# 400/650 V MDmesh™ DM2:

## STPOWER MOSFET series with fast-recovery body diode


**Super-junction technology with fast intrinsic diode ideal for telecom, automotive, solar inverters and motor control applications.**

MDmesh™ DM2 is a silicon-based MOSFET technology with a fast recovery intrinsic diode. STPOWER super-junction technology has improved RDS(on) by up to 40 % compared to previous versions. The MDmesh™ DM2 MOSFET family offers excellent behavior in terms of turn-off energy (Eoff), as well as a low gate charge, low input capacitance and its intrinsic diode shows very short recovery time.

### Key features

- High breakdown voltage: from 400 up to 650 V
- Fast-recovery body diode
- Ultra-low gate charge ($Q_G$)
- Very low $R_{DS(on)}$
- Automotive AEC-Q101 qualified

### Key benefits

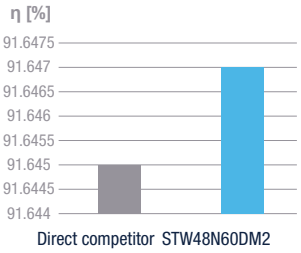
- Increased safety range & flexibility
- Excellent dynamic behavior
- Improved high load efficiency
- Lower conduction losses

### Key applications

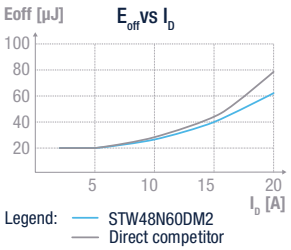
- Telecom
- Automotive
- Solar inverters
- Motor Control

## MDmesh™ DM2 VS competition

The graphs show the good turn-off energy behavior especially at high currents and better efficiency vs Competition. The MDmesh™ DM2 series performs better than the direct competition and is the best-inclass among the previous ST's fast diode technologies.




Efficiency data @ 80% of load in evaluation board
2 kW Fully Digital




Turn-off energy (Eoff vs ID) @ VDD = 400 V, VGS = 10 V ÷ 0 V,
Diode = 2006 SiC, RG = 4.7 Ω

| $V_{DS(on)}$ | $R_{DS(on)}$ (Ω) | Part Number | | $I_D$ (A) | $Q_G$ | trr (ns) | Packages |
|---|---|---|---|---|---|---|---|
| | | Industrial | Automotive | | | | |
| 400 | 0.072 | - | STB45N40DM2AG | 38 | 56 | 95 | D²PAK/TO-220 |
| | 0.072 | - | STP45N40DM2AG | 38 | 56 | 95 | TO-220 |
| 500 | 0.36 | - | STD13N50DM2AG | 11 | 11.7 | 68 | DPAK |
| | 0.35 | STD12N50DM2 | - | 11 | 16 | 140 | DPAK/TO-220FP |
| 400 | 1.55 | STD5N60DM2 | - | 3.5 | 53 | 58 | DPAK |
| | 1.1 | STx6N60DM2 | - | 5 | 6.2 | 60 | DPAK/TO-220FP/IPAK |
| | 0.365 | STx13N60DM2 | - | 11 | 19 | 90 | DPAK/TO-220FP/TO-220 |
| | 0.295 | STx18N60DM2 | - | 12 | 20 | 125 | D²PAK/TO-220FP/TO-220/TO-247 |
| | 0.295 | STL19N60DM2 | - | 11 | 21 | 120 | Power FLAT8x8 HV |
| | 0.206 | STL26N65DM2 | - | 20 | 35 | 100 | Power FLAT 8x8HV |
| | 0.175 | STx28N60DM2 | - | 21 | 34 | 140 | D²PAK/TO-220FP/TO-220/TO-247 |
| | 0.093 | STx43N60DM2 | STx45N60DM2AG,STW58N60DM2AG | 34 | 56 | 120 | D²PAK/TO-220FP/TO-220/TO-247 |
| | 0.079 | STX48N60DM2 | - | 40 | 70 | 140 | TO-247/TO-247 Long Leads |
| | 0.42 | STx70N60DM2 | STx72N60DM2AG | 66 | 121 | 150 | TO-247/TO-247 Long Leads |
| | 0.37 | STL13N60DM2 | - | 8 | 19 | 90 | Poweer FLAT 5x6 HV |
| | 0.22 | STL24N60DM2 | - | 15 | 29 | 155 | Power FLAT8x8 HV |
| | 0.13 | STx33N60DM2 | - | 24 | 43 | 150 | D²PAK/TO-220FP/TO-220/TO-247 |
| | 0.11 | STX35N60DM2 | STX37N60DM2AG | 28 | 54 | 120 | D²PAK/TO-220FP/TO-220/TO-247 |
| | 0.9 | STx7N60DM2 | - | 6 | 7.5 | 69 | DPAK/TO-220FP/IPAK |
| | 0.6 | STx8N60DM2 | - | 8 | 13.5 | 80 | DPAK/TO-220FP |
| | 0.2 | STx26N65DM2 | - | 20 | 35.5 | 100 | TO-220FP/TO-220/TO-247 |
| | 0.2 | STx24N60DM2 | - | 18 | 29 | 155 | D²PAK/TO-220FP/TO-220/TO-247 |
| 650 | 0.065 | STW56N65DM2 | STW58N65DM2AG | 48 | 115 | 230 | TO-247/PowerFLAT 8x8 |
| | 0.42 | STx11N60DM2 | STD12N60DM2AG | 10 | 16.5 | 160 | DPAK/TO-220FP/TO-220 |
| | 0.19 | STx26N65DM2 | - | 20 | 35 | 100 | TO-220FP/TO-220/TO-247 |
| | 0.14 | STL33N60DM2 | - | 21 | 43 | 120 | D²PAK/TO-220/TO-220FP/TO-247 |
| | 0.11 | STx35N65DM2 | - | 32 | 63 | 100 | D²PAK/TO-220/TO-220FP/TO-247 |
| | 0.06 | STW56N60DM2 | STW58N60DM2AG | 50 | 90 | 140 | TO-247 |
| | 0.05 | STW63N65DM2 | - | 60 | 120 | 154 | TO-247/ TO-247 Long Leads |
| | 0.065 | - | STx58N65DM2AG | 48 | | 135 | TO-247 |
| | 0.050 | STx63N65DM2 | STx65N65DM2AG | 60 | | 154 | TO-247 / TO-247 long leads |

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For a complete MDmesh DM2 product portfolio visit www.st.com/mdmeshdm2 or consult the APP ST-MOSFET-Finder