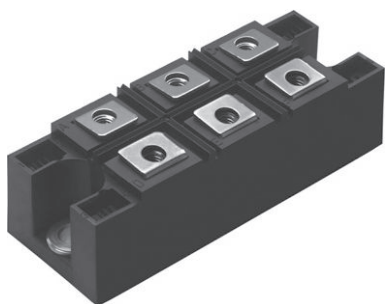


Three Phase Bridge (Power Modules), 40 A



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 ² _t	50 Hz	365	kA ² s
	60 Hz	325	
I ² _{√t}		3650	kA ² √s
V _{RRM}		1600	V
T _{Stg}	Range	-40 to +150	°C
T _J			

ELECTRICAL SPECIFICATIONS

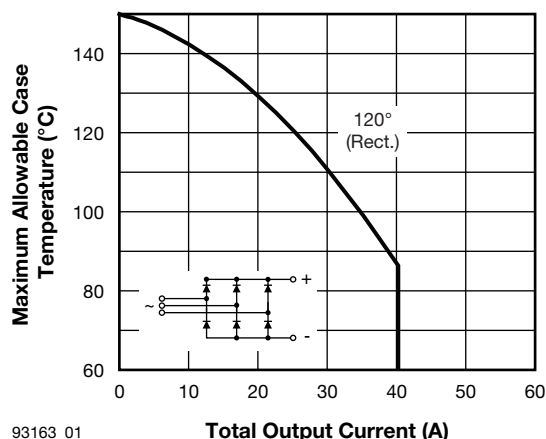
VOLTAGE RATINGS

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



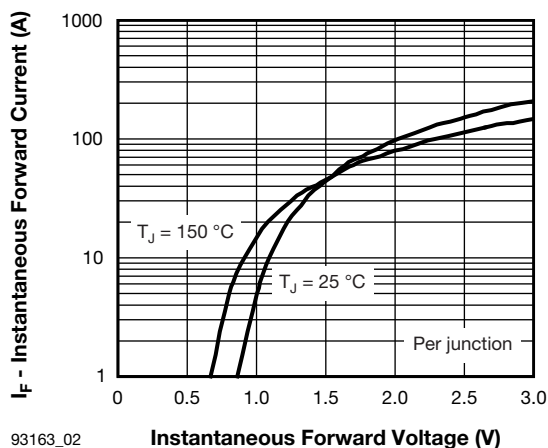
FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum DC output current at case temperature	I _O	120° rect. conduction angle			40 (50)	A
					85 (60)	°C
Maximum peak, one-cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reapplied	Initial T _J = T _J maximum	270	A
		t = 8.3 ms			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			325	
		t = 10 ms	100 % V _{RRM} reapplied		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 % x π x I _{F(AV)} < I < π x I _{F(AV)}), T _J maximum			0.78	V
High level value of threshold voltage	V _{F(TO)2}	(I > π x I _{F(AV)}), T _J maximum			0.9	
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			15	mΩ
High level value of forward slope resistance	r _{f2}	(I > π x 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 to terminal	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
				3 to 4	
Approximate weight				176	g



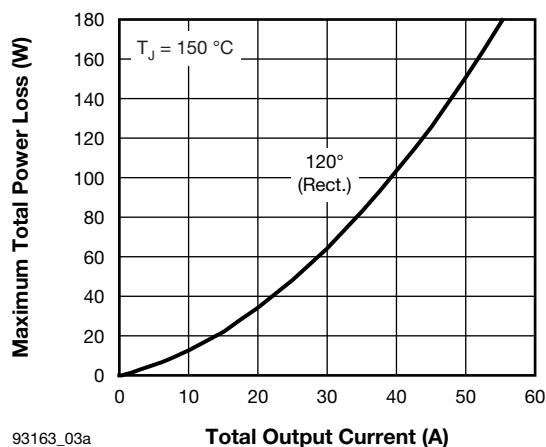
93163_01

Fig. 1 - Current Ratings Characteristics

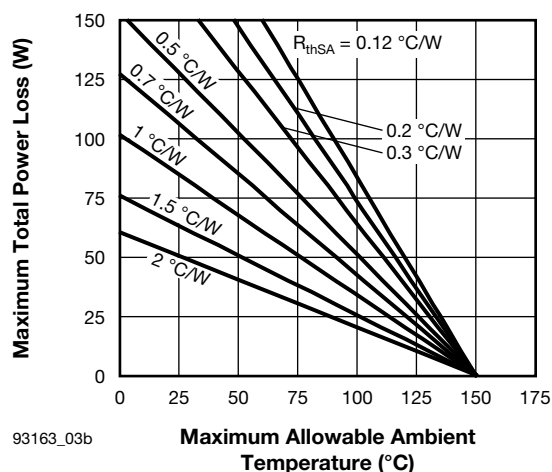


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Fig. 2 - Forward Voltage Drop Characteristics

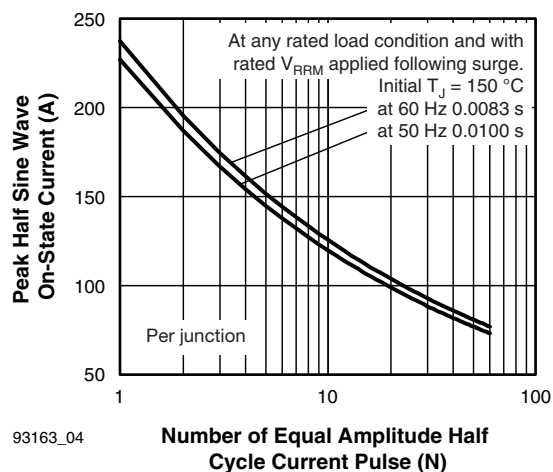


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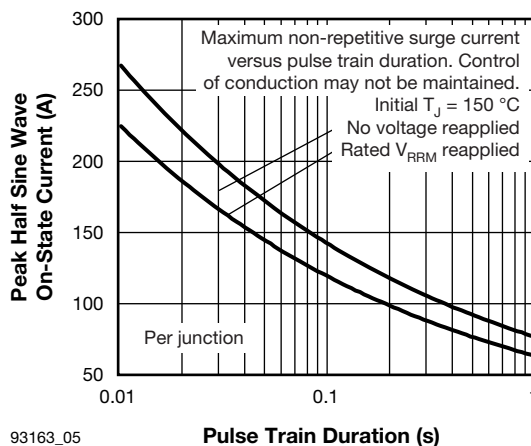
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Fig. 3 - Total Power Loss Characteristics



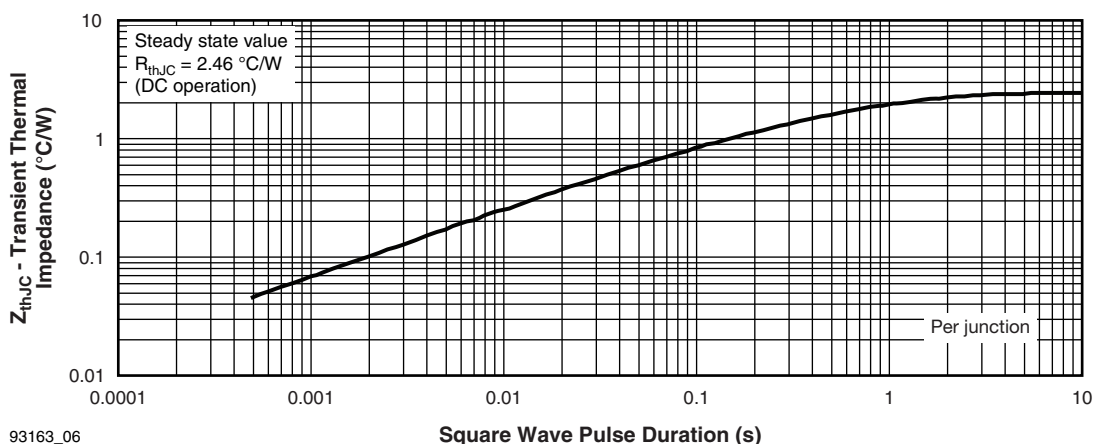
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Fig. 4 - Maximum Non-Repetitive Surge Current



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Fig. 5 - Maximum Non-Repetitive Surge Current


Fig. 6 - Thermal Impedance Z_{thJC} Characteristics

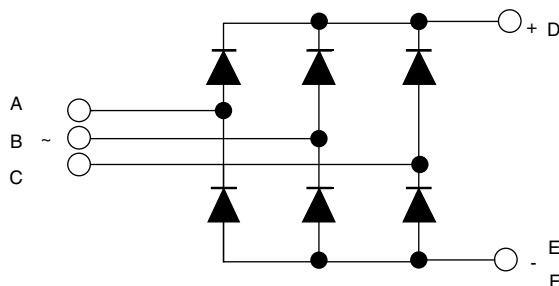
ORDERING INFORMATION TABLE

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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