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 V_{RRM}

VF

Standard Rectifier Module

Phase I	eg
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Part number

MDMA200P1600SA



Backside: isolated



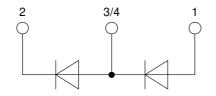
20191204b

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200 A

1.06 V

= 2x 1600 V



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

Applications:

- Diode for main rectification
- For single and three phase
- bridge configurations

Package: SimBus A

- Isolation Voltage: 4800 V~
- Industry standard outline
- RoHS compliant
- Gate: Spring contacts
 for solder-free PCB-mounting
- Height: 17 mm
- Base plate: Copper
- internally DCB isolated
- Advanced power cycling

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				Rating	s	
Definition	Conditions		min.	typ.	max.	Unit
max. non-repetitive reverse bloc	cking voltage	$T_{VJ} = 25^{\circ}C$			1700	V
max. repetitive reverse blocking	voltage	$T_{VJ} = 25^{\circ}C$			1600	V
reverse current	$V_{R} = 1600 V$	$T_{VJ} = 25^{\circ}C$			200	μA
	V_{R} = 1600 V	$T_{vJ} = 150^{\circ}C$			15	mA
forward voltage drop	I _F = 200 A	$T_{vJ} = 25^{\circ}C$			1.13	V
	I _F = 400 A				1.33	V
	$I_{F} = 200 \text{ A}$	T _{vJ} = 125 °C			1.06	۷
	$I_{F} = 400 \text{ A}$				1.32	v
average forward current	T _c = 110°C	$T_{vJ} = 150 ^{\circ}C$			200	А
	rectangular d = 0.5					
threshold voltage		T _{vJ} = 150°C			0.76	V
slope resistance } for power	loss calculation only				1.4	mΩ
thermal resistance junction to ca	ase				0.15	K/W
thermal resistance case to heat	sink			0.08		K/W
total power dissipation		$T_c = 25^{\circ}C$			830	W
max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}C$			6.00	kA
	t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			6.48	kA
	t = 10 ms; (50 Hz), sine	T _{vJ} = 150°C			5.10	kA
	t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			5.51	kA
value for fusing	t = 10 ms; (50 Hz), sine	$T_{vJ} = 45^{\circ}C$			180.0	kA²s
	t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			174.7	kA²s
	t = 10 ms; (50 Hz), sine	$T_{vJ} = 150 ^{\circ}\text{C}$			130.1	kA²s
	t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			126.3	kA²s
junction capacitance	V_{R} = 400 V; f = 1 MHz	$T_{vJ} = 25^{\circ}C$		273		pF
	max. non-repetitive reverse blocking max. repetitive reverse blocking reverse current forward voltage drop average forward current threshold voltage slope resistance for power thermal resistance junction to can thermal resistance case to heat total power dissipation max. forward surge current value for fusing	$\begin{array}{rcl} max. \ non-repetitive \ reverse \ blocking \ voltage \\ \hline max. \ repetitive \ reverse \ blocking \ voltage \\ \hline max. \ repetitive \ reverse \ blocking \ voltage \\ \hline reverse \ current \\ \hline V_R \ = 1600 \ V \\ \hline V_R \ = 100 \ A \\ \hline I_F \ = \ 200 \ A \\ \hline I_F \ = \ 40 \ Ms; \ (50 \ Hz), \ sine \\ \hline I_F \ = \ 40 \ Ms; \ (50 \ Hz), \ sine \ I_F \ = \ 40 \ Ms; \ (50 \ Hz), \ sine$	$\begin{array}{c c} max. non-repetitive reverse blocking voltage & T_{vJ} = 25^{\circ} C\\ \hline max. repetitive reverse blocking voltage & T_{vJ} = 25^{\circ} C\\ \hline reverse current & V_{R} = 1600 \ V & T_{vJ} = 25^{\circ} C\\ \hline V_{R} = 1600 \ V & T_{vJ} = 150^{\circ} C\\ \hline forward voltage drop & I_{F} = 200 \ A & T_{vJ} = 25^{\circ} C\\ \hline I_{F} = 400 \ A & T_{VJ} = 125^{\circ} C\\ \hline I_{F} = 400 \ A & T_{vJ} = 125^{\circ} C\\ \hline I_{F} = 400 \ A & T_{vJ} = 125^{\circ} C\\ \hline I_{F} = 400 \ A & T_{vJ} = 150^{\circ} C\\ \hline rectangular & d = 0.5 & T_{vJ} = 150^{\circ} C\\ \hline threshold voltage \\ slope resistance junction to case & \hline\\ thermal resistance case to heatsink & T_{C} = 25^{\circ} C\\ \hline max. forward surge current & t = 10 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline max. forward surge current & t = 10 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (60 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (60 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 10 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 10 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 10 \ ms; (50 \ Hz), sine & T_{vJ} = 150^{\circ} C\\ \hline t = 8,3 \ ms; (60 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (60 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (60 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (60 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; (50 \ Hz), sine & T_{vJ} = 45^{\circ} C\\ \hline t = 8,3 \ ms; 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(50 \ Hz), sine $T_{VJ} = 150^\circ C$ \\ \hline $tabular t = 10 \ ms; (50 \ Hz), sine $T_{VJ} = 45^\circ C$ \\ \hline $t = 8,3 \ ms; (60 \ Hz), sine $T_{VJ} = 50^\circ C$ \\ \hline $t = 8,3 \ ms; (60 \ Hz), sine $T_{VJ} = 50^\circ C$ $	$\begin{array}{c c c c c c c } \hline Definition & Conditions & min. typ. \\ \hline max. non-repetitive reverse blocking voltage & T_{vi} = 25^{\circ}\text{C} & \\ \hline max. repetitive reverse blocking voltage & T_{vi} = 25^{\circ}\text{C} & \\ \hline reverse current & V_{\text{R}} = 1600 \text{ V} & T_{vi} = 25^{\circ}\text{C} & \\ \hline V_{\text{R}} = 1600 \text{ V} & T_{vi} = 150^{\circ}\text{C} & \\ \hline V_{\text{R}} = 1600 \text{ V} & T_{vi} = 25^{\circ}\text{C} & \\ \hline forward voltage drop & I_{\text{F}} = 200 \text{ A} & T_{vi} = 25^{\circ}\text{C} & \\ \hline I_{\text{F}} = 400 \text{ A} & \\ \hline I_{\text{F}} = 200 \text{ A} & T_{vi} = 125^{\circ}\text{C} & \\ \hline I_{\text{F}} = 400 \text{ A} & \\ \hline I_{\text{F}} = 200 \text{ A} & T_{vi} = 150^{\circ}\text{C} & \\ \hline I_{\text{F}} = 400 \text{ A} & \\ \hline I_{\text{F}} = 200 \text{ A} & \\ \hline T_{vi} = 150^{\circ}\text{C} & \\ \hline rectangular & d = 0.5 & \\ \hline threshold voltage \\ slope resistance & \\ \hline thermal resistance junction to case & \\ \hline thermal resistance junction to case & \\ \hline thermal resistance case to heatsink & \\ \hline total power dissipation & \\ \hline T_{\text{C}} = 25^{\circ}\text{C} & \\ \hline max. forward surge current & t = 10 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 150^{\circ}\text{C} & \\ \hline t = 8,3 \text{ ms}; (60 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 8,3 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 10 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 8,3 \text{ ms}; (60 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 10 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 8,3 \text{ ms}; (60 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 10 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 10 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 10 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 10 \text{ ms}; (50 \text{ Hz}), sine & \\ \hline T_{vi} = 45^{\circ}\text{C} & \\ \hline t = 10 \text{ ms}; 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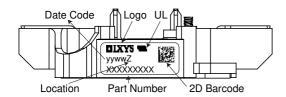
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Package SimBus A				Ratings				
Symbol	Definition	Conditions			min.	typ.	max.	Unit
	RMS current	per terminal					300	Α
T _{vj}	virtual junction temperature				-40		150	°C
T _{op}	operation temperature				-40		125	°C
T _{stg}	storage temperature				-40		125	°C
Weight						152		g
M _D	mounting torque				3		5	Nm
M _T	terminal torque				2.5		5	Nm
d _{Spp/App}		creepage distance on surface striking distance through air	terminal to terminal	14.0	10.0			mm
d _{Spb/Apb}	creepage distance on surra	ce striking distance through an	terminal to backside	14.0	10.0			mm
V	isolation voltage	t = 1 second			4800			V
		t = 1 minute	50/60 Hz, RMS; lıso∟ ≤ 1 mA		4000			V



Part description

M = Module

D = Diode M = Standard Rectifier

A = (up to 1800V) 200 = Current Rating [A] P = Phase leg 1600 = Reverse Voltage [V] SA = SimBus A

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MDMA200P1600SA	MDMA200P1600SA	Blister	9	510373

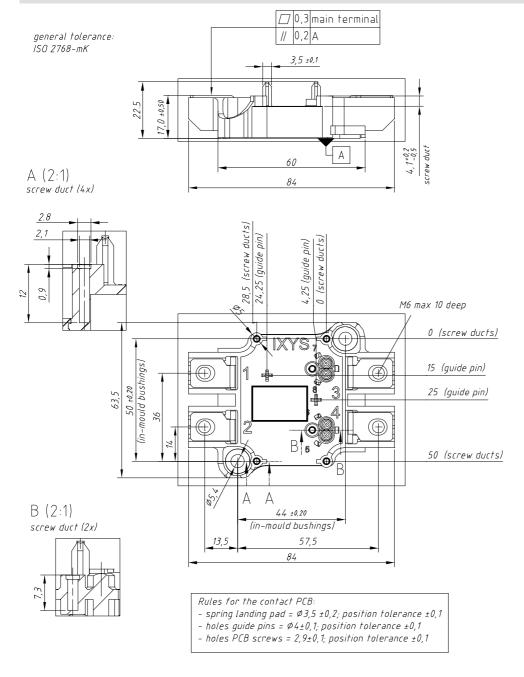
Equiva	alent Circuits for	Simulation	* on die level	$T_{VJ} = 150^{\circ}C$
	- Ro-	Rectifier		
V _{0 max}	threshold voltage	0.76		V
$\mathbf{R}_{0 \max}$	slope resistance *	0.8		mΩ

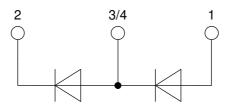
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Outlines SimBus A





T_{vJ} = 150°C

3

t [ms]

100

T_c [°C]

t_i (s)

0.0005

0.0400

0.5500

1.5000

4 5 6 7 8 10

DC =

1

0.5

0.4

0.33_

0.17

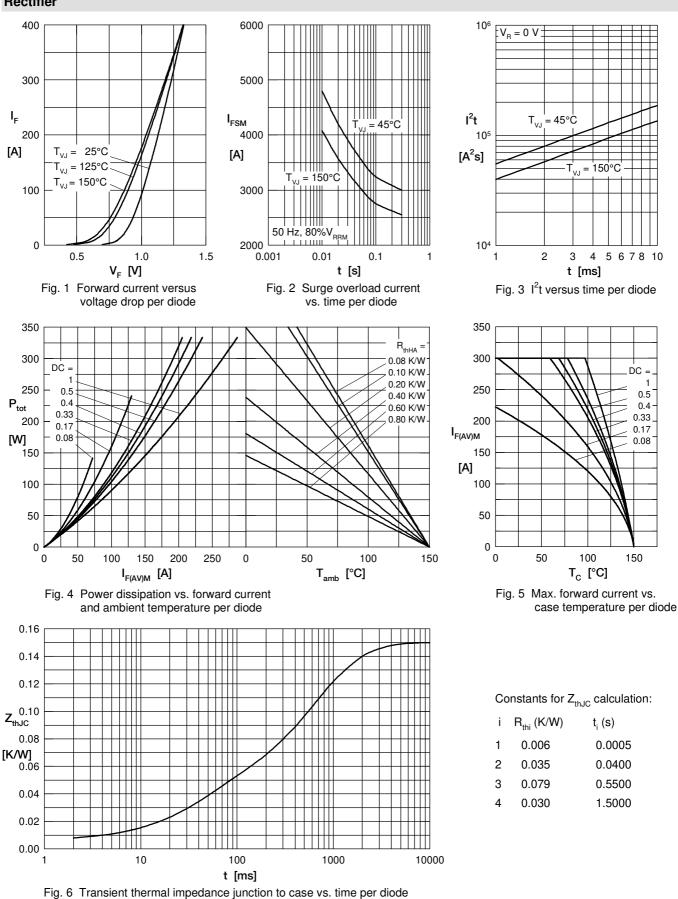
0.08

150



Rectifier

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Data according to IEC 60747and per semiconductor unless otherwise specified

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