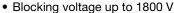


Three Phase Bridge, 160 A (Power Modules)



-							
PRIMARY CHARACTERISTICS							
I ₀	160 A at 118 °C						
V_{RRM}	1600 V to 1800 V						
Package	MTC						
Circuit configuration	Three phase bridge						

FEATURES





High thermal conductivity package, electrically compliant insulated case

- Excellent power volume ratio
- 3600 V_{RMS} isolating voltage
- UL approved file E78996
- Designed for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

DESCRIPTION

A range of extremely compact, encapsulated three phase bridge rectifiers offering efficient and reliable operation. They are intended for use in general purpose and heavy duty applications.

MAJOR RATINGS AND CHARACTERISTICS						
SYMBOL	CHARACTERISTICS	VALUES	UNITS			
. (1)		257	A			
I _O ⁽¹⁾	T _C	85	°C			
1	50 Hz	1540				
I _{FSM}	60 Hz	1610	Α Α			
l ² t	50 Hz	11 860	A2-			
1-1	60 Hz	10 825	A ² s			
I ² √t		118 580	A ² √s			
V _{RRM}	Range	1600 to 1800	V			
T _{Stg}	Range	-40 to +125	°C			
T _J	Range	-40 to +150	°C			

Note

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS									
TYPE NUMBER	NUMBER VOLTAGE CODE VRRM, MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V		V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I _{RRM} MAXIMUM AT T _J = MAXIMUM mA					
VS-161MTC 160		1600	1700	12					
V3-1011VITC	180	1800	1900	12					

⁽¹⁾ Maximum output current must be limited to 220 A to do not exceed the maximum temperature of terminals



FORWARD CONDUCTION						
PARAMETER	SYMBOL		TEST CONDIT	VALUES	UNITS	
Maximum DC output current	I.	120° root oo	120° rect. conduction angle		160	Α
at case temperature	I _O	120 1601.00	induction angle		118	°C
		t = 10 ms	No voltage		1540	А
Maximum peak, one-cycle forward,	I _{FSM}	t = 8.3 ms	reapplied	Initial T _J = T _J maximum	1610	
non-repetitive surge current		t = 10 ms	100 % V _{RRM} reapplied		1295	
		t = 8.3 ms			1355	
Maximum I ² t for fusing		t = 10 ms	No voltage reapplied		11 860	- A ² s
	l ² t	t = 8.3 ms			10 825	
		t = 10 ms	100 % V _{RRM}		8385	
		t = 8.3 ms	reapplied		7620	
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			118 580	A²√s
Low level value of threshold voltage	V _{FT(TO)1}	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), T_J maximum			0.81	V
High level value of threshold voltage	V _{FT(TO)2}	$(I > \pi \times I_{F(AV)})$, T _J maximum	0.98	T v	
Low level value of forward slope resistance	r _{f1}	16.7 % x π x I _{F(AV)} < I < π x I _{F(AV)} , T _J maximum			3.89	mΩ
High level of forward slope resistance	r _{f2}	$(I > \pi \times I_{F(AV)}), T_J$ maximum			3.68	11122
Maximum forward voltage drop	V_{FM}	$I_{pk} = 300 \text{ A}, T_J = 25 ^{\circ}\text{C}, \text{ per junction}$			1.85	V
RMS isolation voltage	V _{ISOL}	T _J = 25 °C, all terminal shorted f = 50 Hz, t = 1 s 3600			l v	

THERMAL AND MECHANICAL SPECIFICATIONS							
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS		
Maximum junction operatir	ıg	TJ		-40 to +150	°C		
Maximum storage temperature		T _{Stg}		-40 to +125			
Maximum thermal resistance, junction to case		В	DC operation per module	0.058			
		R_{thJC}	DC operation per junction	0.35	°C/W		
Typical thermal resistance, case to heatsink		R _{thCS}	Per module Mounting surface smooth, flat, and greased	0.03			
Mounting torque to heatsink			A mounting compound is recommended and the	5	Nm		
± 15 %	to terminal		torque should be rechecked after a period of 3 h to allow for the spread of the compound. Lubricated	5	INIII		
Approximate weight			threads.	235	g		

△R CONDUCTION PER JUNCTION											
DEVICES	SINE HALF WAVE CONDUCTION RECTANGULAR WAVE CONDUCTION				UNITS						
DEVICES	180°	120°	90°	60°	30°	180°	120°	90°	60°	30°	UNITS
VS-161MTC Series	0.054	0.061	0.076	0.107	0.165	0.039	0.064	0.083	0.111	0.167	°C/W

Note

• Table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

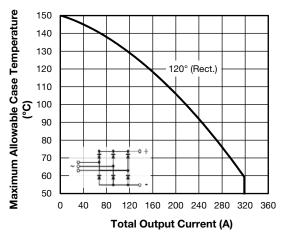
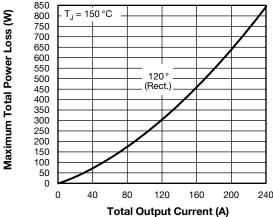
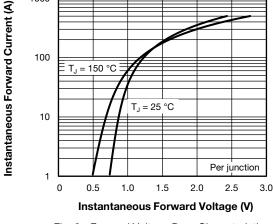


Fig. 1 - Current Ratings Characteristics





1000

Fig. 2 - Forward Voltage Drop Characteristics

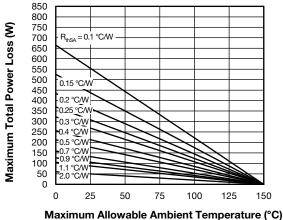


Fig. 3 - Total Power Loss Characteristics

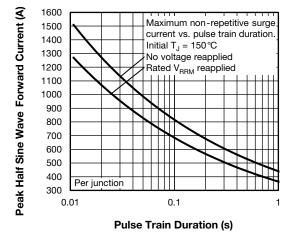


Fig. 4 - Maximum Non-Repetitive Surge Current

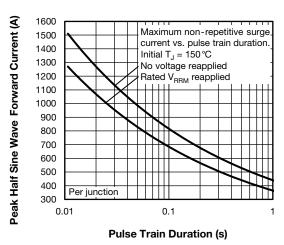


Fig. 5 - Maximum Non-Repetitive Surge Current

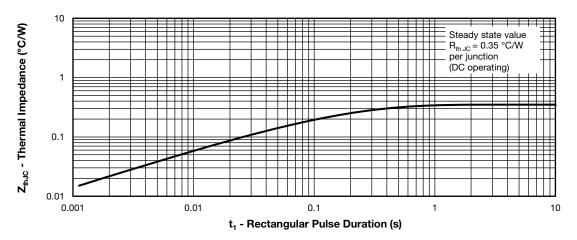
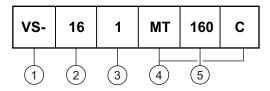


Fig. 6 - Thermal Impedance Z_{thJC} Characteristic

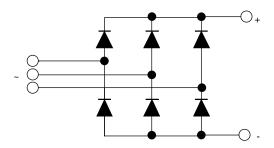
ORDERING INFORMATION TABLE

Device code



- 1 Vishay Semiconductors product
- 2 Current rating code: 16 = 160 A (average)
- Circuit configuration (three phase diodes bridge)
- Package indicator
- Voltage code x 10 = V_{RRM} (see Voltage Ratings table)

CIRCUIT CONFIGURATION

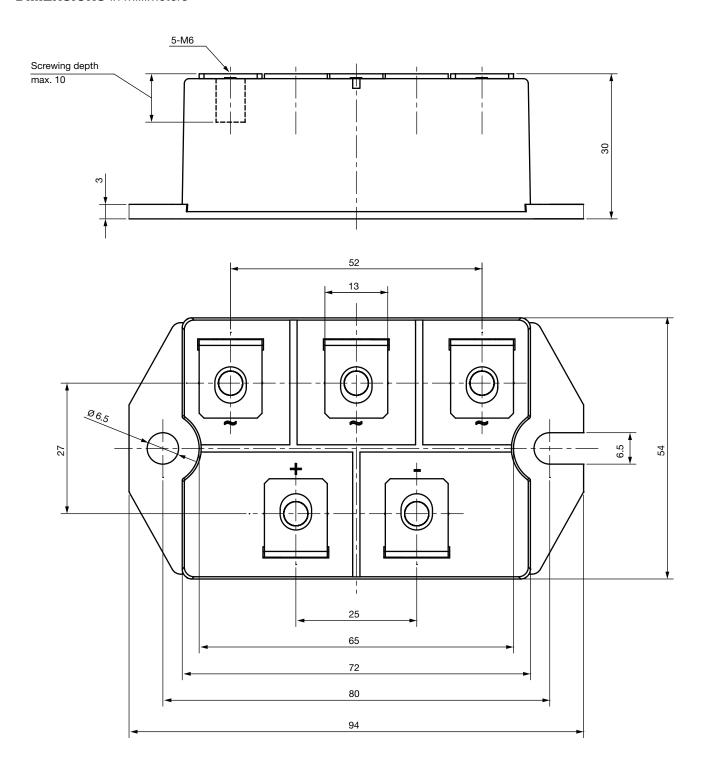


LINKS TO RELATED DOCUMENTS				
Dimensions	www.vishay.com/doc?96003			



MTC

DIMENSIONS in millimeters





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