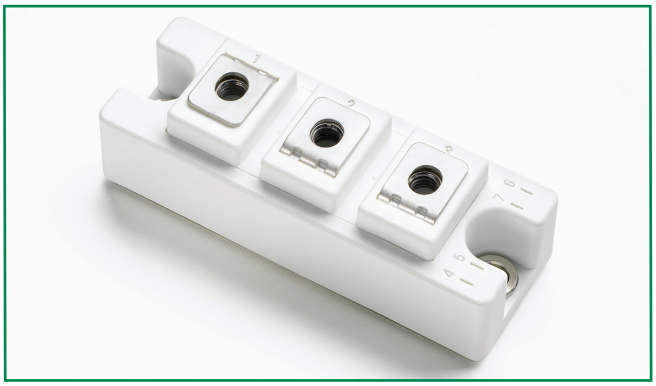
Power Module
Package S Rectifier Diode Module

Rectifier Module Circuit Series- Package S

RoHS



Features

- Low reverse recovery loss
- Low forward voltage
- High surge current capability
- Low inductance package

Applications

- Field supply for DC motors
- Line rectifiers for transistorized AC motor controllers
- Non-controllable rectifiers for AC/DC converter

Agency Approvals

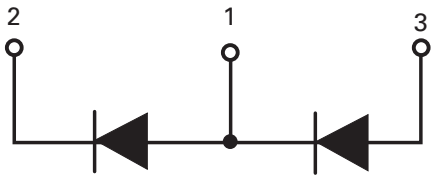
AGENCY	AGENCY FILE NUMBER
	E71639

Main Features

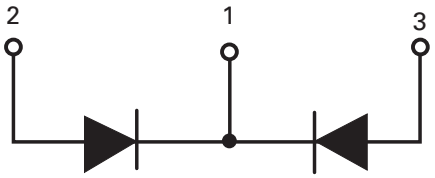
Symbol	Value	Unit
$I_{F(AV)}$	130 to 200	A
V_{RRM}	1600 to 1800	V
V_{RSM}	1700 to 1900	V

Circuit Diagram

B type



DK type



Absolute Maximum Rating (T_c = 25°C, unless otherwise specified)

Symbol	Parameters		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	MD16xxxS	1600	V
		MD18xxxS	1800	
V_{RSM}	Non-Repetitive Peak Reverse Voltage	MD16xxxS	1700	V
		MD18xxxS	1900	

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Absolute Maximum Ratings (T_c = 25°C, unless otherwise specified)

Symbol	Parameters	Test Conditions	Values				Unit
			MDxx130S	MDxx160S	MDxx180S	MDxx200S	
$I_{F(AV)}$	Average Forward Current	Single phase, half wave 180°C conduction, T_c [1]	130	160	180	200	A
$I_{F(RMS)}$	RMS Forward Current		204	250	280	310	A
I_{FSM}	Non-Repetitive Surge Forward Current	T_c=45°C, 50Hz, Single wave	3500	5500	6000	6500	A
		T_c=45°C, 60Hz, Single wave	3800	6000	6500	7000	
I^2t	I^2t (For Fusing)	T_c=45°C, 50Hz, Single wave	61.2	151.2	180.0	211.2	KA^2s
		T_c=45°C, 60Hz, Single wave	60.0	149.4	175.3	203.3	
P_D	Power Dissipation		625	694	694	781	W
T_J	Junction Temperature		-40 to +150				°C
T_{STG}	Storage Temperature Range		-40 to + 125				°C
V_{isol}	Insulation Test Voltage	AC, 50Hz, t=1min	3000				V

Note: 1. for MDxx130S & MDxx160S, T_c=95°C; for MDxx180S, T_c=90°C; for MDxx200S, T_c=85°C

Electrical and Thermal Specifications (T_c = 25°C, unless otherwise specified)

Symbol	Parameters		Test Conditions	Min	Typ	Max	Unit
I_{RM}	Reverse Leakage Current		$V_R=V_{RRM}$	-	-	500	μA
			$V_R=V_{RRM}$, T_J=125°C	-	-	10	mA
V_F	Forward Voltage	MDxx130S	I_F=400A	-	-	1.5	V
		MDxx160S	I_F=500A	-	-	1.5	
		MDxx180S	I_F=600A	-	-	1.5	
		MDxx200S	I_F=600A	-	-	1.5	
V_{T0}	For power-loss calculations only T_J=125°C	MDxx130S		-	-	0.85	V
		MDxx160S		-	-	0.85	
		MDxx180S		-	-	0.82	
		MDxx200S		-	-	0.80	
r_T		MDxx130S		-	-	1.6	mΩ
		MDxx160S		-	-	1.2	
		MDxx180S		-	-	1.1	
		MDxx200S		-	-	1.0	

Mechanical Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Unit
Torque	Module-to-Sink	Recommended (M6)	3		5	N·m
Torque	Module Electrodes	Recommended (M6)	3		5	N·m

Electrical and Thermal Specifications (T_c = 25°C, unless otherwise specified)

Symbol	Parameters		Max	Unit
R_{thJC}	Junction-to-Case	MDxx130S	0.20	K/W
		MDxx160S	0.18	
		MDxx180S	0.18	
		MDxx200S	0.16	

Figure 1: Forward current vs.voltage drop

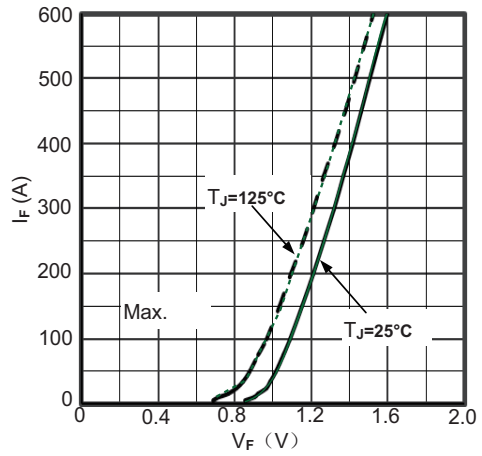

Figure 2: Max Non-Repetitive Forward Surge Current

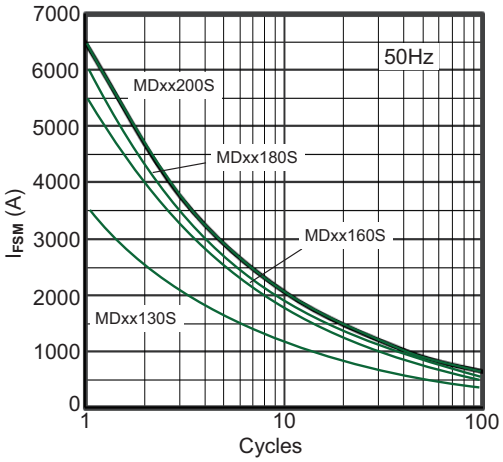

Figure 3: Forward current vs.Case temperature

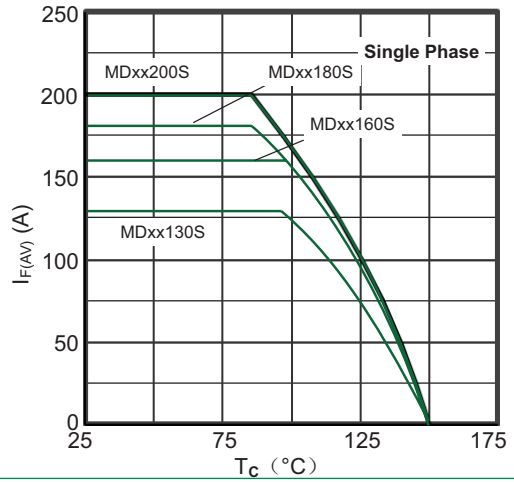

Figure 4: Transient Thermal Impedance

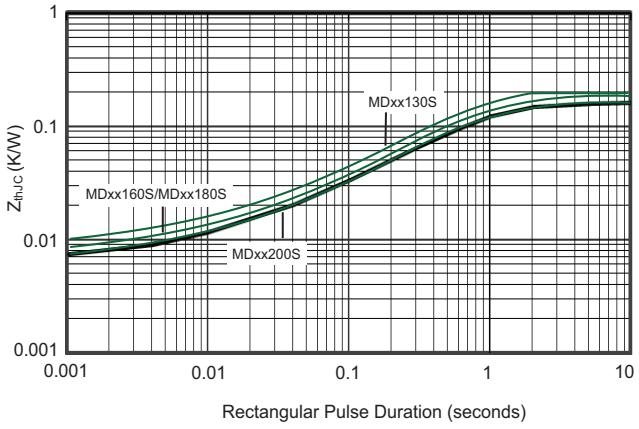

Figure 5: Power dissipation vs. $I_{F(AV)}$ for MDxx130S

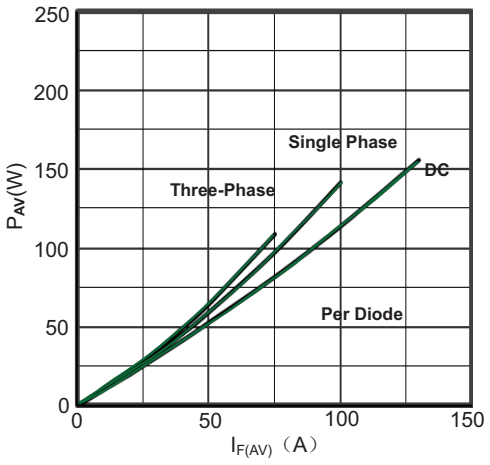

Figure 5: Power dissipation vs. $I_{F(AV)}$ for MDxx160S

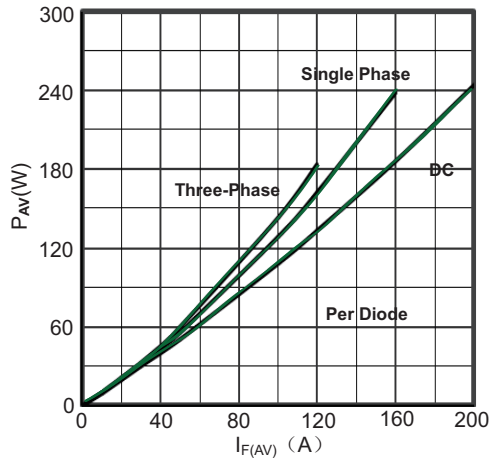

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Figure 5: Power dissipation vs. $I_{F(AV)}$ for MDxx180S

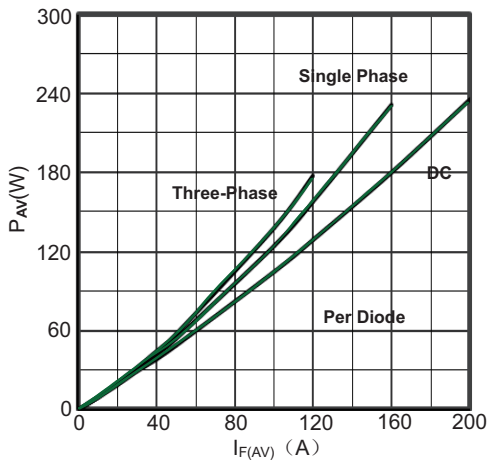
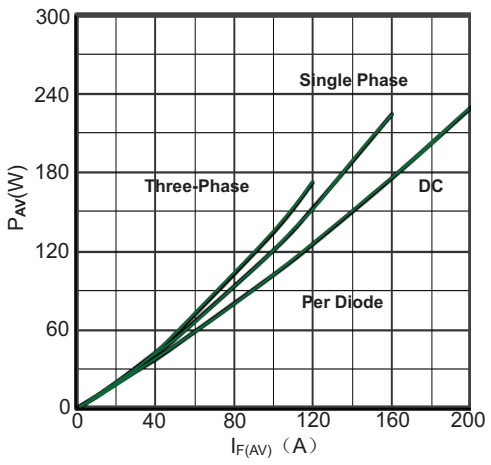
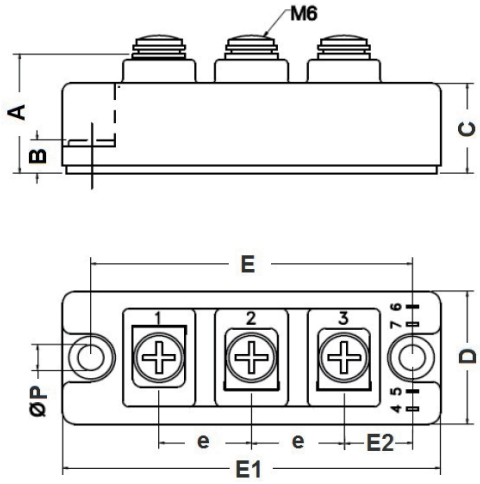


Figure 5: Power dissipation vs. $I_{F(AV)}$ for MDxx200S



Dimensions-Package S



Dimension	Inches		Millimeters	
	Max	Max	Min	Max
A	1.181	1.220	30.0	31.0
B	0.323	0.346	8.2	8.8
C	0.894	0.917	22.7	23.3
D	1.311	1.350	33.3	34.3
E	3.130	3.169	79.5	80.5
E1	3.681	3.720	93.5	94.5
E2	0.650	0.689	16.5	17.5
e	0.886	0.925	22.5	23.5
P	0.244	0.268	6.2	6.8

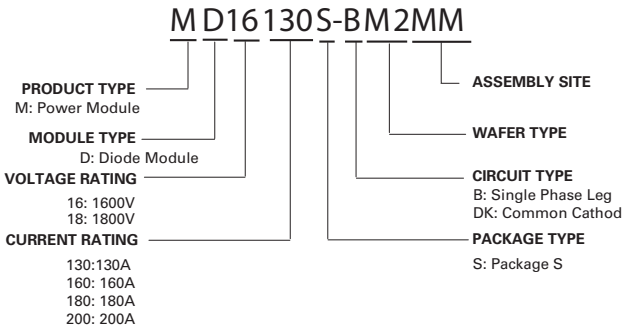
Packing Selector

Part Number	V_{RRM}		$I_{F(AV)}$	Circuit Type	Package
	1600V	1800V			
MDxx130S-BM2MM	X	X	130A	B	S
MDxx130S-DKM2MM	X	X		DK	
MDxx160S-BM2MM	X	X	160A	B	
MDxx160S-DKM2MM	X	X		DK	
MDxx180S-BM2MM	X	X	180A	B	
MDxx180S-DKM2MM	X	X		DK	
MDxx200S-BM2MM	X	X	200A	B	
MDxx200S-DKM2MM	X	X		DK	

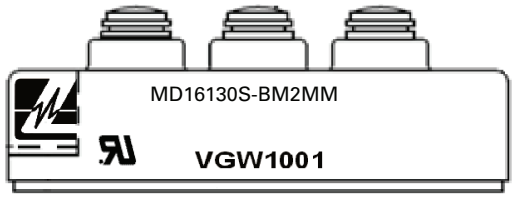
Packing Options

Part Number	Marking	Weight	Packing Mode	M.O.Q
MDxxxxxS-xM2MM	MDxxxxxS-xM2MM	170g	Bulk Pack	50

Part Numbering System



Part Marking System



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