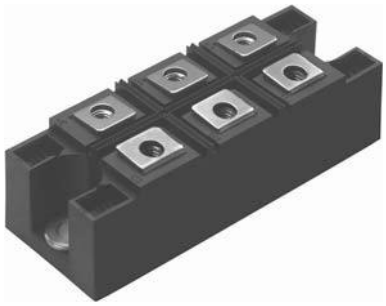
Three Phase Bridge, 130/160 A (Power Modules)



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
- 4000 V_{RMS} isolating voltage
- UL E78996 approved
- Totally lead (Pb)-free
- Designed and qualified for industrial level

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	130/160 A

MAJOR RATINGS AND CHARACTERISTICS				
SYMBOL	CHARACTERISTICS	130MT.K	160MT.K	UNITS
I_O		130 (160)	160 (200)	A
	T_C	85 (62)	85 (60)	°C
I_{FSM}	50 Hz	1130	1430	A
	60 Hz	1180	1500	
I^2t	50 Hz	6400	10 200	A^2s
	60 Hz	5800	9300	
$I^2\sqrt{t}$		64 000	102 000	$A^2\sqrt{s}$
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
130-160MT..K	80	800	900	10
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

FORWARD CONDUCTION							
PARAMETER	**SYMBOL**	**TEST CONDITIONS**			**130MT.K**	**160MT.K**	**UNITS**
Maximum DC output current at case temperature	I_O	120° rect. conduction angle			130 (160)	160 (200)	A
					85 (62)	85 (60)	°C
Maximum peak, one-cycle forward, non-repetitive surge current	I_{TSM}	t = 10 ms	No voltage reapplied	Initial $T_J = T_J$ maximum	1130	1430	A
		t = 8.3 ms			1180	1500	
		t = 10 ms	100 % V_{RRM} reapplied		950	1200	
		t = 8.3 ms			1000	1260	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		64 000	102 000	A^2s
		t = 8.3 ms			5800	9300	
		t = 10 ms	100 % V_{RRM} reapplied		4500	7200	
		t = 8.3 ms			4100	6600	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			64 000	102 000	$A^2\sqrt{s}$
Low level value of threshold voltage	$V_{T(TO)1}$	(16.7 % x π x $I_{T(AV)}$ < I < π x $I_{T(AV)}$), T_J maximum			0.78	0.81	V
High level value of threshold voltage	$V_{T(TO)2}$	(I > π x $I_{T(AV)}$), T_J maximum			0.99	1.04	
Low level value of forward slope resistance	r_{f1}	16.7 % x π x $I_{T(AV)}$ < I < π x $I_{T(AV)}$), T_J maximum			4.59	3.52	mΩ
High level of forward slope resistance	r_{f2}	(I > π x $I_{T(AV)}$), T_J maximum			4.17	3.13	
Maximum forward voltage drop	V_{FM}	I_{pk} = 200 A, T_J = 25 °C, t_p = 400 µs single junction			1.63	1.49	V
RMS isolation voltage	V_{ISOL}	T_J = 25 °C, all terminal shorted f = 50 Hz, t = 1 s			4000		V

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**130MT.K**	**160MT.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	0.16	0.12	K/W
		DC operation per junction	0.93	0.73	
		120° rect. conduction angle per module	0.18	0.15	
		120° rect. conduction angle per junction	1.08	0.88	
Maximum thermal resistance, case to heatsink	R_{thCS}	Per module 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

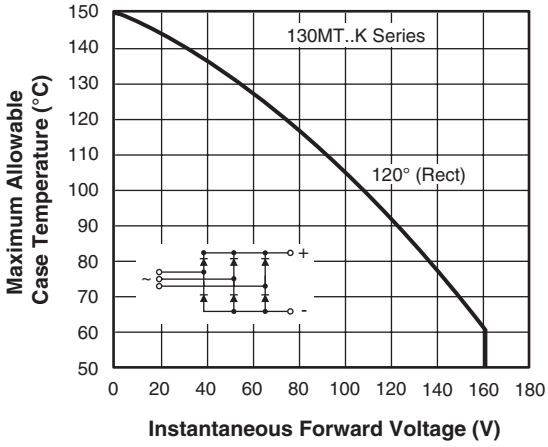


Fig. 1 - Current Ratings Characteristic

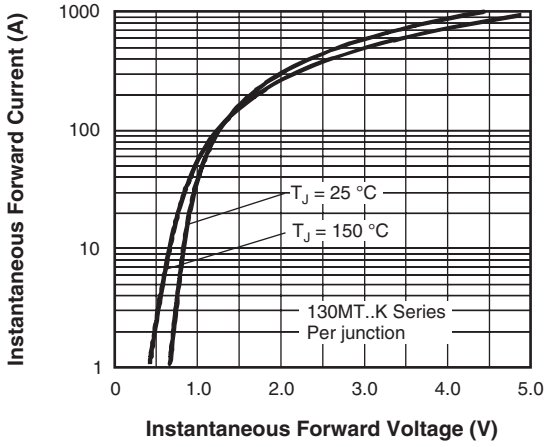
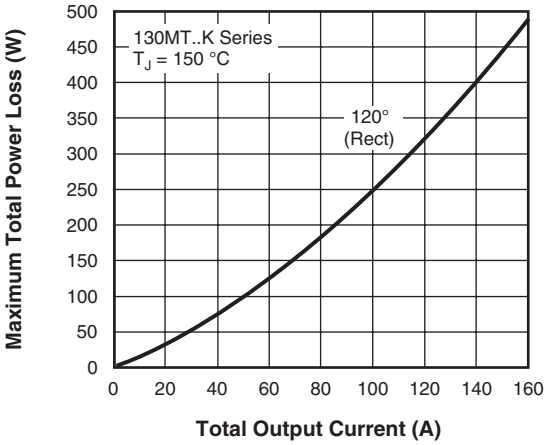


Fig. 2 - Forward Voltage Drop Characteristics



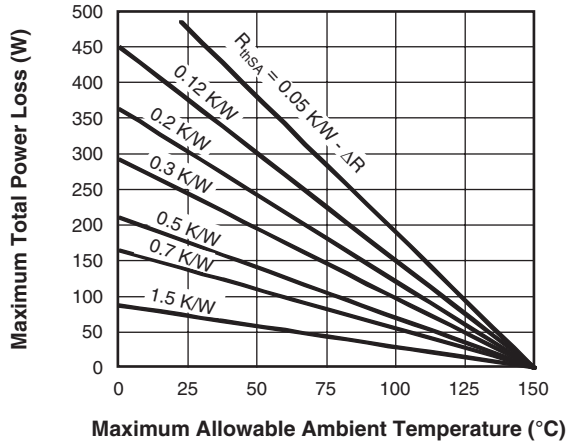


Fig. 3 - Total Power Loss Characteristics

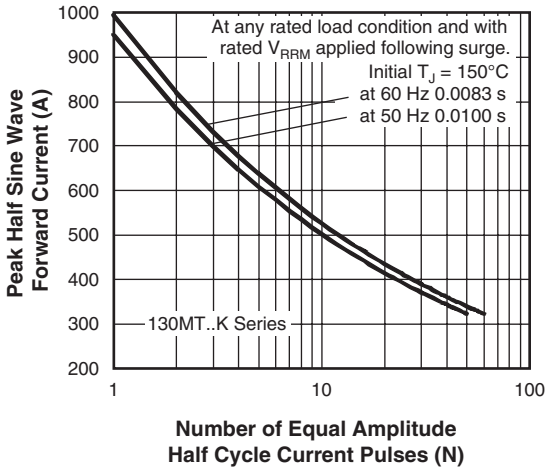


Fig. 4 - Maximum Non-Repetitive Surge Current

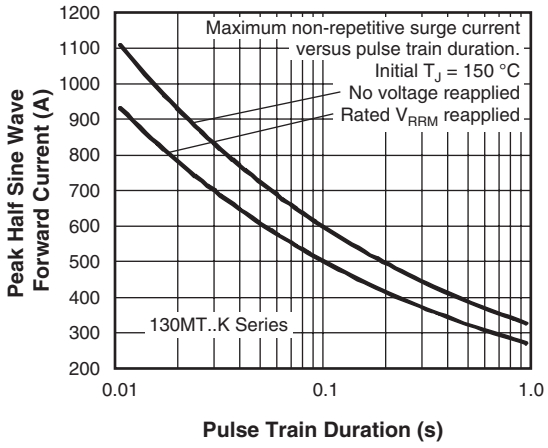


Fig. 5 - Maximum Non-Repetitive Surge Current

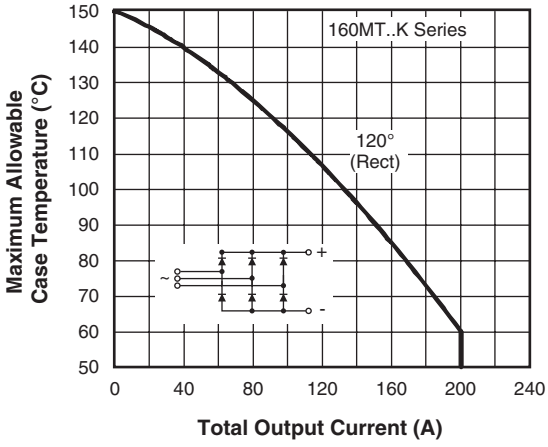


Fig. 6 - Current Ratings Characteristic

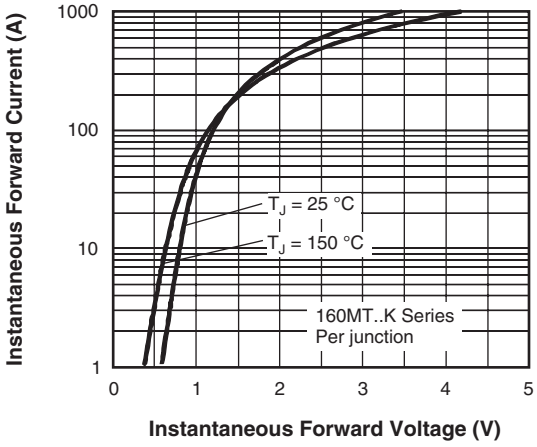
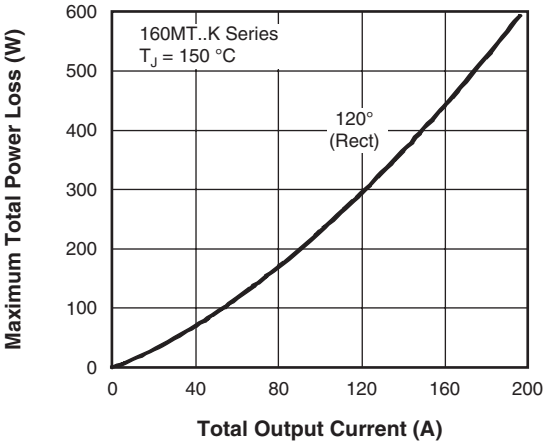


Fig. 7 - Forward Voltage Drop Characteristics



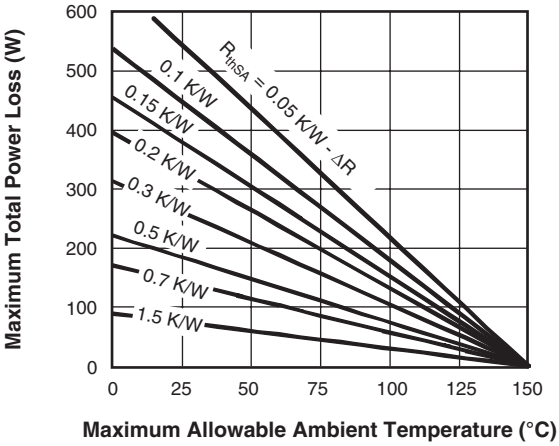


Fig. 8 - Total Power Loss Characteristics

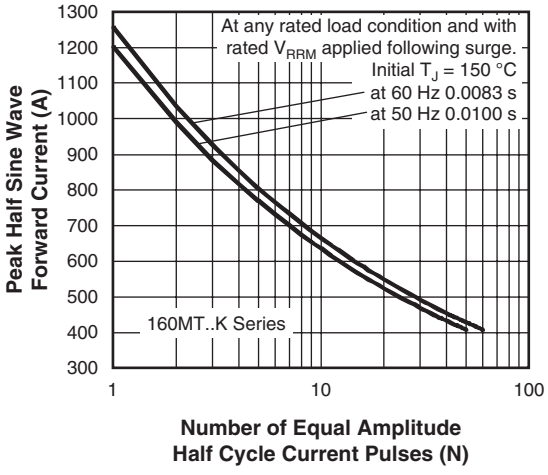


Fig. 9 - Maximum Non-Repetitive Surge Current

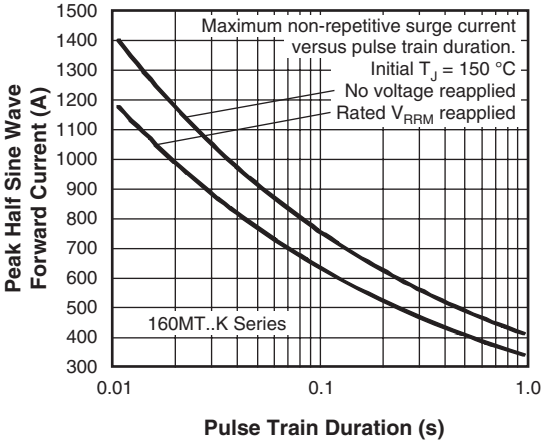


Fig. 10 - Maximum Non-Repetitive Surge Current

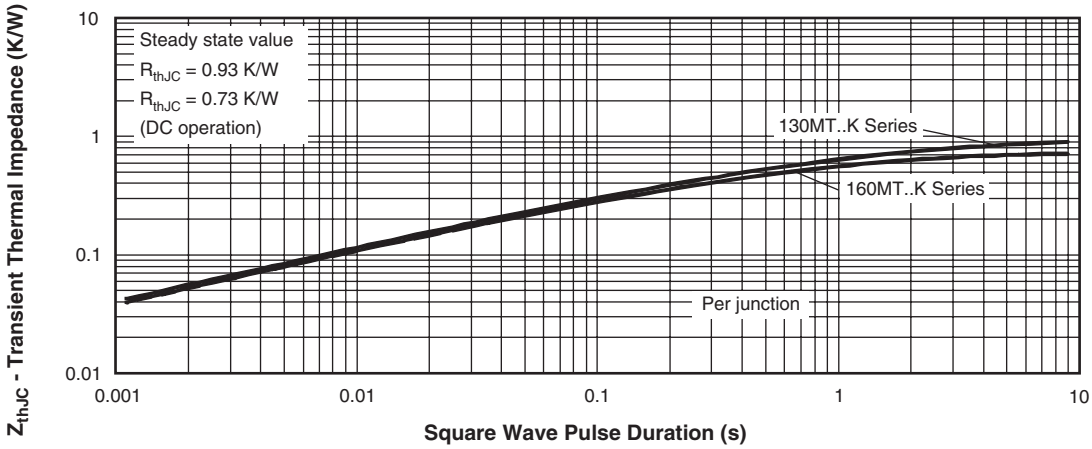


Fig. 11 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

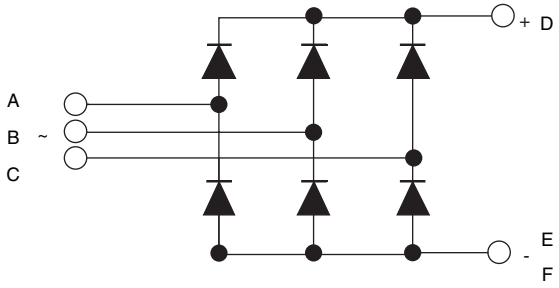
Device code	16	0	MT	160	K	PbF
	1	2	3	4		5

- 1 - Current rating code: 13 = 130 A (average)
  16 = 160 A (average)
- 2 - Three phase diodes bridge
- 3 - Essential part number
- 4 - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 5 - PbF = Lead (Pb)-free

Note

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

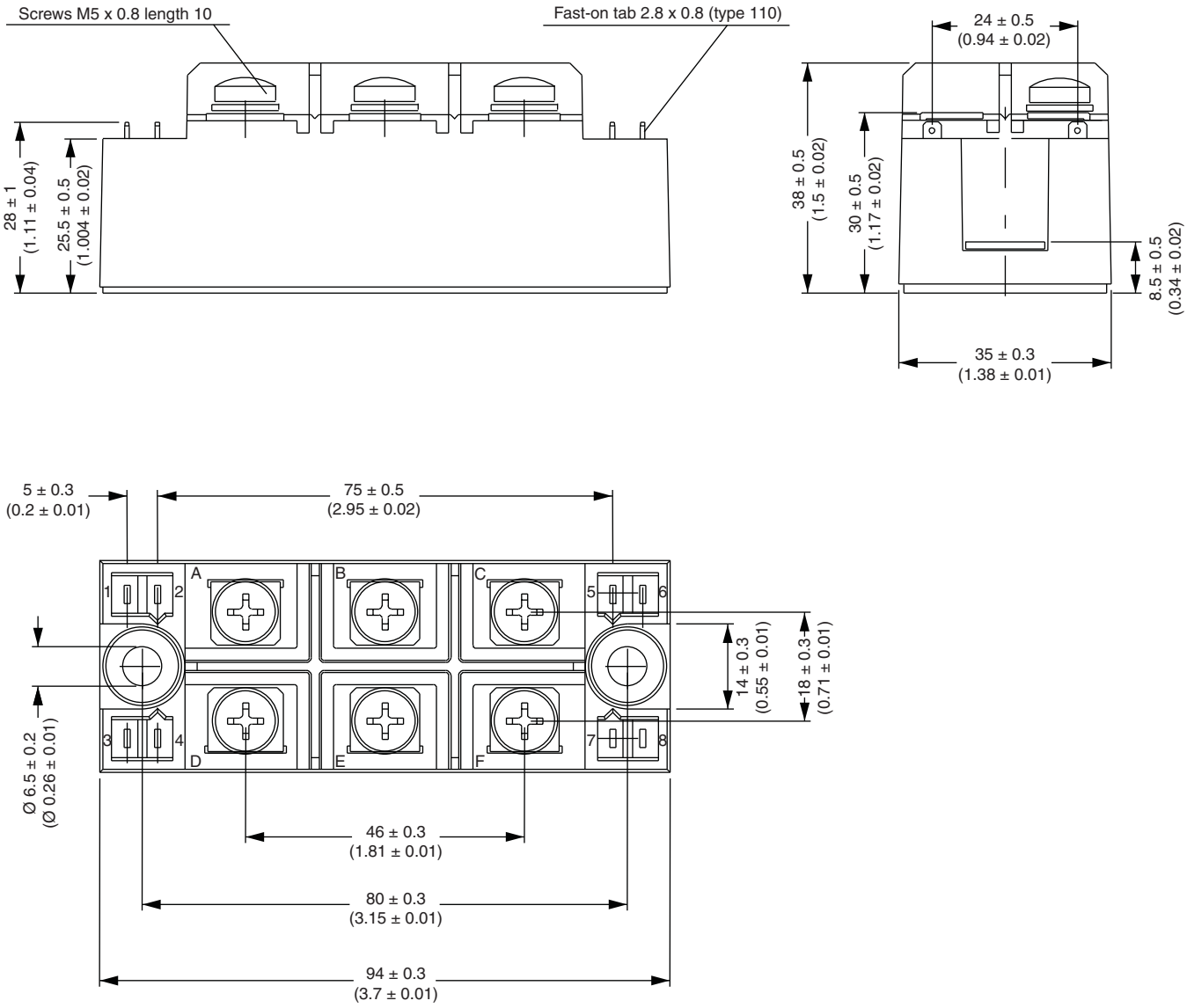
CIRCUIT CONFIGURATION



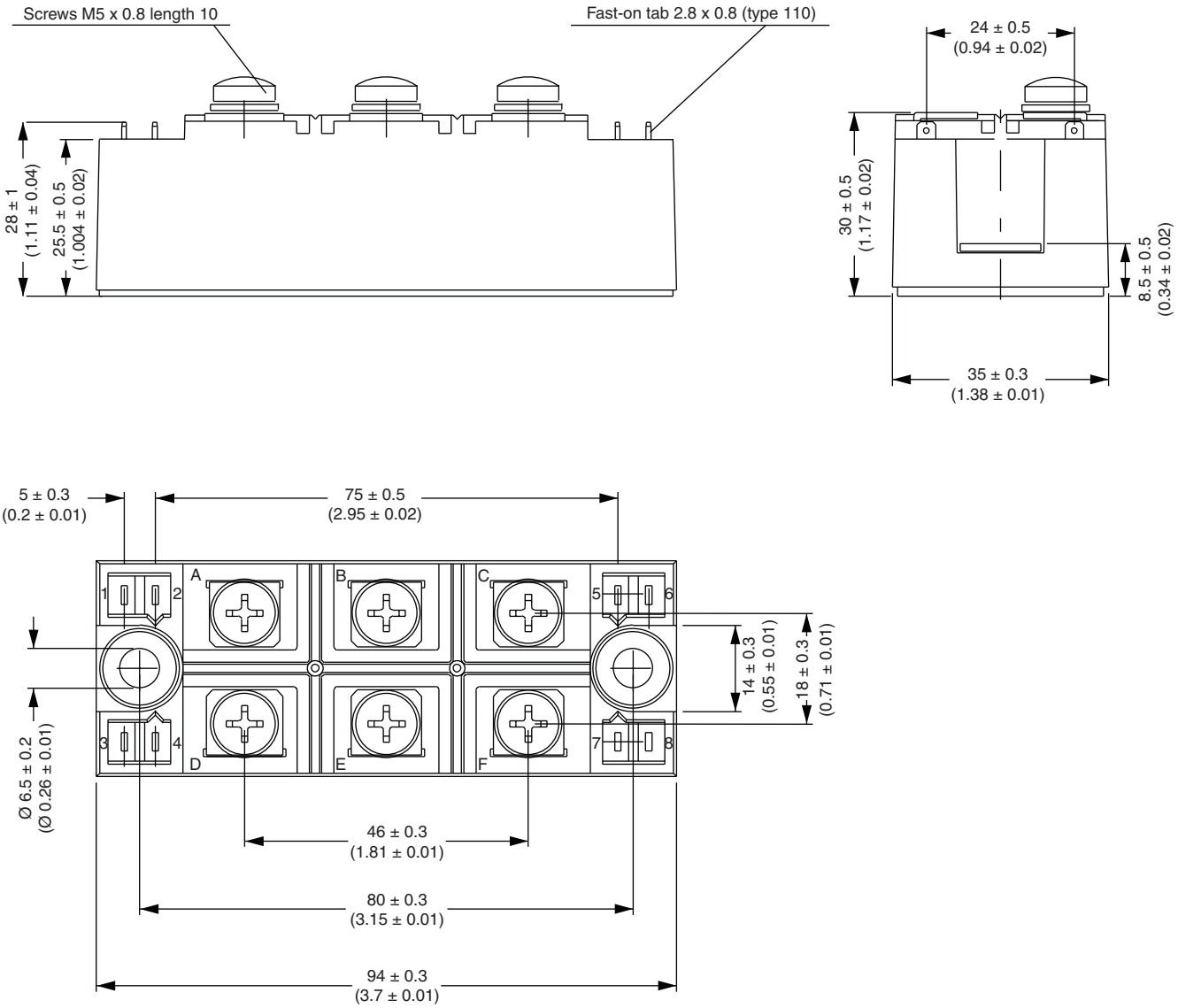
LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95004

MTK (with and without optional barrier)

DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)



DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)



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