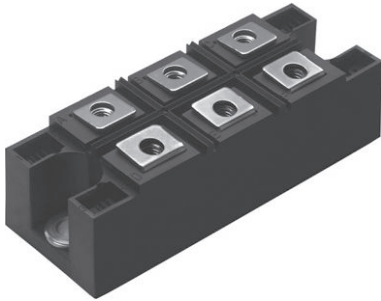


Three Phase Bridge (Power Modules), 40 A



MTK

FEATURES

- Package fully compatible with the industry standard INT-A-PAK power modules series
- High thermal conductivity package, electrically insulated case
- Excellent power volume ratio, outline for easy connections to power transistor and IGBT modules
- 4000 V_{RMS} isolating voltage
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

PRIMARY CHARACTERISTICS	
I_o	40 A
V_{RRM}	1600 V
Package	MTK
Circuit configuration	Three phase bridge

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
I_o		40 (50)	A
	T_c	85 (60)	°C
I_{FSM}	50 Hz	270	A
	60 Hz	280	
I^2t	50 Hz	365	kA ² s
	60 Hz	325	
$I^2\sqrt{t}$		3650	kA ² √s
V_{RRM}		1600	V
T_{Stg}	Range	-40 to +150	°C
T_J			

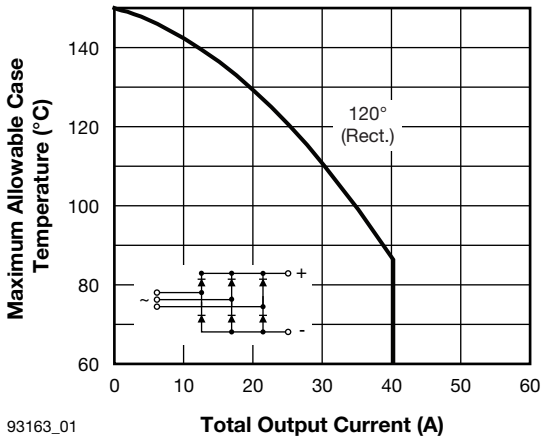
ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT T_J MAXIMUM mA
40MT..K	160	1600	1700	10



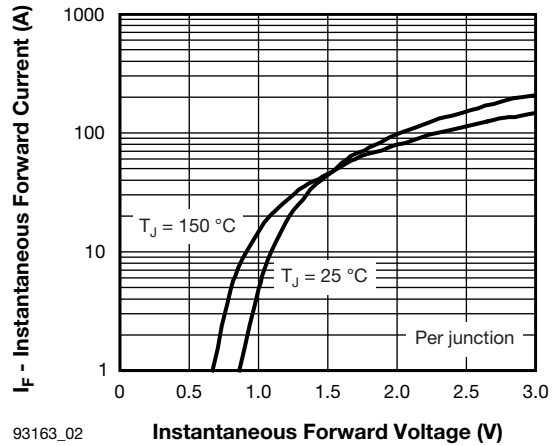
FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum DC output current at case temperature	I _O	120° rect. conduction angle		40 (50)	A	
				85 (60)	°C	
Maximum peak, one-cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reapplied	270	A	
		t = 8.3 ms		Initial T _J = T _J maximum		280
		t = 10 ms	100 % V _{RRM} reapplied			225
		t = 8.3 ms				240
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		365	kA ² s
		t = 8.3 ms		100 % V _{RRM} reapplied	325	
		t = 10 ms	253			
		t = 8.3 ms	240			
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			3650	A ² √s
Low level value of threshold voltage	V _{F(TO)1}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J maximum		0.78	V	
High level value of threshold voltage	V _{F(TO)2}	(I > π × I _{F(AV)}), T _J maximum		0.9		
Low level value of forward slope resistance	r _{f1}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J maximum		15	mΩ	
High level value of forward slope resistance	r _{f2}	(I > π × I _{F(AV)}), T _J maximum		14.1		
Maximum forward voltage drop	V _{FM}	I _{pk} = 100 A, T _J = 25 °C, t _p = 400 μs single junction		2.02	V	
RMS isolation voltage	V _{ISOL}	T _J = 25 °C, all terminal shorted f = 50 Hz, t = 1 s		4000		

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction operating and storage temperature range	T _J , T _{Stg}			-40 to +150	°C
Maximum thermal resistance, junction to case	R _{thJC}	DC operation per module		0.41	K/W
		DC operation per junction		2.46	
		120° rect. conduction angle per module		0.45	
		120° rect. conduction angle per junction		2.7	
Maximum thermal resistance, case to heatsink per module	R _{thCS}	Mounting surface smooth, flat and greased		0.03	
Mounting torque ± 10 %	to heatsink	A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound. Lubricated threads.		4 to 6	Nm
	to terminal			3 to 4	
Approximate weight				176	g



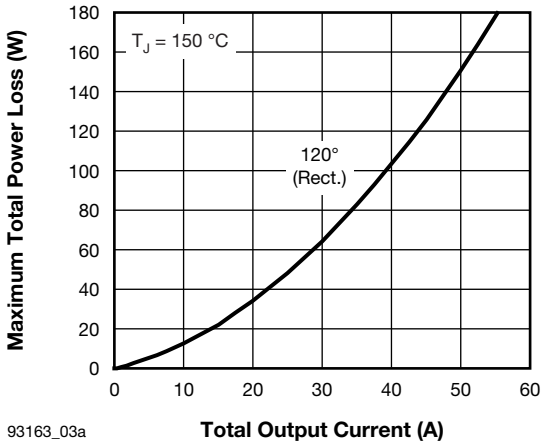
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Total Output Current (A)
Fig. 1 - Current Ratings Characteristics



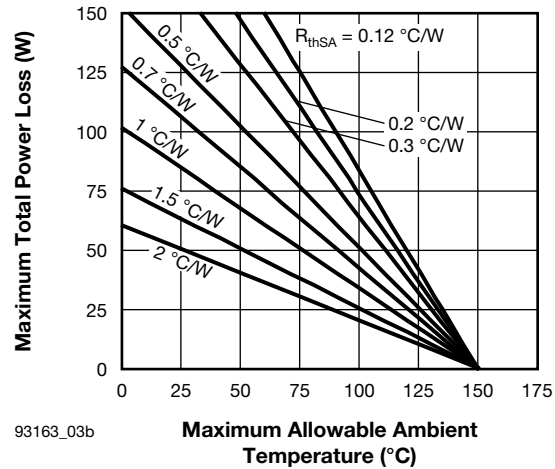
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Instantaneous Forward Voltage (V)
Fig. 2 - Forward Voltage Drop Characteristics



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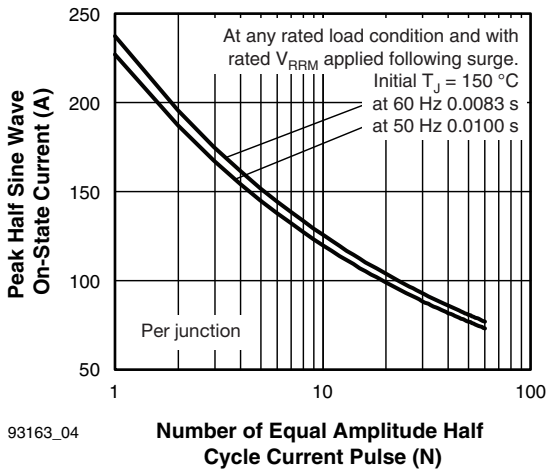
Total Output Current (A)



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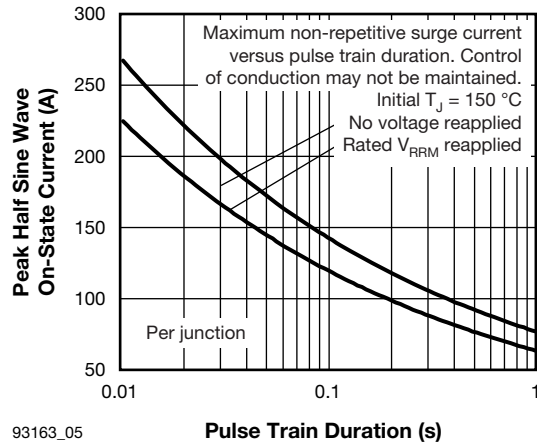
Maximum Allowable Ambient Temperature (°C)

Fig. 3 - Total Power Loss Characteristics



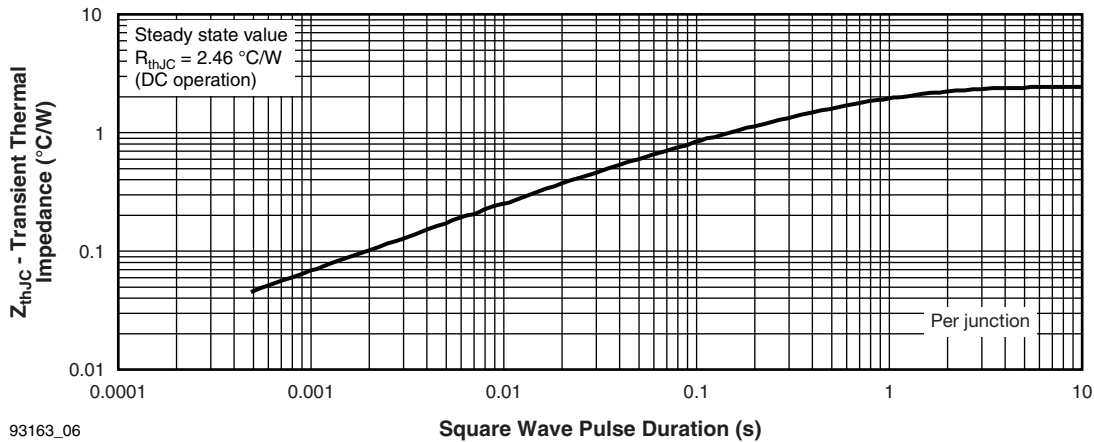
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Number of Equal Amplitude Half Cycle Current Pulse (N)
Fig. 4 - Maximum Non-Repetitive Surge Current



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Pulse Train Duration (s)
Fig. 5 - Maximum Non-Repetitive Surge Current

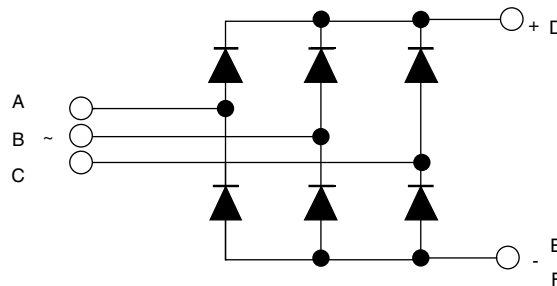

 Fig. 6 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-	4	0	MT	160	K	PbF		
	①	②	③	⑤	⑥		⑦		
	1	-	Vishay Semiconductors product	2	-	Current rating code: 4 = 40 A (average)	3	-	Three phase diodes bridge
	4	-	Essential part number	5	-	Voltage code x 10 = V_{RRM} (see Voltage Ratings table)	6	-	PbF = lead (Pb)-free

Note

- To order the optional hardware go to www.vishay.com/doc?95172

CIRCUIT CONFIGURATION

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95004
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