

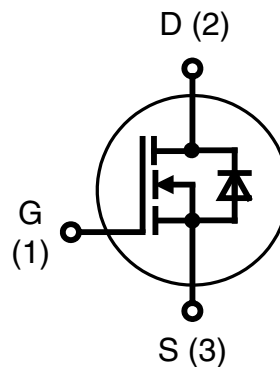
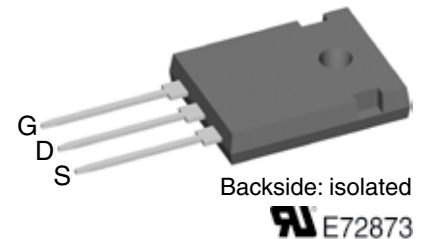
preliminary

CoolMOS™ 1) CFD Power MOSFET

| | | |
|------------------|---|--------------|
| I_{D25} | = | 25 A |
| V_{DSS} | = | 650 V |
| $R_{DS(on) max}$ | = | 80 mΩ |

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.

| 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 | | | | 25 | | A | | |
| I_{D80} | | | | | 22.5 | | A | | |
| I_{D100} | | | | | 19 | | A | | |
| R_{DSon} | static drain source on resistance | $I_D = 18\text{ A}; V_{GS} = 20\text{ V}$ | | 72 | 80 | | mΩ | | |
| | | | | 190 | | | mΩ | | |
| $V_{GS(th)}$ | gate threshold voltage | $I_D = 1.76\text{ mA}; V_{DS} = 10\text{ V}$ | | 3.5 | 4.5 | | V | | |
| I_{DSS} | drain source leakage current | $V_{DS} = 650\text{ V}; V_{GS} = 0\text{ V}$ | | 500 | 1 | | μA | | |
| | | | | | | | μA | | |
| I_{GSS} | gate source leakage current | $V_{DS} = 0\text{ V}; V_{GS} = 20\text{ V}$ | | | 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 $V_{DS} = 400\text{ V}; I_D = 25\text{ A}$ $V_{GS} = 0 / 10\text{ V}; R_G = 5\text{ }\Omega$ (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 | |
| R_{thJH} | thermal resistance junction to heatsink | 1.0 | K/W | | | | | | |

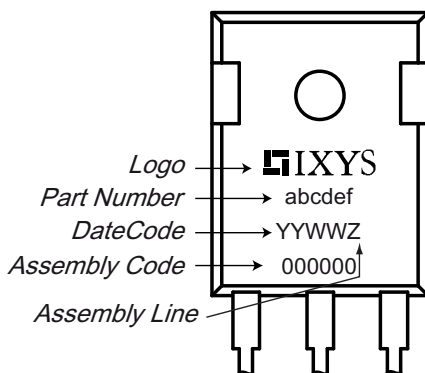
| Source-Drain Diode | | | | Ratings | | | | | |
|--------------------|---|---|-----------------------------|---------|------|--|----|----|----|
| Symbol | Definitions | Conditions | min. | typ. | max. | | | | |
| I_{S25} | source current, pulsed | $V_{GS} = 0\text{ V}$ | | | 130 | | A | | |
| I_{S100} | | | | | 70 | | A | | |
| V_{SD} | forward voltage drop | $I_F = 26\text{ A}; V_{GS} = 0\text{ V}$ | | 0.9 | | | V | | |
| | | | | | | | V | | |
| t_{rr} | reverse recovery time | $V_{GS} = 0\text{ V}; I_F = 26\text{ A}$ $V_R = 400\text{ V}; -di_F/dt = 100\text{ A}/\mu\text{s}$ | $T_{VJ} = 25^\circ\text{C}$ | | 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 | 2.7 | | | mm |
| $d_{Spb/Apb}$ | | terminal to terminal | 4.1 | | | mm |
| V_{ISOL} | isolation voltage | t = 1 second t = 1 minute | 3600 3000 | 50 / 60 Hz, RMS; $I_{ISOL} \leq 1$ mA | | V V |
| C_p | coupling capacity | between shorted pins and back side metallization | | | 16 | pF |

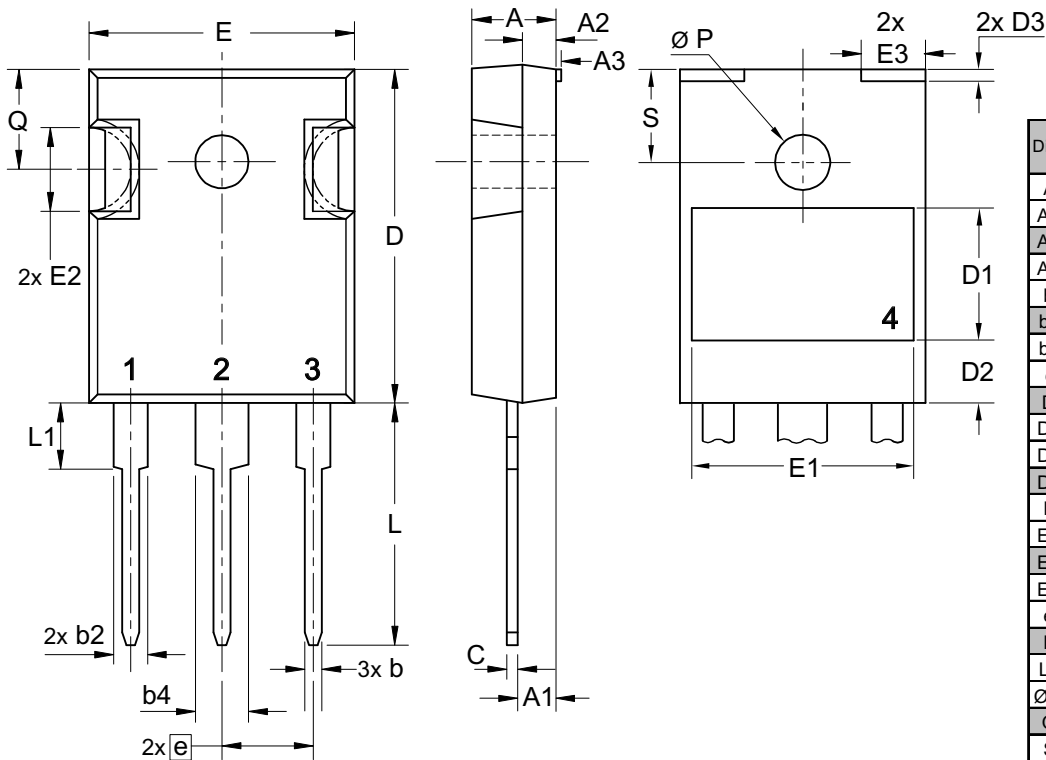
Product Marking

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 | |

