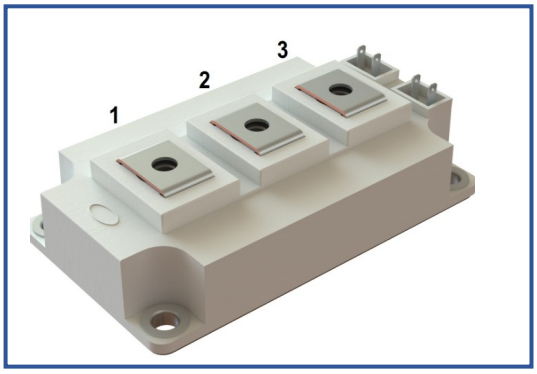
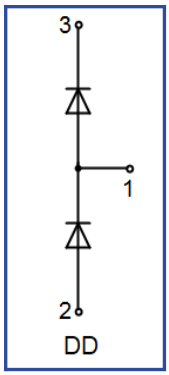
MDAA-DD17SM-300N

Half-Bridge rectifier module datasheet

Industry standard 62mm half-bridge rectifier module

1700 V 300 A





Chip features

- fast and soft reverse recovery
- low voltage drop

Design features

- copper baseplate
- Al_2O_3 DBC substrate
- ultrasonically welded power terminals
- Improved thermal cycling
- RoHS compliant

Typical application

- AC motor drives
- solar inverter
- air conditioning
- high power converters and UPS

Advance Data

Maximum rated values

Definition	Symbol	Conditions	Value	Unit
Diode				
Repetitive peak reverse voltage	V_{RRM}		1700	V
Maximum allowable forward current (continuous)	$I_{F\ 25}$	$T_{vj\ (max)}$ = 175°C; T_c = 25°C.	424	A
	$I_{F\ 80}$	$T_{vj\ (max)}$ = 175°C; T_c = 80°C.	300	A
Repetitive peak forward current*1	I_{FRM}	I_{FRM} = 2 x $I_{F\ nom}$; t_p = 1 ms.	600	A
Junction operating temperature	$T_{vj\ (op)}$		-40…+150	°C
Module				
Storage temperature	T_{stg}		-55…+50	°C
Isolation voltage	U_{isol}	AC sin 50 Hz; t = 1 min.	4000	V

Characteristics

Definition	Symbol	Conditions		Value min.	Value typ.	Value max.	Unit.
Diode							
Forward voltage drop	V_F	I_F = 300 A; t_u = 1000 µs.	T_{vj} = 25°C	1.50	1.80	1.95	V
			T_{vj} = 150°C	1.60	1.90	2.10	V
Repetitive peak reverse current	I_{RRM}	V_{RRM} = 1700 V.	T_{vj} = 25°C	-	15.00	100.00	µA
			T_{vj} = 125°C	-	300.00	1000.00	µA
Reverse recovery time	t_{rr}	V_R = 920 V; I_F = 300 A.	T_{vj} = 25°C	-	-	648	ns
			T_{vj} = 150°C	390	-	900	ns
Peak reverse current	I_{RM}		T_{vj} = 25°C	-	-	572	A
			T_{vj} = 150°C	254	-	500	A
Recovered charge	Q_r		T_{vj} = 25°C	-	-	106	µC
			T_{vj} = 150°C	82	-	148	µC
Reverse recovery energy	E_{rec}		T_{vj} = 25°C	-	-	87	mJ
			T_{vj} = 150°C	62	-	122	mJ

*1 Pulse width and repetition rate should be such that device junction temperature does not exceed maximum T_{vj} rating.

Characteristics

Definition	Symbol	Conditions		Value min.	Value typ.	Value max.	Unit.
Diode							
Threshold voltage	$V_{(T0)}$	T_{vj} = 150°C; I_{F1} = 75 A;		-	0.82	0.84	V
Forward slope resistance	r_T	I_{F2} = 300 A; t_u = 1000 µs		-	-	3.57	mΩ
Thermal resistance junction to case	$R_{th(JC-D)}$	DC; I_{CE} = 200±10 A; I_{test} = 1.0 A.		-	-	0.150	K/W
Module							
Pin resistance	R_{Pxy}	T_{vj} = 25°C.	R_{P12}	-	0.28	0.50	mΩ
			R_{P13}	-	0.38	0.50	
Parasitic inductance between terminals	L_{Pxy}			-	22	-	nH
Thermal resistance case to heatsink	R_{thCH}	per module		-	0.02	0.04	K/W
Mounting torque for screws to heatsink	M_s	to heatsink M6		3.00	-	5.00	N*m
Mounting torque for terminal screws	M_t	to terminals M6		2.25	2.50	2.75	N*m
Weight	W			-	320	340	g

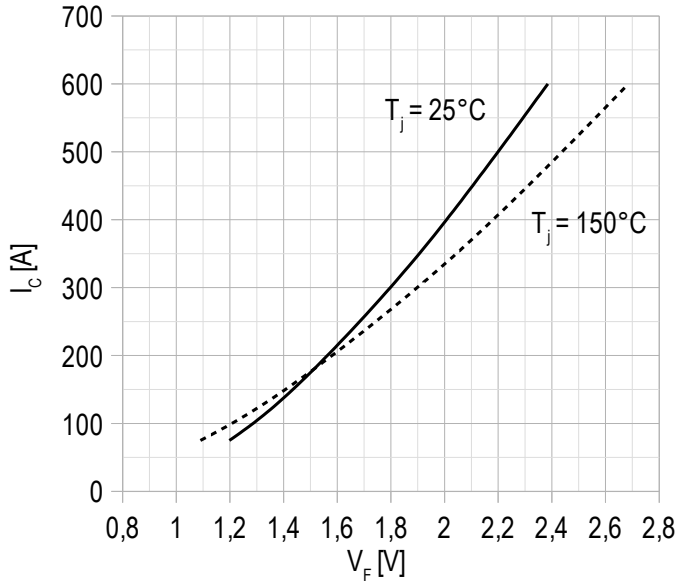
" - " — data will be refined as additional tests are conducted and statistics are collected.

Notes:

- Insulating material operating temperature 125°C max;
- Case temperature 125°C max;
- The recommended operating junction temperature $T_{vj\ op}$ = -40...+150°C.

Advance Data

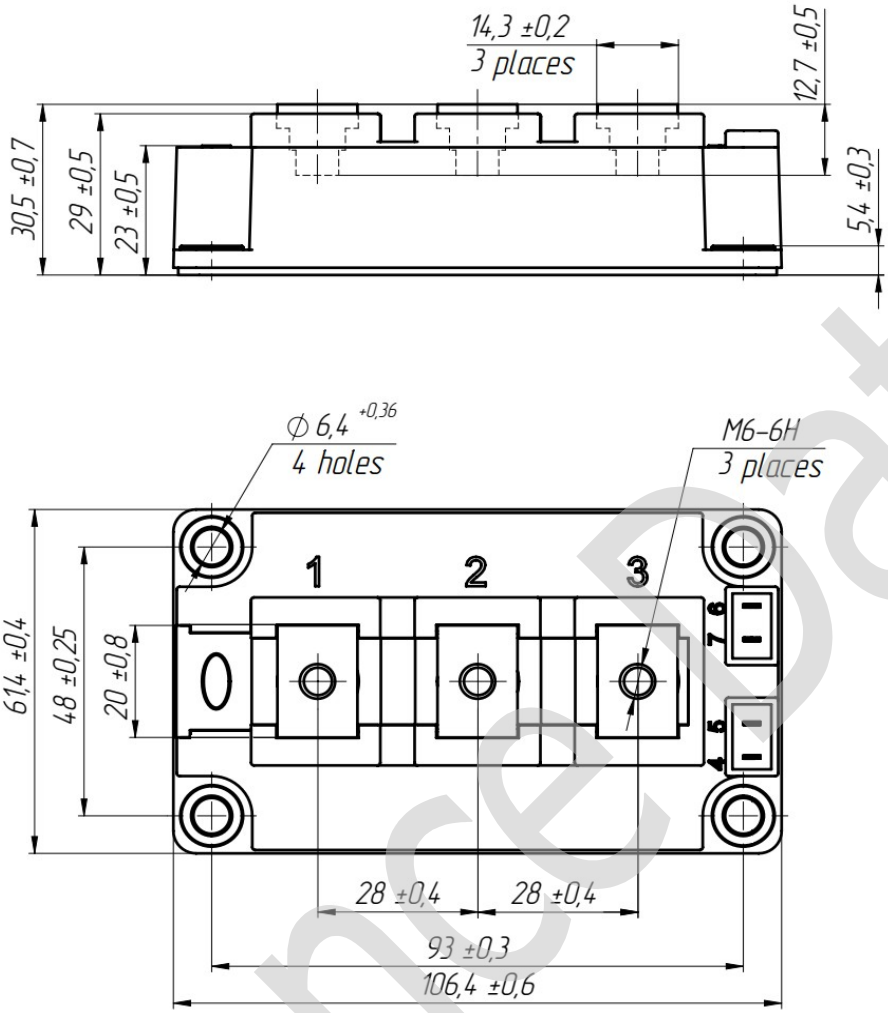
Chart 11 – typ. output characteristic, FRD.



t_u = 1000 µs.

Advance Data

Overall dimensions: Package type – AA



Advance Data

Part numbering guide

MDAA	-	DD	17	SM	-	300	N	
MDAA								Module package type: AA
		DD						Half-bridge connection of diodes
			17					Voltage rating (V_{RRM}/100)
				SM				FRD chipset modification
						300		Current Rating
							N	Climatic version: normal climate

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