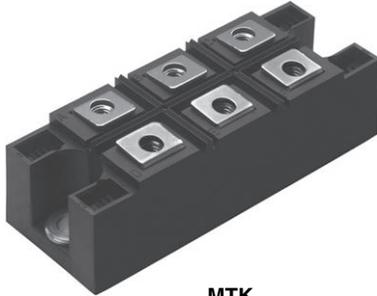


Three Phase Bridge, 130 A to 160 A (Power Modules)



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


**RoHS
COMPLIANT**

| PRODUCT SUMMARY | |
|------------------|--------------------|
| I _O | 130 A to 160 A |
| V _{RRM} | 800 V to 1600 V |
| Package | MT-K |
| Circuit | 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 130MT.K | VALUES 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 ² t | 50 Hz | 6400 | 10 200 | A ² s |
| | 60 Hz | 5800 | 9300 | |
| I ² √t | | 64 000 | 102 000 | A ² √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-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 | | VALUES 130MT.K | VALUES 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 reappplied | Initial T _J = T _J maximum | 1130 | 1430 | A |
| | | t = 8.3 ms | | | 1180 | 1500 | |
| | | t = 10 ms | 100 % V _{RRM} reappplied | | 950 | 1200 | |
| | | t = 8.3 ms | | | 1000 | 1260 | |
| Maximum I ² t for fusing | I ² t | t = 10 ms | No voltage reappplied | Initial T _J = T _J maximum | 64 000 | 102 000 | A ² s |
| | | t = 8.3 ms | | | 5800 | 9300 | |
| | | t = 10 ms | 100 % V _{RRM} reappplied | | 4500 | 7200 | |
| | | t = 8.3 ms | | | 4100 | 6600 | |
| Maximum I ² √t for fusing | I ² √t | t = 0.1 ms to 10 ms, no voltage reappplied | | 64 000 | 102 000 | A ² √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 | | | |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | | |
|--|-----------------------------------|---|--|-------------------|-------------------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES 130MT.K | VALUES 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. Lubricated threads. | | 4 to 6 | | Nm |
| | | | | 3 to 4 | | |
| Approximate weight | | | | 176 | | g |

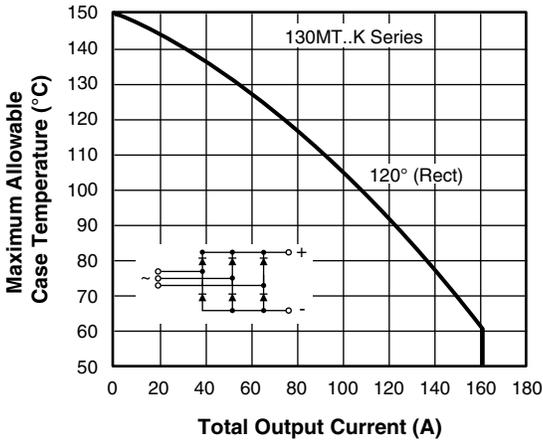


Fig. 1 - Current Rating Characteristics

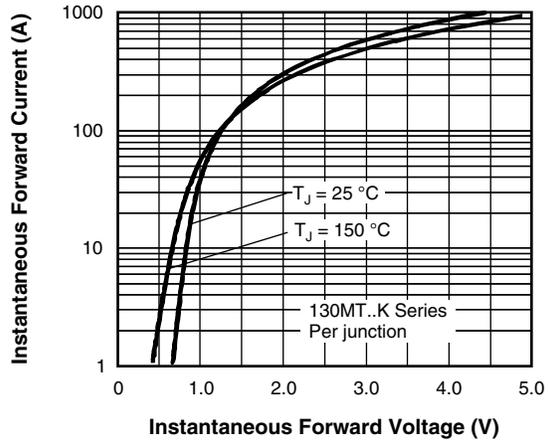


Fig. 2 - Forward Voltage Drop Characteristics

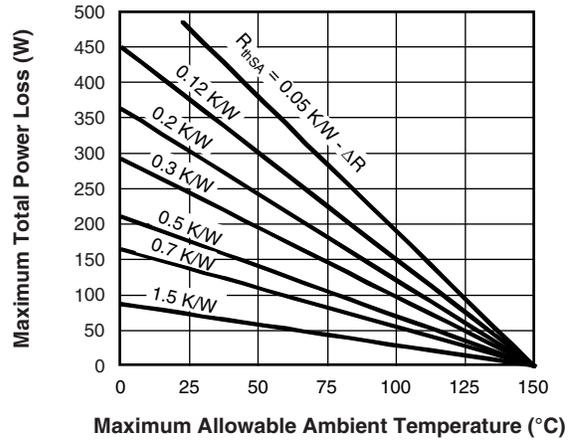
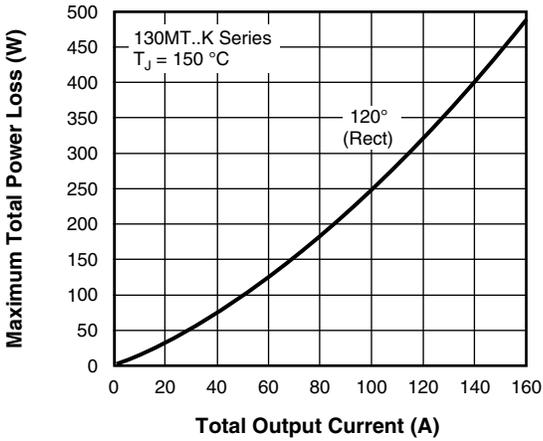


Fig. 3 - Total Power Loss Characteristics

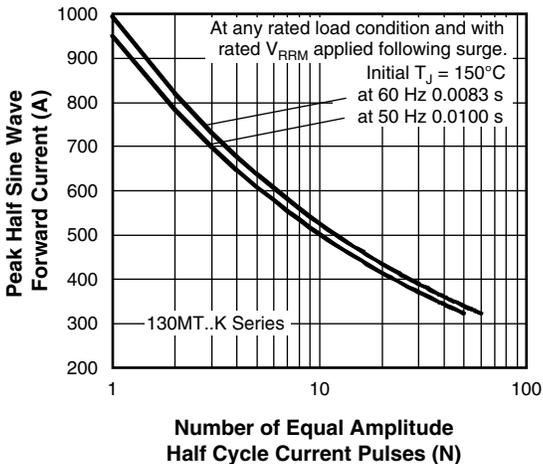


Fig. 4 - Maximum Non-Repetitive Surge Current

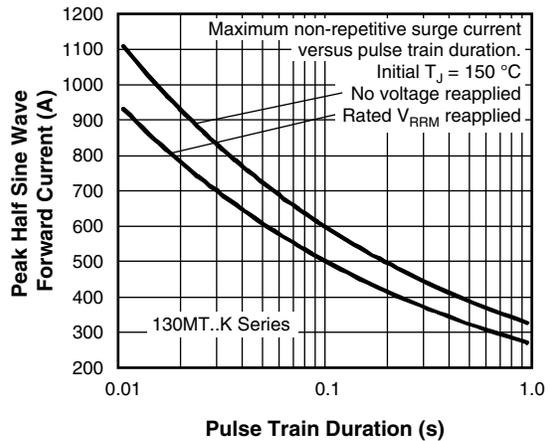


Fig. 5 - Maximum Non-Repetitive Surge Current

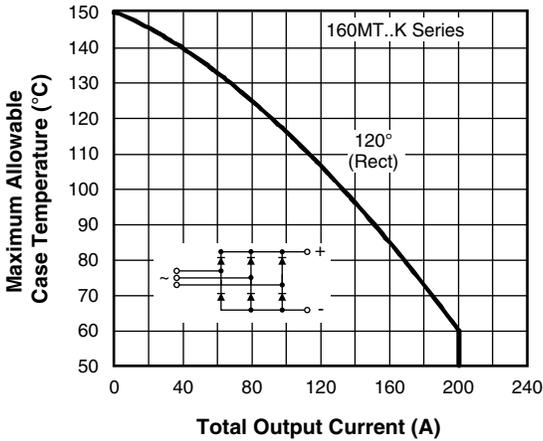


Fig. 6 - Current Ratings Characteristic

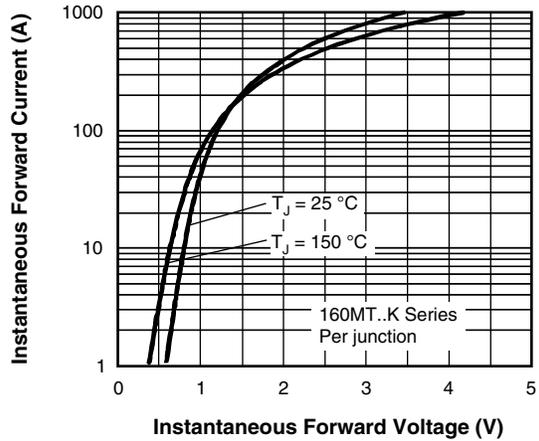


Fig. 7 - Forward Voltage Drop Characteristics

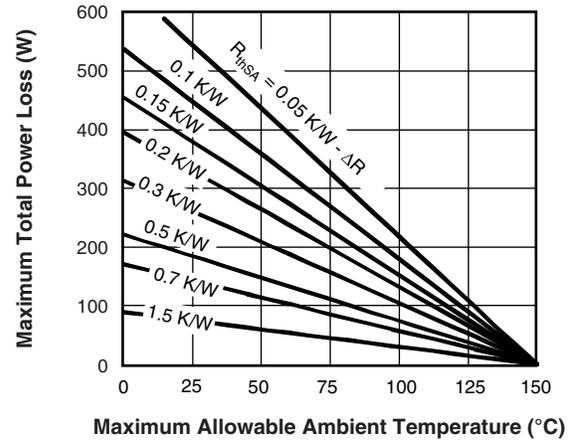
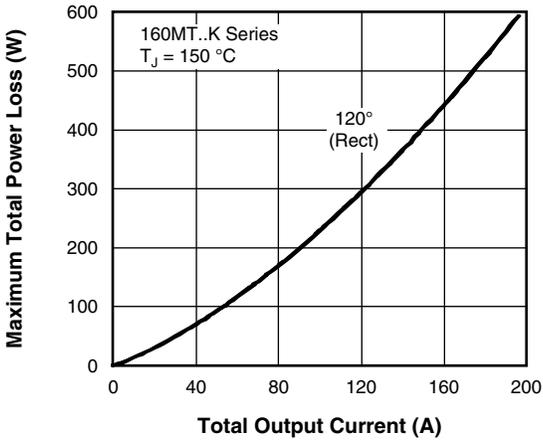


Fig. 8 - Total Power Loss Characteristics

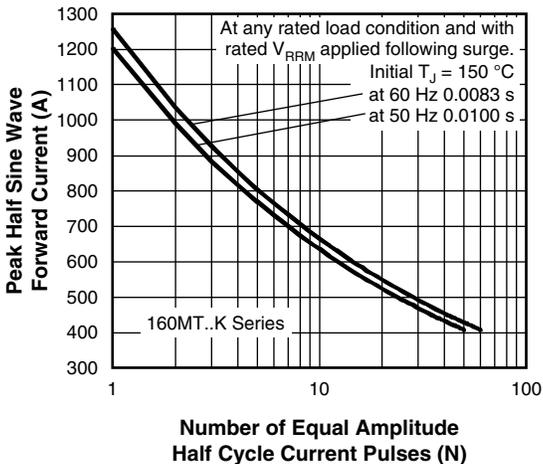


Fig. 9 - Maximum Non-Repetitive Surge Current

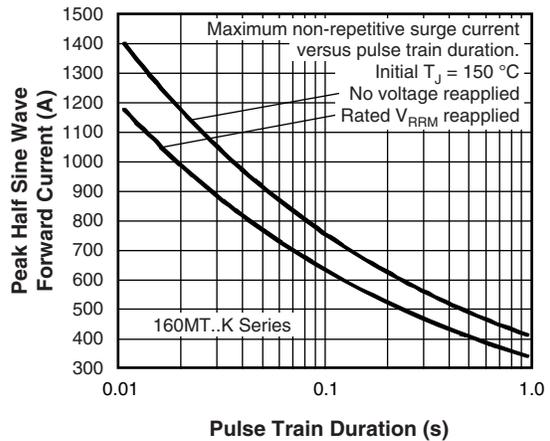


Fig. 10 - Maximum Non-Repetitive Surge Current

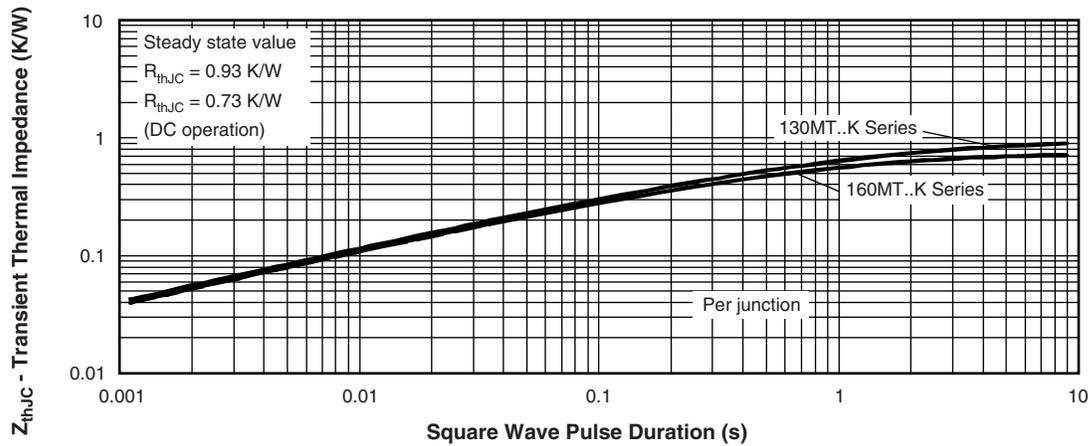


Fig. 11 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

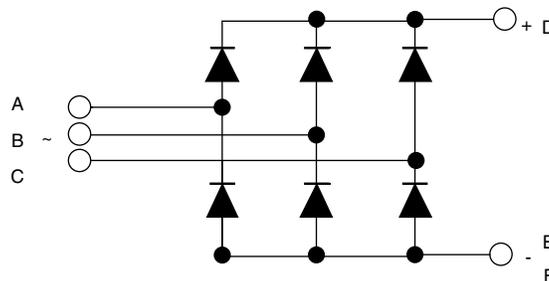
| Device code | VS- | 16 | 0 | MT | 160 | K | PbF |
|-------------|-----|----|---|----|-----|---|-----|
| | ① | ② | ③ | ④ | ⑤ | | ⑥ |
| | 1 | 2 | 3 | 4 | 5 | | 6 |

- 1** - Vishay Semiconductors product
- 2** - Current rating code: 13 = 130 A (average)
16 = 160 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



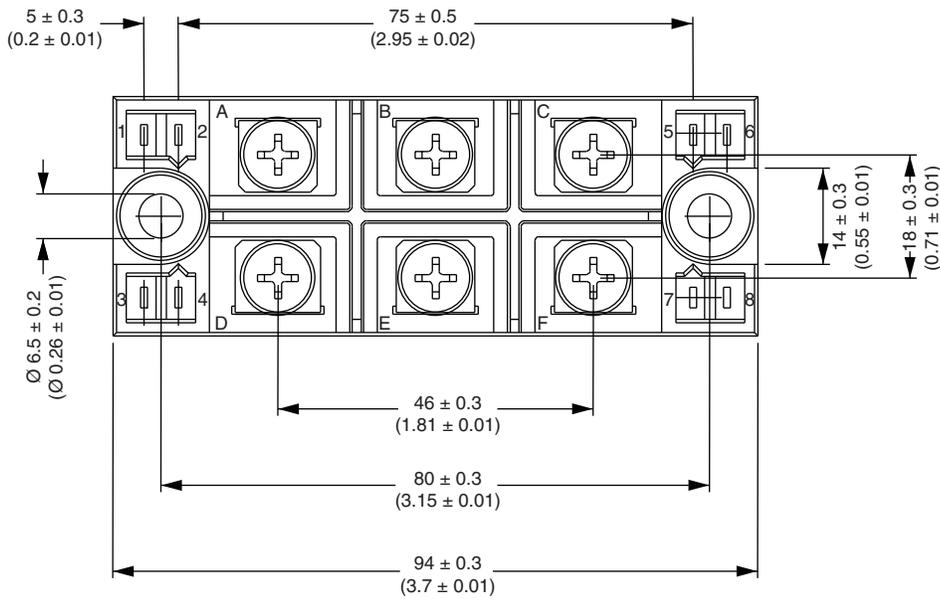
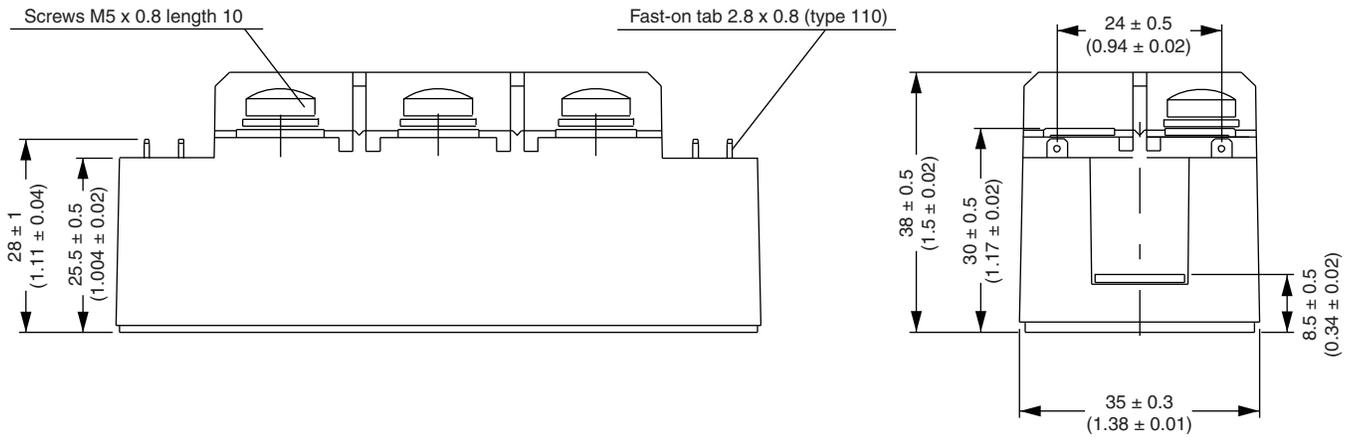
LINKS TO RELATED DOCUMENTS

Dimensions

www.vishay.com/doc?95004

MTK (with and without optional barrier)

DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)

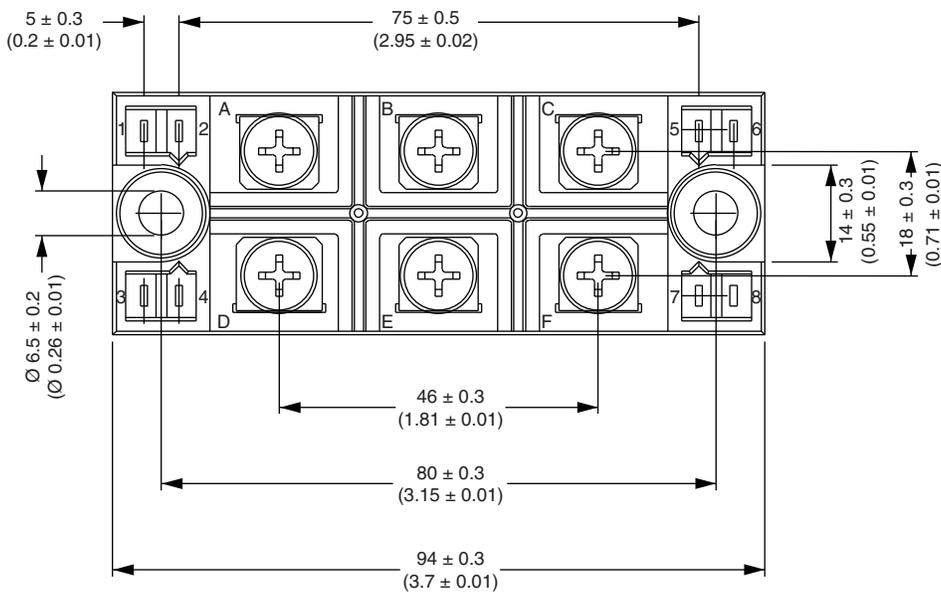
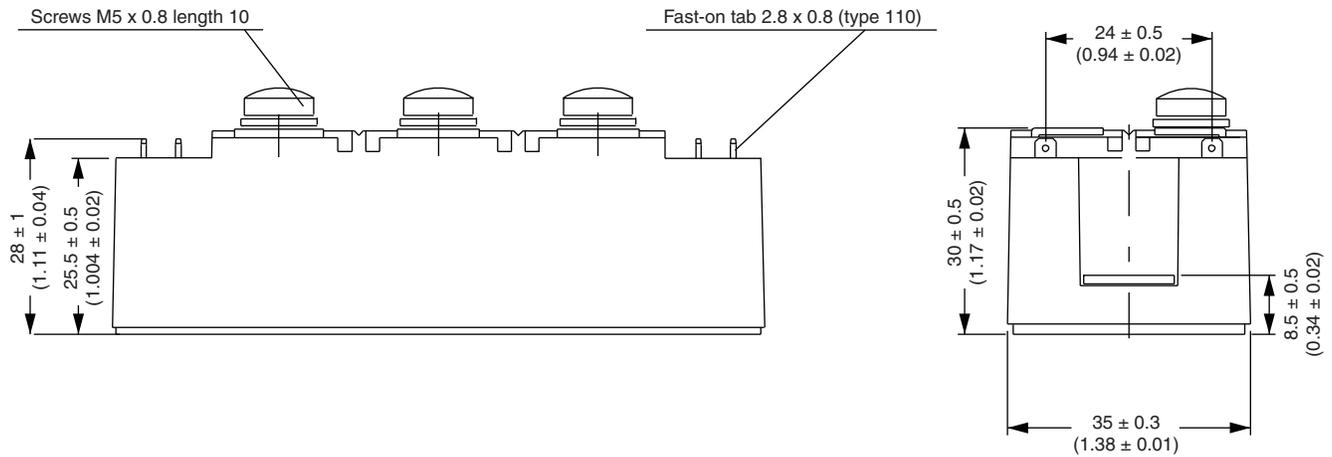


Outline Dimensions

Vishay Semiconductors MTK (with and without optional barrier)



DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)





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