



Electrically isolated base plate
Industrial standard package
Simplified mechanical design, rapid assembly
Pressure contact

**Double Diode Module
For Phase Control
MDx-320-18-C**

Average forward current		I_{FAV}	320 A		
Repetitive peak reverse voltage		V_{RRM}	1000 ÷ 1800 V		
V_{RRM}, V	1000	1200	1400	1600	1800
Voltage code	10	12	14	16	18
$T_j, ^\circ C$	- 40 ÷ 150				

MD3	MD4	MD5

All dimensions in millimeters (inches)

JSC "PROTON-ELECTROTEX"

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MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{FAV}	Average forward current	A	320 350	$T_c = 105\text{ }^\circ\text{C}$; $T_c = 100\text{ }^\circ\text{C}$; 180° half-sine wave; 50 Hz
I_{FRMS}	RMS forward current	A	502	$T_c = 105\text{ }^\circ\text{C}$; 180° half-sine wave; 50 Hz
I_{FSM}	Surge forward current	kA	11.0 13.0	$T_j = T_{j\max}$ $T_j = 25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ($t_p = 10\text{ ms}$); single pulse; $V_R = 0\text{ V}$;
			12.0 14.0	$T_j = T_{j\max}$ $T_j = 25\text{ }^\circ\text{C}$ 180° half-sine wave; 60 Hz ($t_p = 8.3\text{ ms}$); single pulse; $V_R = 0\text{ V}$;
I^2t	Safety factor	$A^2s \cdot 10^3$	605 845	$T_j = T_{j\max}$ $T_j = 25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ($t_p = 10\text{ ms}$); single pulse; $V_R = 0\text{ V}$;
			595 810	$T_j = T_{j\max}$ $T_j = 25\text{ }^\circ\text{C}$ 180° half-sine wave; 60 Hz ($t_p = 8.3\text{ ms}$); single pulse; $V_R = 0\text{ V}$;
BLOCKING				
V_{RRM}	Repetitive peak reverse voltages	V	1000÷1800	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz;
V_{RSM}	Non-repetitive peak reverse voltages	V	1100÷1900	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz; single pulse;
V_R	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j = T_{j\max}$;
THERMAL				
T_{stg}	Storage temperature	$^\circ\text{C}$	- 40 ÷ 125	
T_j	Operating junction temperature	$^\circ\text{C}$	- 40 ÷ 150	
MECHANICAL				
a	Acceleration under vibration	m/s^2	50	

CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
ON-STATE				
V_{FM}	Peak forward voltage, max	V	1.42	$T_j = 25\text{ }^\circ\text{C}$; $I_{FM} = 1005\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	0.75	$T_j = T_{j\max}$;
r_T	Forward slope resistance, max	$m\Omega$	0.400	$0.5 \pi I_{FAV} < I_T < 1.5 \pi I_{FAV}$
BLOCKING				
I_{RRM}	Repetitive peak reverse current, max	mA	40	$T_j = T_{j\max}$; $V_R = V_{RRM}$
THERMAL				
R_{thjc}	Thermal resistance, junction to case			180° half-sine wave, 50 Hz
	per module	$^\circ\text{C/W}$	0.0650	
	per arm	$^\circ\text{C/W}$	0.1300	
R_{thch}	Thermal resistance, case to heatsink			
	per module	$^\circ\text{C/W}$	0.0200	
	per arm	$^\circ\text{C/W}$	0.0400	

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INSULATION					
V _{ISOL}	Insulation test voltage	kV	3.00	Sine wave, 50 Hz; RMS	t=1 min
			3.60		t=1 sec
MECHANICAL					
M ₁	Mounting torque (M6) ¹⁾	Nm	6.00	Tolerance ± 15%	
M ₂	Terminal connection torque (M8) ¹⁾	Nm	12.00	Tolerance ± 10%	
w	Weight	g	800		

PART NUMBERING GUIDE						NOTES					
MD	3	-	320	-	18	-	C	-	N		1) The screws must be lubricated
1	2		3		4		5		6		
1. MD - Rectifier Diode 2. Circuit Schematic 3. Average Forward Current, A 4. Voltage Code 5. Package Type (M.C) 6. Ambient Conditions: N – Normal											

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