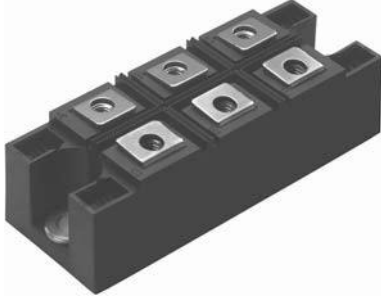



## Three Phase Bridge, 130/160 A (Power Modules)



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<sub>RMS</sub> isolating voltage
- UL E78996 approved 
- Totally lead (Pb)-free
- Designed and qualified for industrial level



**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

$I_o$	130/160 A
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### 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	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 <sup>2</sup> s
	60 Hz	5800	9300	
$I^2\sqrt{t}$		64 000	102 000	A <sup>2</sup> √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	

# 130-160MT..KPbF Series



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

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					
		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	Initial $T_J = T_J$ maximum	64 000	102 000	A <sup>2</sup> s
		t = 8.3 ms					
		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 <sup>2</sup> √s	
Low level value of threshold voltage	$V_{T(TO)1}$	(16.7 % $\times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)}$ ), $T_J$ maximum		0.78	0.81	V	
High level value of threshold voltage	$V_{T(TO)2}$	(I > $\pi \times I_{T(AV)}$ ), $T_J$ maximum		0.99	1.04		
Low level value of forward slope resistance	$r_{f1}$	16.7 % $\times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)}$ , $T_J$ maximum		4.59	3.52	mΩ	
High level of forward slope resistance	$r_{f2}$	(I > $\pi \times I_{T(AV)}$ ), $T_J$ 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			

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 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.		4 to 6		Nm
				3 to 4		
Approximate weight		Lubricated threads.		176		g



# 130-160MT..KPbF Series

## Three Phase Bridge, 130/160 A Vishay High Power Products (Power Modules)

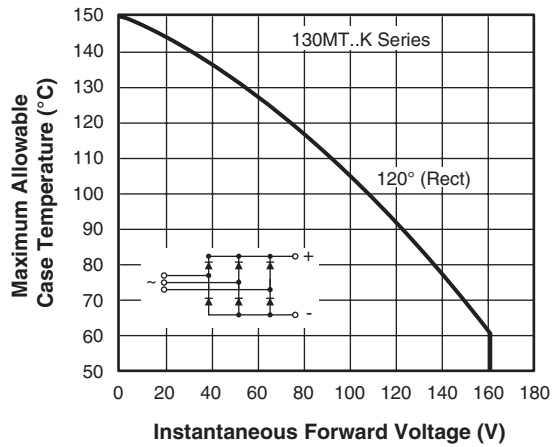


Fig. 1 - Current Ratings Characteristic

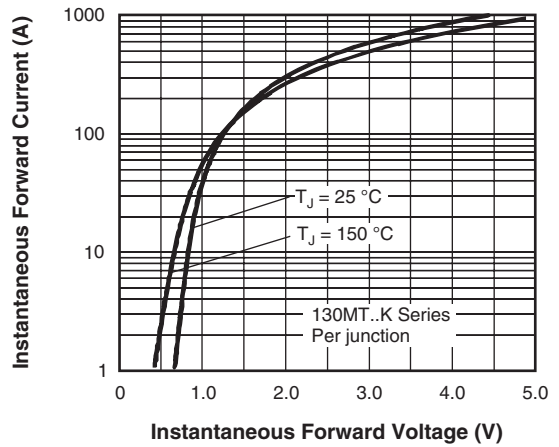


Fig. 2 - Forward Voltage Drop Characteristics

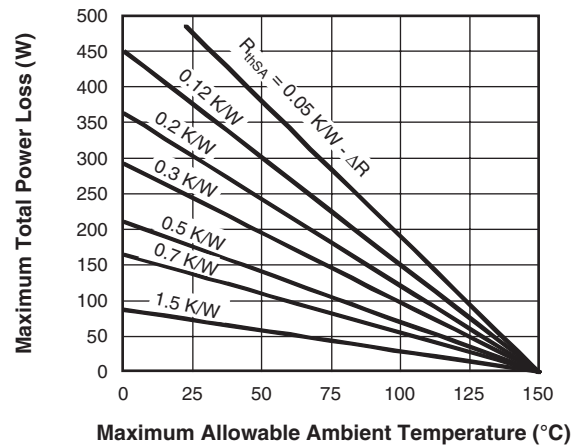
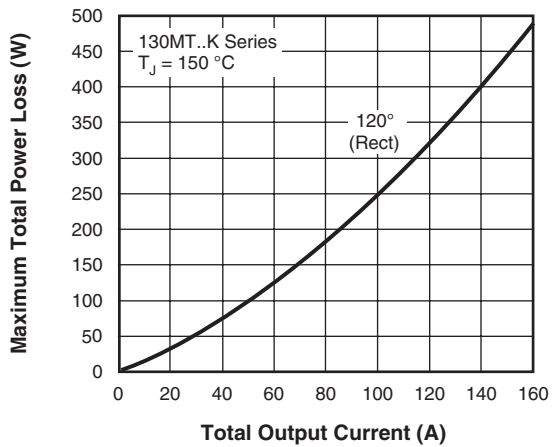


Fig. 3 - Total Power Loss Characteristics

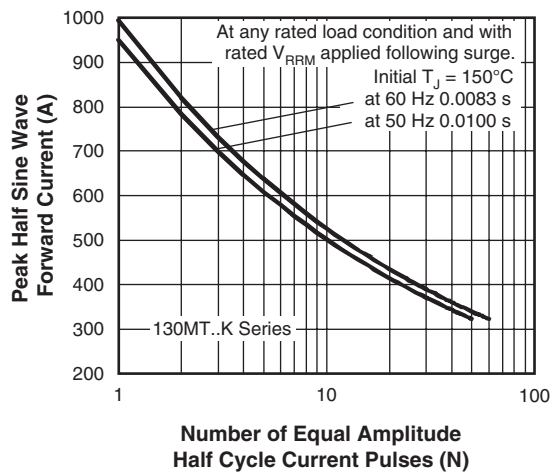


Fig. 4 - Maximum Non-Repetitive Surge Current

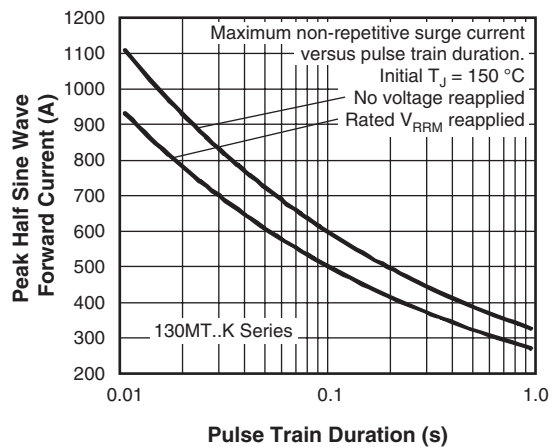


Fig. 5 - Maximum Non-Repetitive Surge Current

# 130-160MT..KPbF Series



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

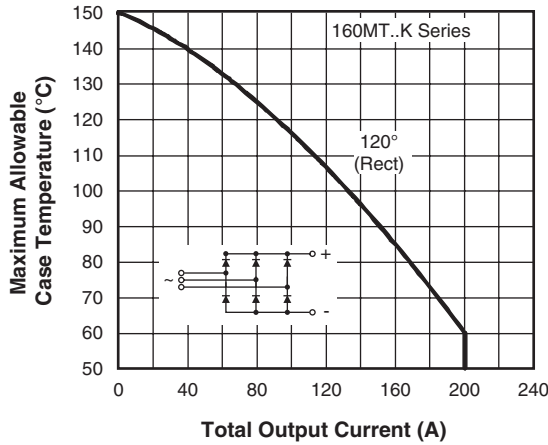


Fig. 6 - Current Ratings Characteristic

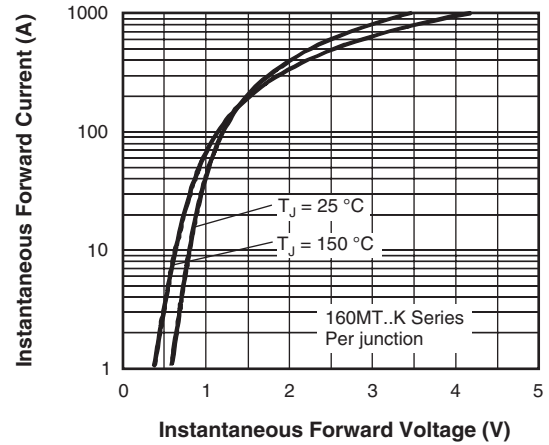


Fig. 7 - Forward Voltage Drop Characteristics

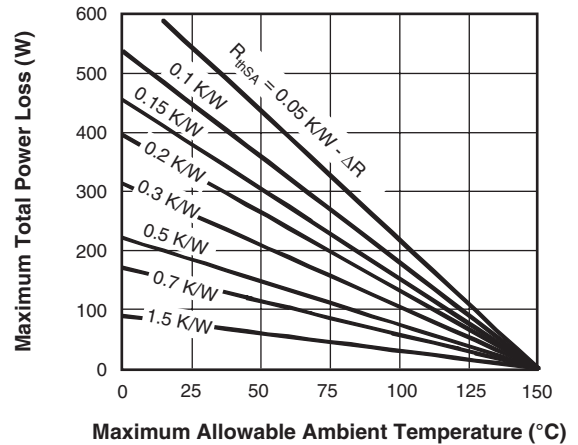
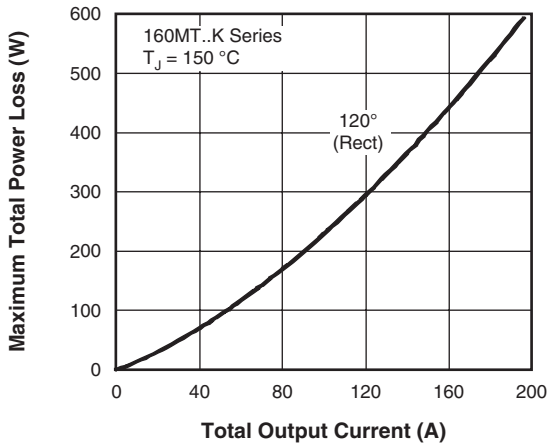


Fig. 8 - Total Power Loss Characteristics

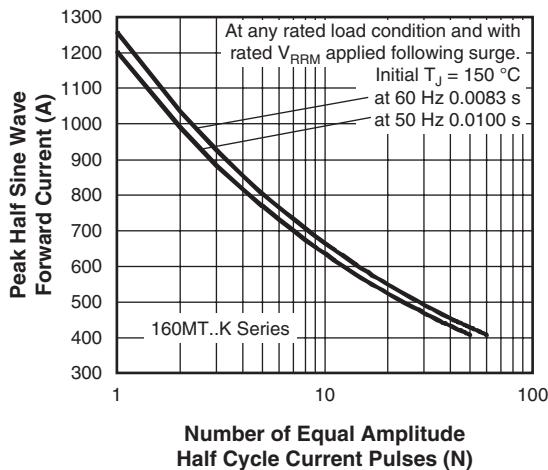


Fig. 9 - Maximum Non-Repetitive Surge Current

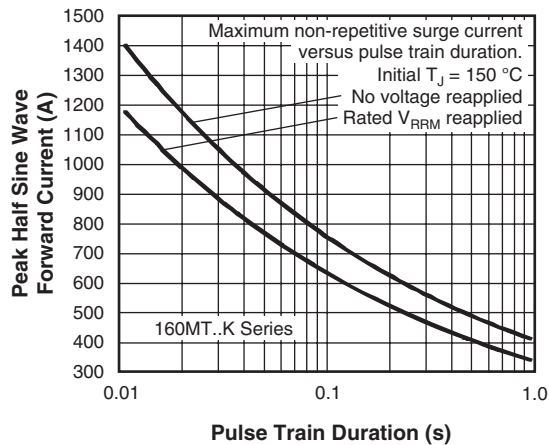


Fig. 10 - Maximum Non-Repetitive Surge Current

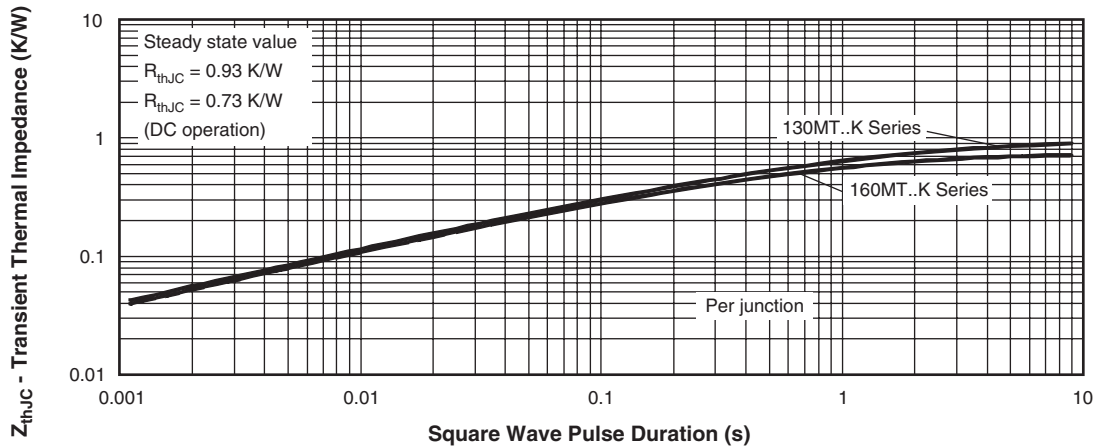


Fig. 11 - Thermal Impedance  $Z_{thJC}$  Characteristics

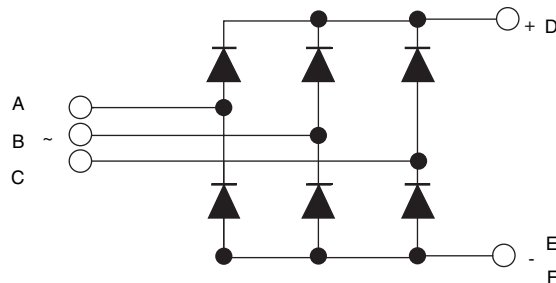
### ORDERING INFORMATION TABLE

Device code	<b>16</b>	<b>0</b>	<b>MT</b>	<b>160</b>	<b>K</b>	<b>PbF</b>
	①	②	③	④	⑤	
<b>1</b>	- Current rating code: 13 = 130 A (average) 16 = 160 A (average)					
<b>2</b>	- Three phase diodes bridge					
<b>3</b>	- Essential part number					
<b>4</b>	- Voltage code x 10 = $V_{RRM}$ (see Voltage Ratings table)					
<b>5</b>	- PbF = Lead (Pb)-free					

#### Note

- To order the optional hardware go to [www.vishay.com/doc?95172](http://www.vishay.com/doc?95172)

### CIRCUIT CONFIGURATION



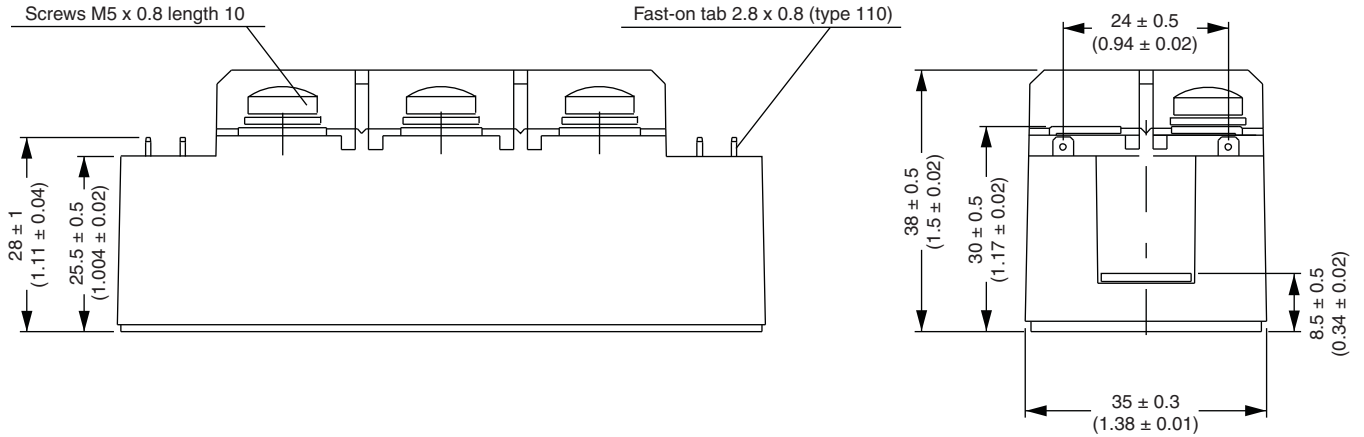
#### LINKS TO RELATED DOCUMENTS

Dimensions

<http://www.vishay.com/doc?95004>

## MTK (with and without optional barrier)

### DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)

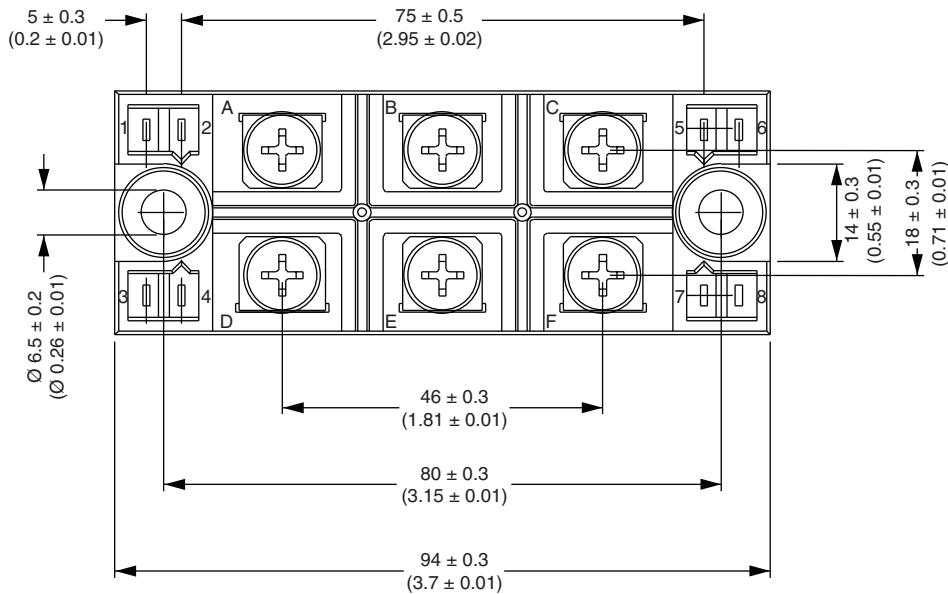
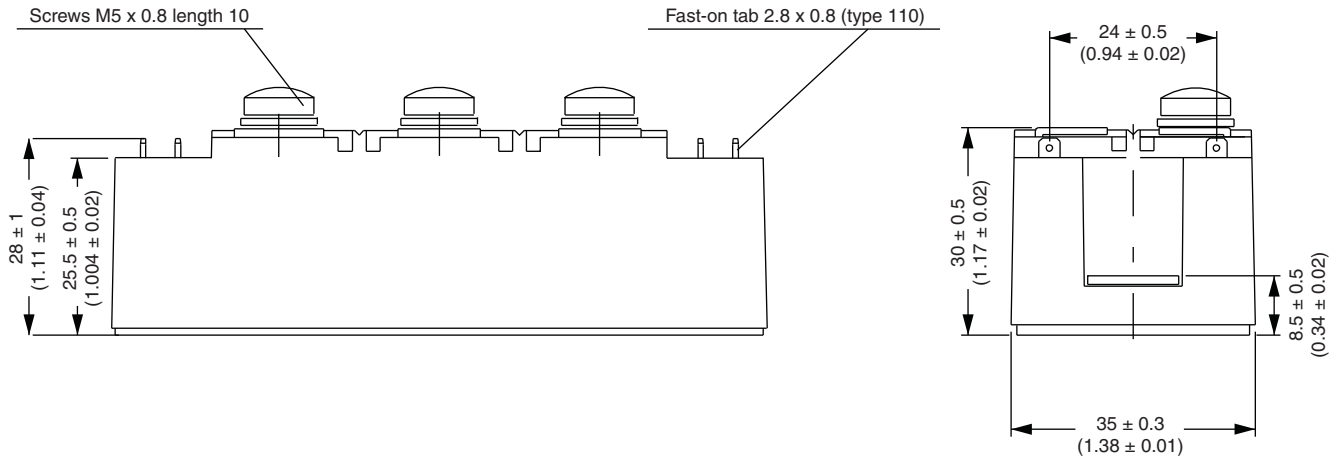


# Outline Dimensions

Vishay Semiconductors MTK (with and without optional barrier)



## DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)





## Disclaimer

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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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