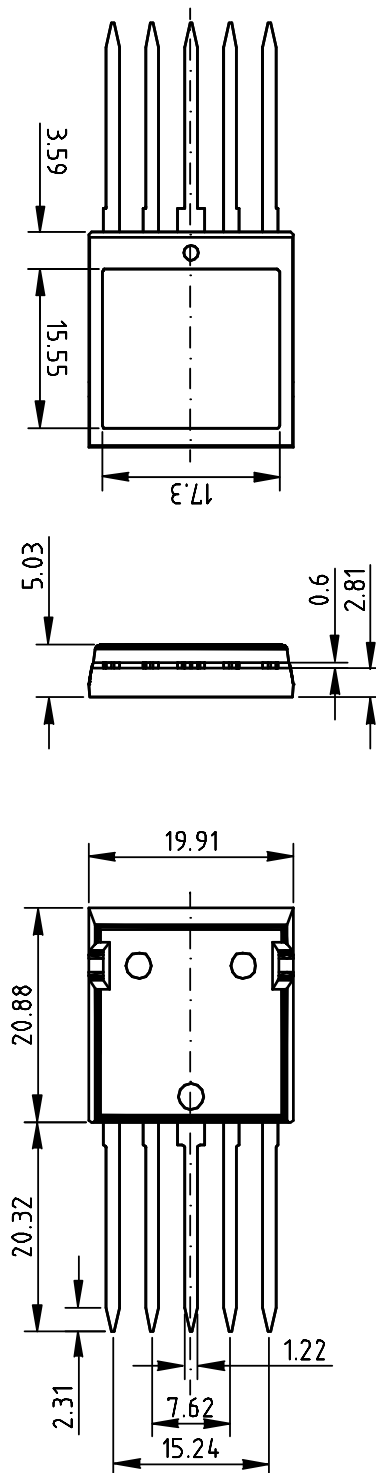
Symbol	Conditions	Maximum Ratings	
V _{RRM}	T _{VJ} = 25°C to 150°C	600	V
I _{F25}	T _C = 25°C	15	A
I _{F90}	T _C = 90°C	8	A

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
V _F	I _F = 15 A	T _{VJ} = 25°C		2.50	V
	I _F = 30 A			3.00	V
	I _F = 15 A	T _{VJ} = 150°C		2.00	A
	I _F = 30 A			2.55	A
I _R	V _R = V _{RRM}	T _{VJ} = 25°C		1	μA
		T _{VJ} = 150°C		0.08	mA
I _{FSM}	t = 10 ms (50 Hz), sine;	T _{VJ} = 45°C		150	A
I _{RM}	I _F = 20 A; V _R = 100 V; -di _F /dt = 200 A/μs	T _{VJ} = 25°C		3	A
t _{rr}				35	ns
R _{thJC}	with heat transfer paste			2.4	K/W
R _{thJH}			0.8		K/W

Component

Symbol	Conditions	Maximum Ratings	
T _{VJ}	operating	-55...+150	°C
T _{stg}	storage	-55...+125	°C
V _{ISOL}	I _{ISOL} < 1 mA; 50/60 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




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