

400/650 V MDmesh™ DM2: ST's new MOSFET series with integrated fast-recovery body diode



New super-junction technology with fast intrinsic diode ideal for telecom, automotive and solar high-power systems

The MDmesh™ DM2 is a new MOSFET silicon-based technology with a fast-recovery intrinsic diode. This new 400/650 V series achieves up to 40% better $R_{DS(on)}$ than earlier versions thanks to ST's super-junction technology, combined with an excellent performance in terms of t_{rr}/Q_{rr} and the industry's best soft switching performance. Furthermore, the new MDmesh DM2 family is among the best in terms of turn-off energy (E_{off}) at high currents and also shows a low gate charge, input capacitance and a fast recovery phase of the intrinsic diode.

KEY FEATURES

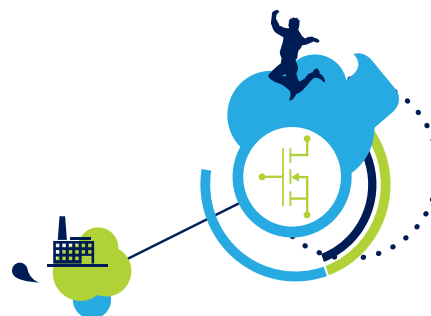
- Higher BV_{DSS} : from 400 up to 650 V
- Fast-recovery body diode
- Ultra-low gate charge (Q_G)
- Very low $R_{DS(on)}$
- Automotive AEC-Q101 qualified

KEY BENEFITS

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

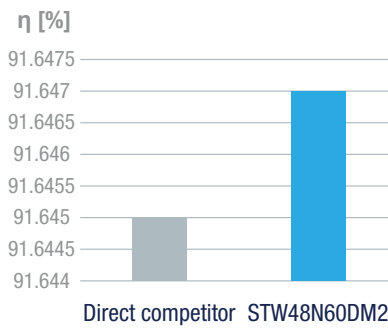
APPLICATIONS

- Telecom/Server
- Automotive
- Solar
- Motor Control

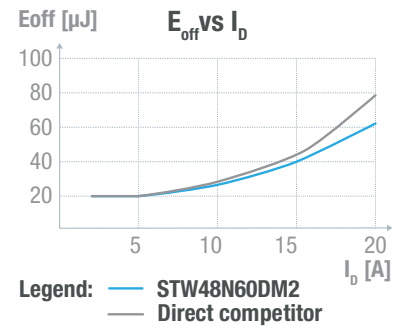


MDmesh™ DM2 VS COMPETITION

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-in-class among the previous ST's fast diode technologies.



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



Turn-off energy (E_{off} vs I_d) @ V_{DD} = 400 V, V_{GS} = 10 V ÷ 0 V,
Diode = 2006 SiC, R_G = 4.7 Ω

BV _{DSS} (V)	Part number	Automotive grade	R _{DS(on)} (Ω) (@ V _{GS} = 10 V)	Drain current (Dc) max (A)	Reverse recovery time (ns)	Package
400	STx45N40DM2AG	Yes	0.072	38	95	D ² PAK/TO-220
500	STx12N50DM2	-	0.35	11	110	DPAK/TO-220FP
500	STB34N50DM2AG	Yes	0.12	26	110	D ² PAK
500	STB45N50DM2AG	Yes	0.084	34	105	D ² PAK
600	STD5N60DM2	-	1.55	3.5	70	DPAK
600	STx6N60DM2	-	1.1	5	73	DPAK/TO-220FP ⁽¹⁾ /IPAK ⁽¹⁾
600	STx7N60DM2	-	0.9	6	75	DPAK/TO-220FP/IPAK ⁽¹⁾
600	STx10N60DM2	-	0.53	8.5	90	DPAK/TO-220FP
600	STx11N60DM2	-	0.42	11	90	DPAK/TO-220/TO-220FP
600	STx13N60DM2	-	0.365/0.380*	12	90	DPAK/TO-220FP/PowerFLAT™ 5x6 HV
600	STx18N60DM2 STL19N60DM2	-	0.295/0.32*	12	120	D ² PAK/TO-220/TO-247/PowerFLAT™ 8x8 HV
600	STx24N60DM2	-	0.2/0.22*	18	155	D ² PAK/TO-220FP/TO-220/TO-247/PowerFLAT™ 8x8 HV
600	STx28N60DM2	-	0.16/0.175*	22	110	D ² PAK/TO-220FP/TO-220/TO-247/PowerFLAT™ 8x8 HV
600	STx33N60DM2	-	0.13/0.14*	25	120	D ² PAK/TO-220/TO-247/PowerFLAT™ 8x8 HV
600	STx35N60DM2	-	0.11	28	120	D ² PAK/TO-220FP/TO-220/TO-247
600	STx37N60DM2AG	Yes	0.11	28	120	D ² PAK/TO-247/TO-247 long leads ⁽¹⁾
600	STx45N60DM2AG	Yes	0.093	34	120	D ² PAK/TO-220/TO-247/TO-247 long leads ⁽¹⁾
600	STx43N60DM2	-	0.093	34	120	TO-220/TO-247
600	STW48N60DM2	-	0.079	40	140	TO-247
600	STx70N60DM2	-	0.042	67	150	TO-247/TO-247 long leads ⁽¹⁾
600	STx72N60DM2AG	Yes	0.042	66	150	TO-247/TO-247 long leads
600	STW56N60DM2	-	0.06	50	140	TO-247
600	STW58N60DM2AG	Yes	0.06	50	140	TO-247/TO-247 long leads ⁽¹⁾
650	STx26N65DM2	-	0.19/0.205*	21	105	TO-220/TO-220FP/TO-247/PowerFLAT™ 8x8 HV ⁽¹⁾
650	STx35N65DM2	-	0.11	31	115	D ² PAK/TO-220/TO-220FP/TO-247
650	STX50N65DM2AG	Yes	0.087	38	150	TO-247/TO-247 long leads
650	STW56N65DM2	-	0.065	48	145	TO-247
650	STx58N65DM2AG	Yes	0.065	48	145	TO-247/TO-247 long leads ⁽¹⁾
650	STx65N65DM2AG	Yes	0.05	60	154	TO-247/TO-247 long leads

⁽¹⁾ Coming soon - * Value for PowerFLAT™ package



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



© STMicroelectronics - March 2019 - Printed in United Kingdom - All rights reserved
The STMicroelectronics corporate logo is a registered trademark of the STMicroelectronics group of companies
All other names are the property of their respective owners

