

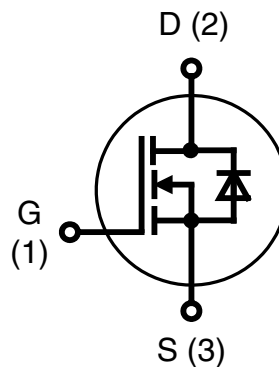
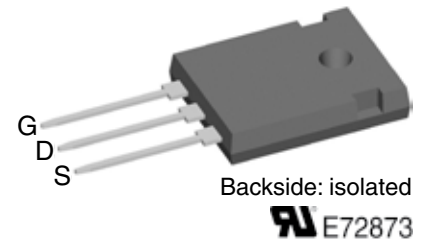
preliminary

CoolMOS™ 1) CFD Power MOSFET

$$\begin{aligned} I_{D25} &= 25 \text{ A} \\ V_{DSS} &= 650 \text{ V} \\ R_{DS(on) \text{ max}} &= 80 \text{ m}\Omega \end{aligned}$$

Single MOSFET

Part number
MKH24I650HR



Features / Advantages:

- High speed switching
- Fast body diode
- Very high commutation ruggedness
- Easy to drive
- Very low FOM $R_{DS(on)} * Q_g$ and E_{OSS}

Applications:

- Switch mode power supplies
- Resonant switching converters
- DC/DC converters
- Solar inverters
- Lighting
- Telecom

Package: ISO247

- Isolation Voltage: 3600V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

¹⁾ CoolMOS™ is a trademark of
Infineon Technologies AG

Terms & Conditions of usage

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact the sales office, which is responsible for you. Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

IXYS reserves the right to change limits, test conditions and dimensions.

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1 - 4

MOSFET				Ratings			
Symbol	Definitions	Conditions		min.	typ.	max.	
V_{DS}	drain source breakdown voltage					650	V
V_{GS}	gate source voltage			-20		+20	V
V_{GSM}	max. transient gate source voltage			-30		+30	V
I_{D25}	drain current		$T_C = 25^\circ\text{C}$			25	A
I_{D80}			$T_C = 80^\circ\text{C}$			22.5	A
I_{D100}			$T_C = 100^\circ\text{C}$			19	A
R_{DSon}	static drain source on resistance	$I_D = 18\text{ A}; V_{GS} = 20\text{ V}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		72 190	80	mΩ mΩ
$V_{GS(th)}$	gate threshold voltage	$I_D = 1.76\text{ mA}; V_{DS} = 10\text{ V}$	$T_{VJ} = 25^\circ\text{C}$	3.5		4.5	V
I_{DSS}	drain source leakage current	$V_{DS} = 650\text{ V}; V_{GS} = 0\text{ V}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		500	1	μA μA
I_{GSS}	gate source leakage current	$V_{DS} = 0\text{ V}; V_{GS} = 20\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			100	nA
R_G	internal gate resistance				0.75		Ω
C_{iss}	input capacitance	$V_{DS} = 100\text{ V}; V_{GS} = 0\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		5030		pF
C_{oss}	output capacitance				215		pF
C_{rss}	reverse transfer (Miller) capacitance						pF
Q_g	total gate charge	$V_{DS} = 480\text{ V}; I_D = 25\text{ A}; V_{GS} = 0/10\text{ V}$	$T_{VJ} = 25^\circ\text{C}$		170		nC
Q_{gs}	gate source charge				25		nC
Q_{gd}	gate drain (Miller) charge				120		nC
$t_{d(on)}$	turn-on delay time	Inductive switching Free wheeling diode DHG20I600HA $V_{DS} = 400\text{ V}; I_D = 25\text{ A}$ $V_{GS} = 0/10\text{ V}; R_G = 5\text{ Ω (external)}$	$T_{VJ} = 25^\circ\text{C}$		33		ns
t_r	current rise time				17		ns
$t_{d(off)}$	turn-off delay time				145		ns
t_f	current fall time				16		ns
E_{on}	turn-on energy per pulse				0.83		mJ
E_{off}	turn-off energy per pulse				0.13		mJ
$E_{rec(off)}$	reverse recovery losses at turn-off				0.16		mJ
R_{thJC}	thermal resistance junction to case	with heatsink compound; IXYS test setup				0.65	K/W
R_{thJH}	thermal resistance junction to heatsink				1.0		K/W

Source-Drain Diode				Ratings			
Symbol	Definitions	Conditions		min.	typ.	max.	
I_{S25}	source current, pulsed	$V_{GS} = 0\text{ V}$	$T_C = 25^\circ\text{C}$			130	A
I_{S100}			$T_C = 80^\circ\text{C}$			70	A
V_{SD}	forward voltage drop	$I_F = 26\text{ A}; V_{GS} = 0\text{ V}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		0.9		V V
t_{rr}	reverse recovery time	$V_{GS} = 0\text{ V}; I_F = 26\text{ A}$ $V_R = 400\text{ V}; -di_F/dt = 100\text{ A/μs}$	$T_{VJ} = 25^\circ\text{C}$		180		ns
Q_{RM}	reverse recovery charge (intrinsic diode)				1		nC
I_{RM}	max. reverse recovery current				10		A

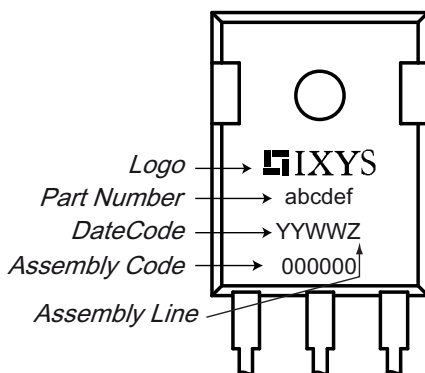
Note:

For MOSFET paralleling the use of ferrite beads on the gate or separate totem poles is generally recommended

Package ISO247

Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per terminal			50	A
T_{stg}	storage temperature		-55		150	°C
T_{op}	operation temperature		-55		150	°C
T_{vJ}	virtual junction temperature		-55		150	°C
Weight				6		g
M_D	mounting torque		0.8		1.2	Nm
F_C	mounting force with clip		20		120	N
$d_{Spp/App}$	creepage distance on surface / striking distance through air	terminal to backside terminal to terminal	2.7			mm
$d_{Spb/Apb}$			4.1			mm
V_{ISOL}	isolation voltage	$t = 1$ second $t = 1$ minute	3600 3000			V V
C_p	coupling capacity	between shorted pins and back side metallization		16		pF

Product Marking



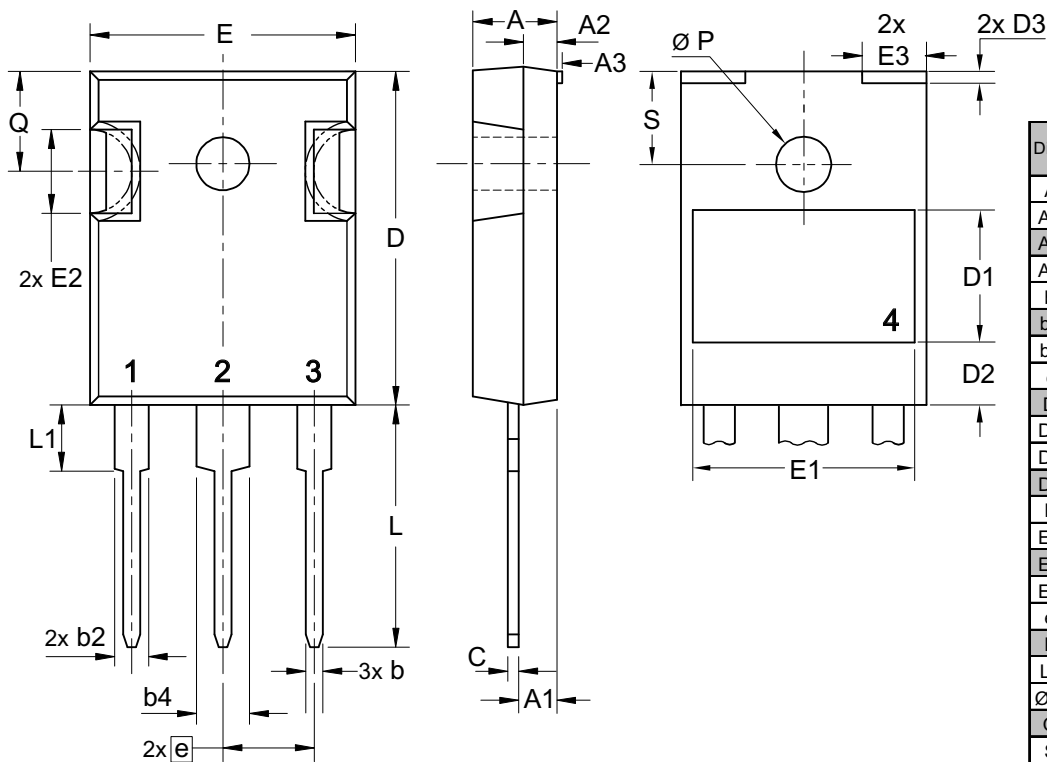
Part number

M = Mosfet
 K = CoolMOS¹⁾
 H = CFD die type
 24 = Current Rating [A]
 I = Single Mosfet
 650 = Reverse Voltage [V]
 HR = ISO247 (3)

¹⁾ CoolMOS™ is a trademark of Infineon Technologies AG

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MKH24I650HR	MKH24I650HR	Tube	30	516493

Outlines ISO247



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
A3	typ. 0.05		typ. 0.002	
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
c	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.844
D1	typ. 8.90		typ. 0.350	
D2	typ. 2.90		typ. 0.114	
D3	typ. 1.00		typ. 0.039	
E	15.49	16.24	0.610	0.639
E1	typ. 13.45		typ. 0.530	
E2	4.31	5.48	0.170	0.216
E3	typ. 4.00		typ. 0.157	
e	5.46 BSC		0.215 BSC	
L	19.80	20.30	0.780	0.799
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	

