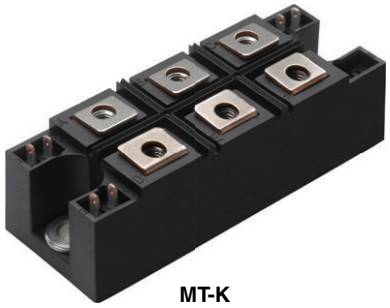
Three Phase Bridge (Power Modules), 90 A/110 A



MT-K

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
- UL E78996 approved
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

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.

PRODUCT SUMMARY	
I_O	90 A to 110 A
V_{RRM}	800 V to 1600 V
Package	MT-K
Circuit	Three phase bridge

MAJOR RATINGS AND CHARACTERISTICS				
SYMBOL	CHARACTERISTICS	90MT.K	110MT.K	UNITS
I_O		90 (120)	110 (150)	A
	T_C	90 (61)	90 (57)	°C
I_{FSM}	50 Hz	770	950	A
	60 Hz	810	1000	
I^2t	50 Hz	3000	4500	A^2s
	60 Hz	2700	4100	
$I^2\sqrt{t}$		30 000	45 000	$A^2\sqrt{s}$
V_{RRM}	Range	800 to 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
VS-90-110MT..K	80	800	900	10
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

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FORWARD CONDUCTION							
PARAMETER	**SYMBOL**	**TEST CONDITIONS**			**90MT.K**	**110MT.K**	**UNITS**
Maximum DC output current at case temperature	I_O	120° rect. conduction angle			90 (120)	110 (150)	A
					90 (61)	90 (57)	°C
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reapplied	Initial $T_J = T_J$ maximum	770	950	A
		t = 8.3 ms			810	1000	
		t = 10 ms	100 % V_{RRM} reapplied		650	800	
		t = 8.3 ms			680	840	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		3000	4500	A^2s
		t = 8.3 ms			2700	4100	
		t = 10 ms	100 % V_{RRM} reapplied		2100	3200	
		t = 8.3 ms			1900	2900	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reapplied			30 000	45 000	$A^2\sqrt{s}$
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			0.89	0.81	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), T_J maximum			1.05	0.99	
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			5.11	4.37	mΩ
High level value of forward slope resistance	r_{f2}	(I > π x $I_{F(AV)}$), T_J maximum			4.64		
Maximum forward voltage drop	V_{FM}	I_{pk} = 150 A, T_J = 25 °C t_p = 400 µs single junction			1.6	1.4	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**	**90MT.K**	**110MT.K**	**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	0.21	0.18	°C/W
		DC operation per junction	1.26	1.07	
		120° rect. conduction angle per module	0.25	0.21	
		120° rect. conduction angle per junction	1.47	1.25	
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
Mounting torque ± 10 % to terminal			3 to 4		
Approximate weight			176		g

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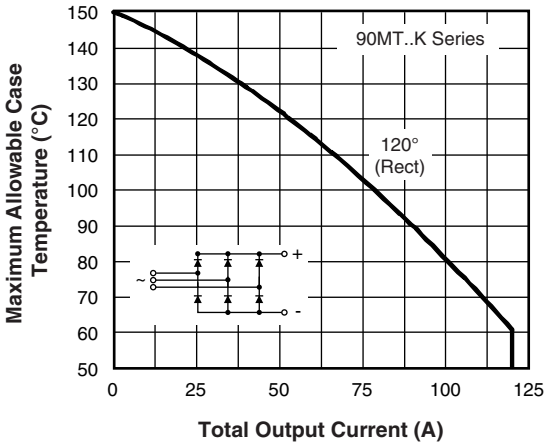


Fig. 1 - Current Ratings Characteristics

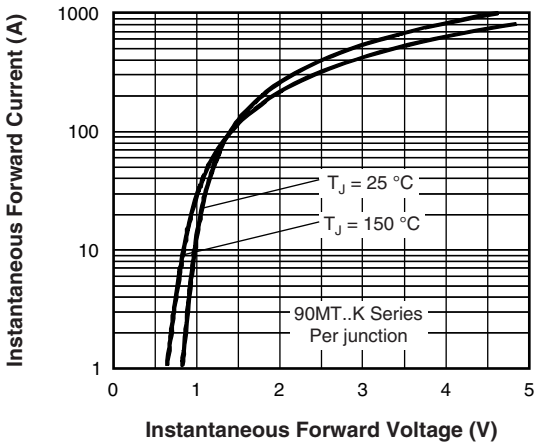
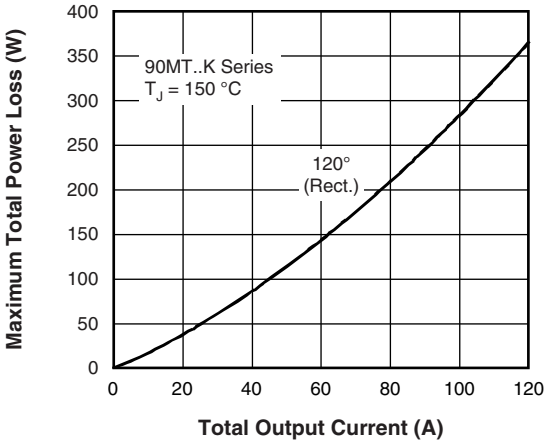


Fig. 2 - Forward Voltage Drop Characteristics



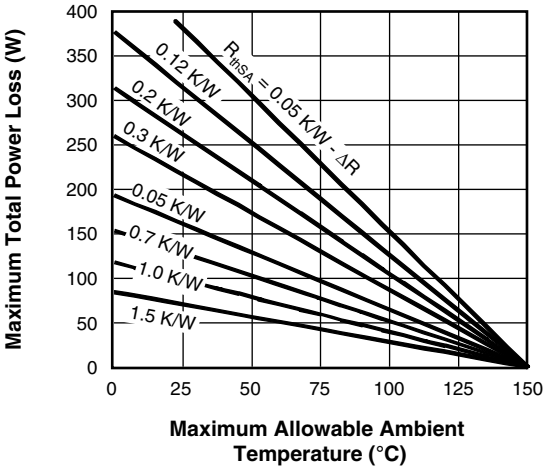


Fig. 3 - Total Power Loss Characteristics

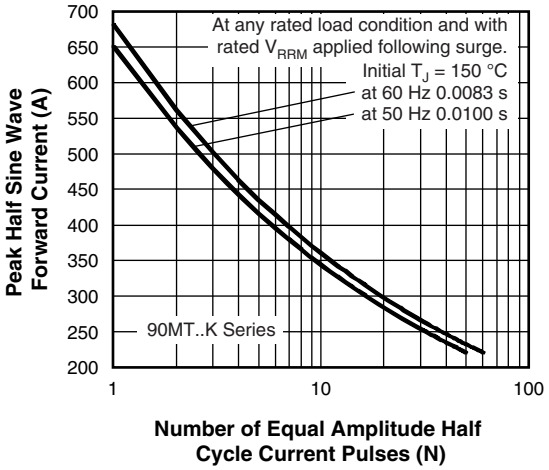


Fig. 4 - Maximum Non-Repetitive Surge Current

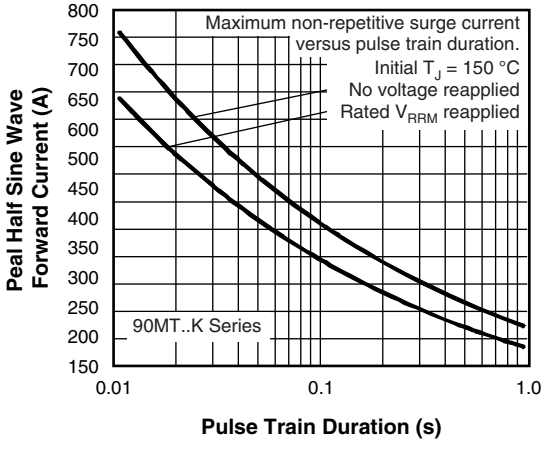


Fig. 5 - Maximum Non-Repetitive Surge Current

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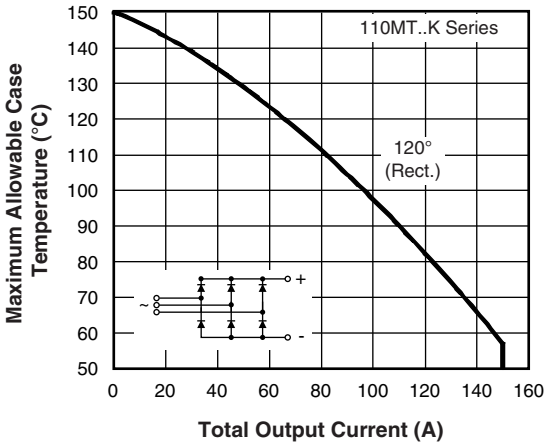


Fig. 6 - Current Ratings Characteristics

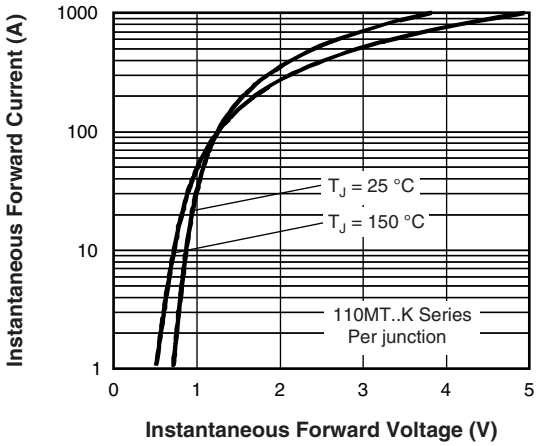
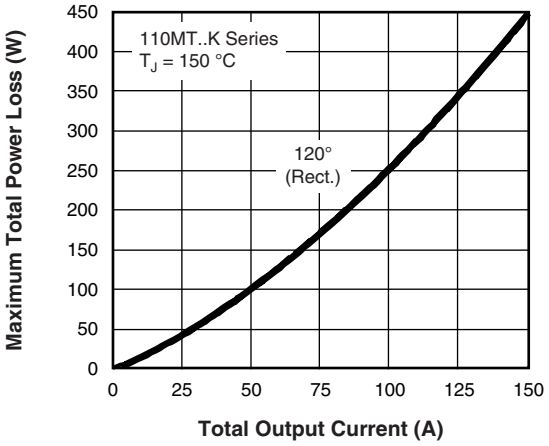


Fig. 7 - Forward Voltage Drop Characteristics



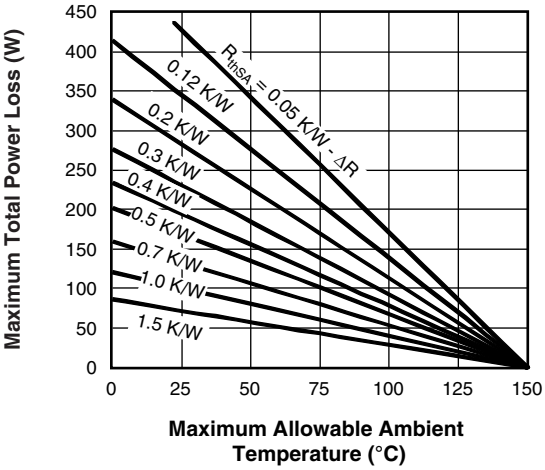


Fig. 8 - Total Power Loss Characteristics

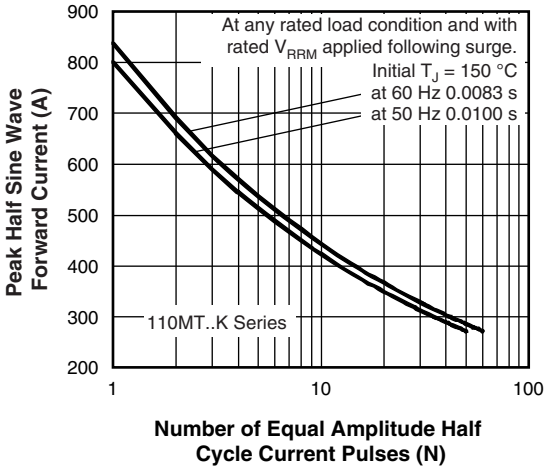


Fig. 9 - Maximum Non-Repetitive Surge Current

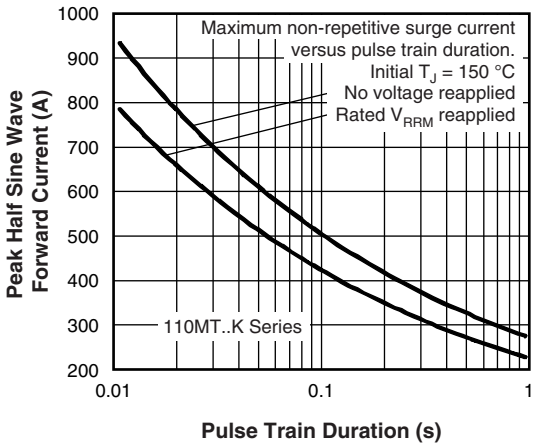


Fig. 10 - Maximum Non-Repetitive Surge Current

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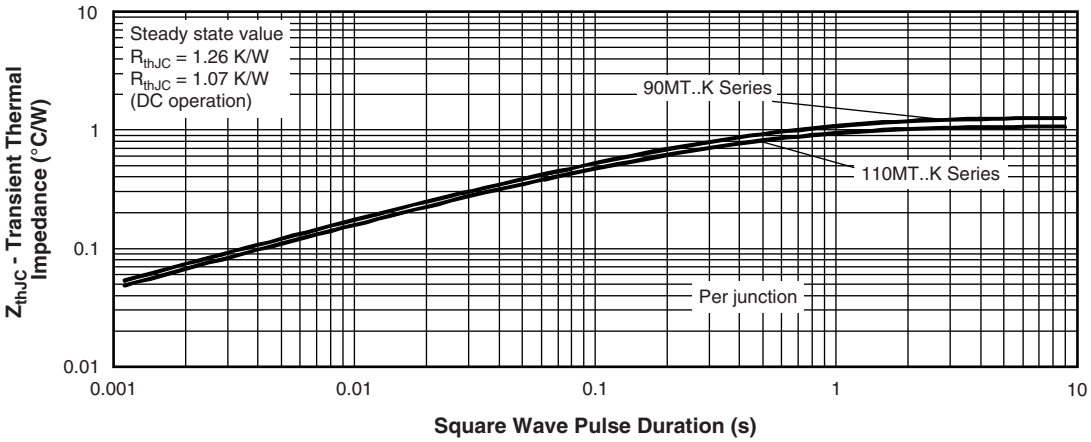


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic

ORDERING INFORMATION TABLE

Device code

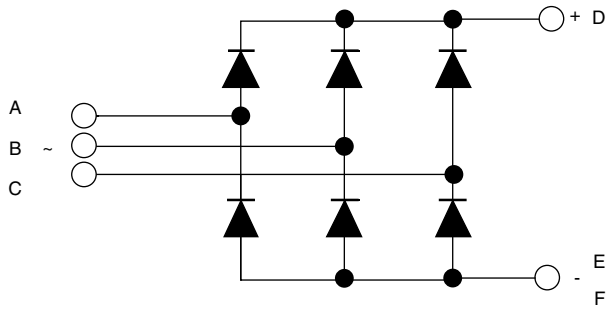
VS-	11	0	MT	160	K	PbF
1	2	3	4	5		6

- 1 - Vishay Semiconductors product
- 2 - Current rating code: 9 = 90 A (average)
  11 = 110 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

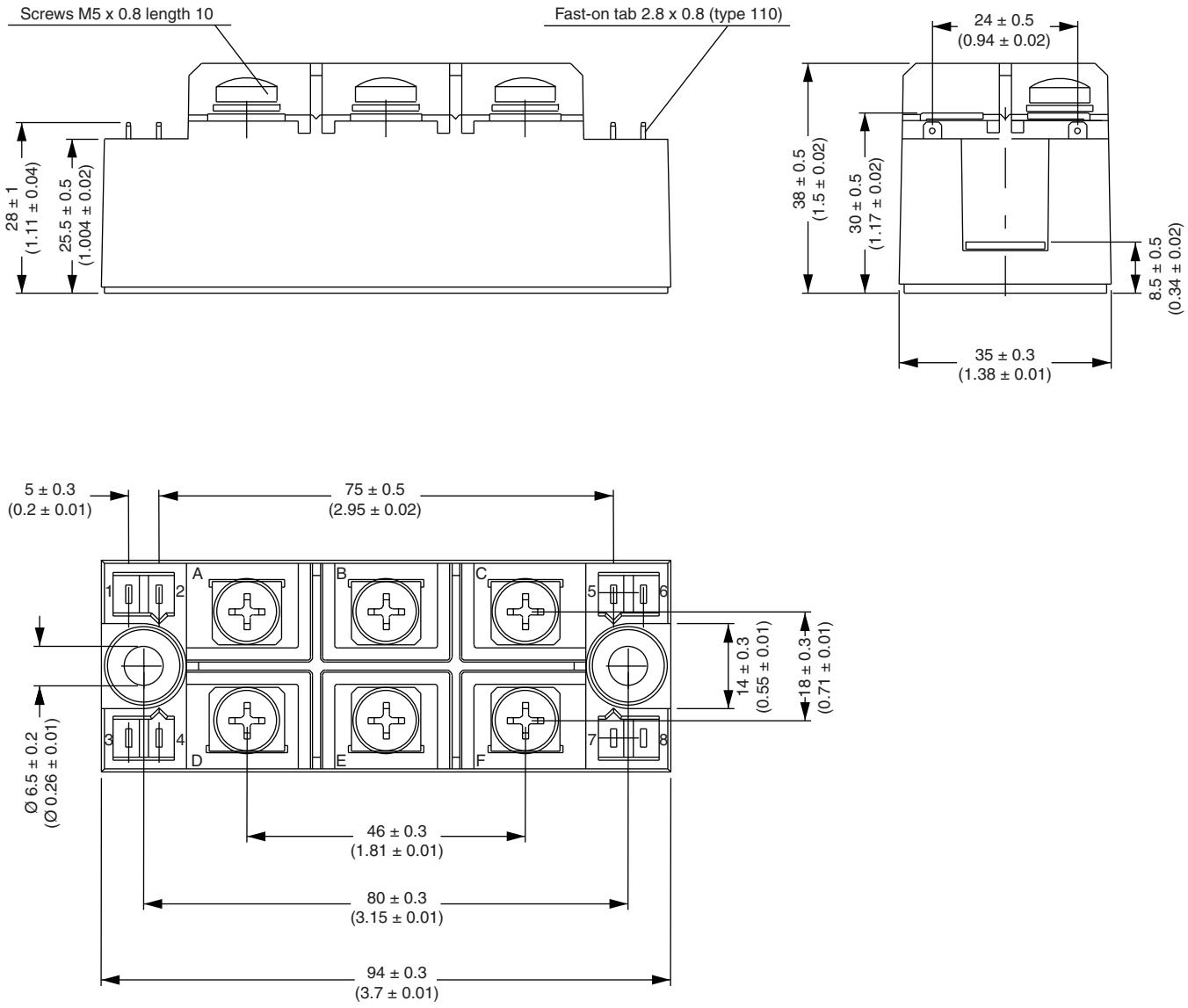


LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95004

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MTK (with and without optional barrier)

DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)



DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)

