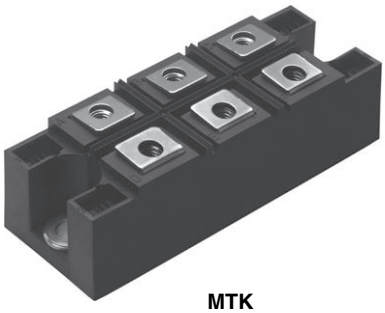
Three Phase Bridge (Power Module), 200 A



MTK

FEATURES

- Package fully compatible with the industry standard INT-A-PAK power modules series
- High thermal conductivity package, electrically insulated case
- Low power loss
- 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

RoHS COMPLIANT

DESCRIPTION

It extends the existing range of MT...KB bridges an extremely compact, encapsulated three phase bridge rectifiers offering efficient and reliable operation. They are intended for use in general purpose and heavy duty applications.

PRIMARY CHARACTERISTICS	
I_O	200 A
V_{RRM}	400 V
Package	MTK
Circuit configuration	Three phase bridge

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
I_O		200	A
	T_C	85	°C
I_{FSM}	50 Hz	1800	A
	60 Hz	1880	
I^2t	50 Hz	16.2	kA^2s
	60 Hz	14.7	
$I^2\sqrt{t}$		162	$kA^2\sqrt{s}$
V_{RRM}		400	V
T_{Stg}	Range	-40 to +150	°C
T_J			

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS			
TYPE NUMBER	V_{RRM}, MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM}, MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT T_J = 150 °C mA
VS-200MT40KPbF	400	500	6

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FORWARD CONDUCTION						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**			**VALUES**	**UNITS**
Maximum RMS output current at case temperature	I_O	120° rect. conduction angle			200	A
					85	°C
Maximum peak, one-cycle forward. non-repetitive on state surge current	I_{TSM}	t = 10 ms	No voltage reapplied	Initial $T_J = T_J$ maximum	1800	A
		t = 8.3 ms			1880	
		t = 10 ms	100 % V_{RRM} reapplied		1520	
		t = 8.3 ms			1590	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		16.2	kA^2s
		t = 8.3 ms			14.7	
		t = 10 ms	100 % V_{RRM} reapplied		11.6	
		t = 8.3 ms			12.6	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reapplied			162	$kA^2\sqrt{s}$
Value of threshold voltage	$V_{F(TO)}$	T_J maximum			0.76	V
Slope resistance	r_t				2.4	mΩ
Maximum forward voltage drop	V_{FM}	I_{pk} = 200 A, T_J = 25 °C, t_p = 400 µs single junction			1.40	V
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	0.12	K/W
		DC operation per junction	0.69	
		120° rect. conduction angle per module	0.14	
		120° rect. conduction angle per junction	0.82	
Maximum thermal resistance, case to heatsink per module	R_{thCS}	Mounting surface smooth, flat and greased. Heatsink compound thermal conductivity = 0.42 W/mK	0.033	
Mounting torque ± 10 % to heatsink		A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow or the spread of the compound. Lubricated threads.	4 to 6	Nm
Approximate weight			176	g

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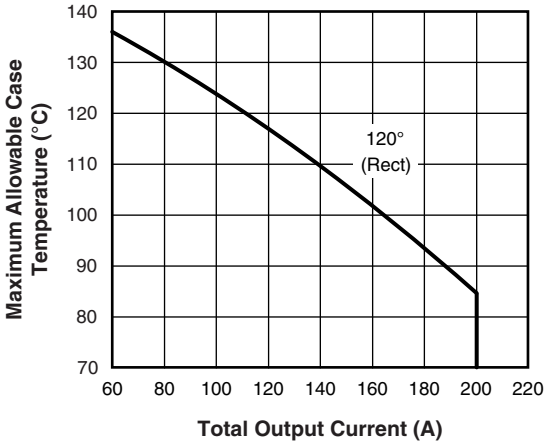


Fig. 1 - Current Rating Characteristics

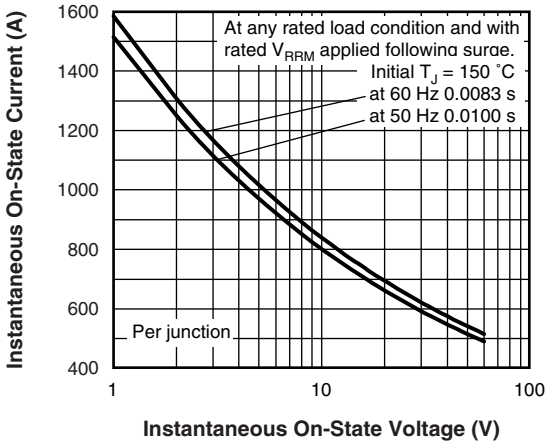


Fig. 3 - Maximum Non-Repetitve Surge Current

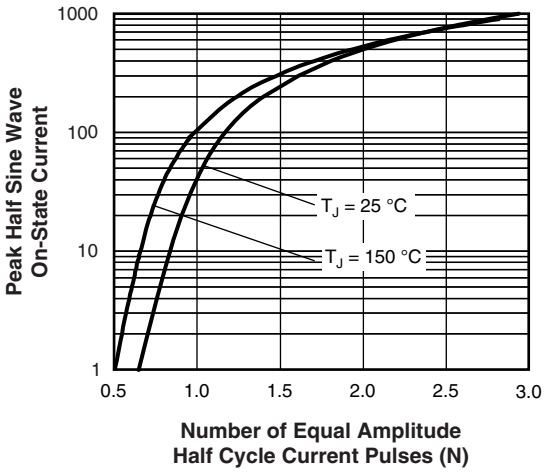


Fig. 2 - On-State Voltage Drop Characteristics

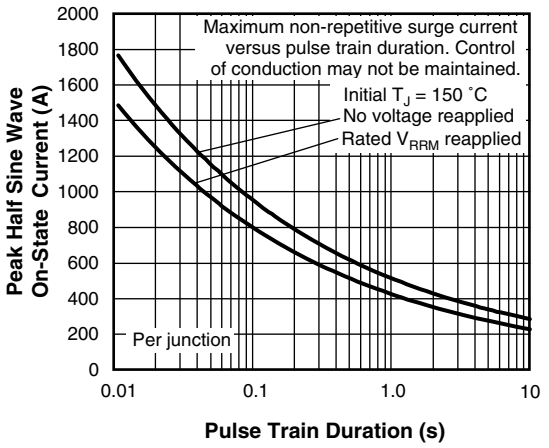
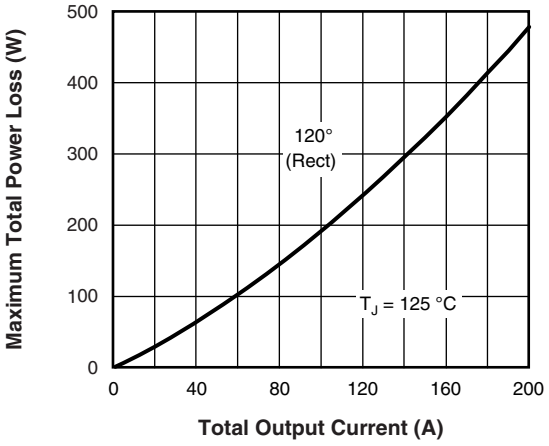


Fig. 4 - Maximum Non-Repetitive Surge Current



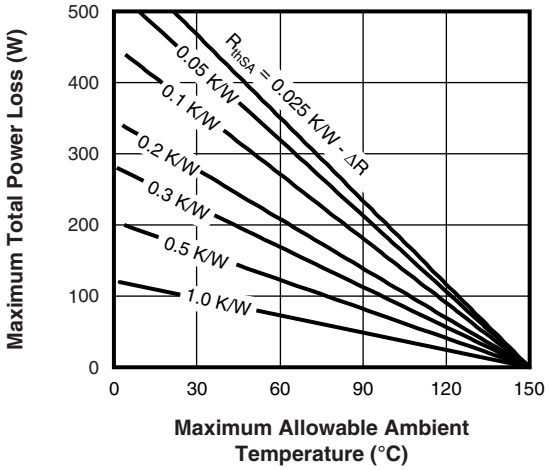


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)

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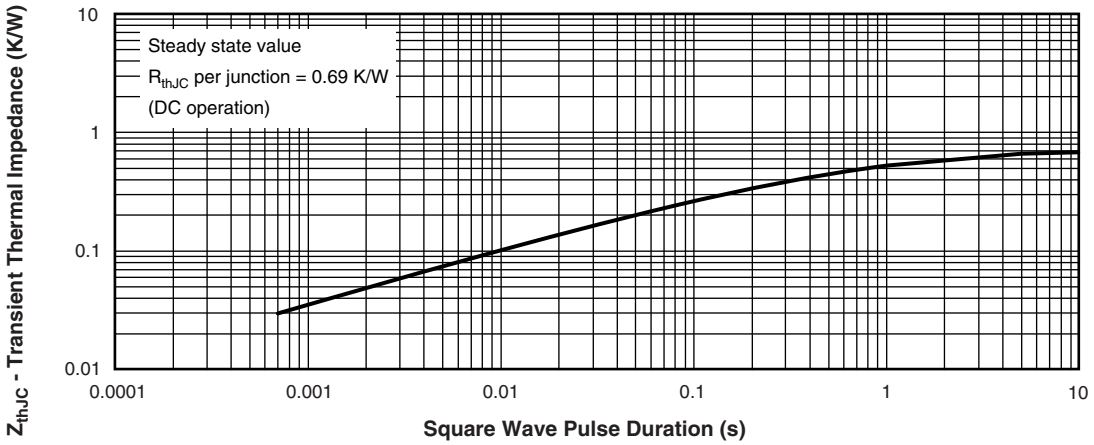


Fig. 6 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code

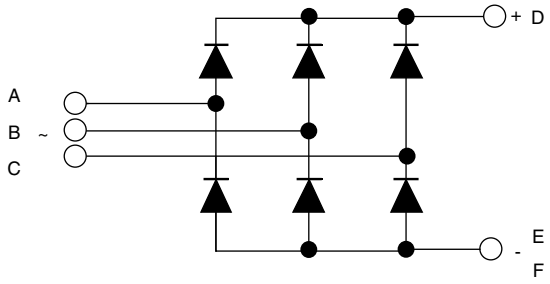
VS-	20	0	MT	40	K	PbF
1	2	3	4	5		6

1	-	Vishay Semiconductors product
2	-	Current rating code: 20 = 200 A (average)
3	-	Three phase diodes bridge
4	-	Essential part number
5	-	Voltage code x 10 = V_{RRM} (40 = 400 V)
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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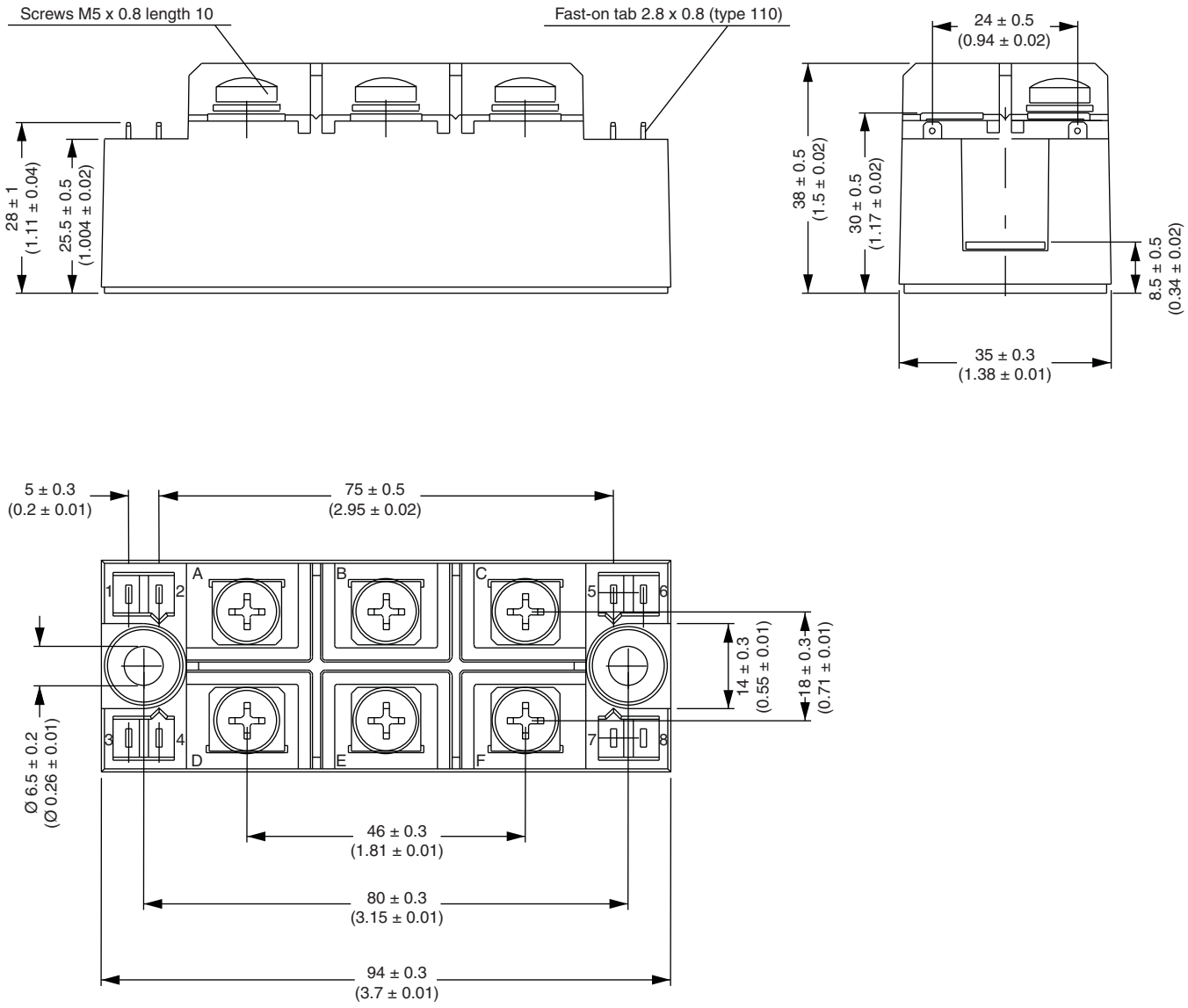
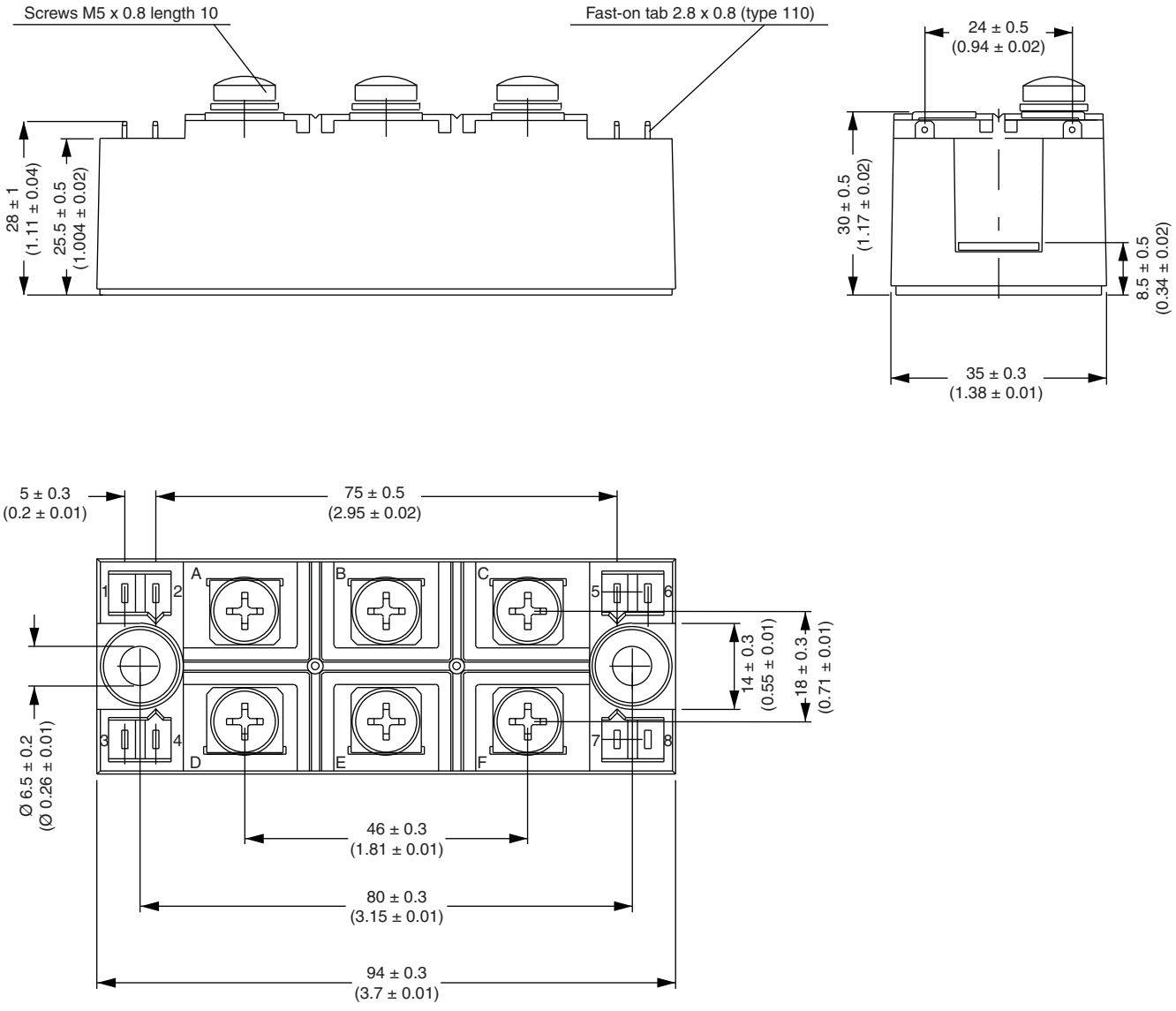
MTK (with and without optional barrier)

DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)



DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)



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