

MTP PressFit Power Module Three Phase Bridge, 45 A to 100 A



MTP PressFit

FEATURES

- Low V_F
- Low profile package
- Direct mounting to heatsink
- PressFit pins technology
- Low junction to case thermal resistance
- 3500 V_{RMS} insulation voltage
- UL approved file E78996
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT**

APPLICATIONS

- Power conversion machines
- Welding
- UPS
- SMPS
- Motor drives
- General purpose and heavy duty application

DESCRIPTION

The new MTP module is easy to use thanks to solder less method for contacting PressFit pins to the PCB. The low profile package has been specifically conceived to maximize space saving and optimize the electrical layout of the application specific power supplies.

PRODUCT SUMMARY

| | |
|-----------|--------------------|
| I_o | 45 A to 100 A |
| V_{RRM} | 1600 V |
| Package | MTP PressFit |
| Circuit | Three phase bridge |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES 40MT | VALUES 70MT | VALUES 100MT | UNITS |
|---------------|-----------------|----------------|----------------|-----------------|-------------------|
| I_o | | 45 | 75 | 100 | A |
| | T_C | 100 | 80 | 80 | °C |
| I_{FSM} | 50 Hz | 270 | 380 | 450 | A |
| | 60 Hz | 280 | 398 | 470 | |
| I^2t | 50 Hz | 365 | 724 | 1013 | A ² s |
| | 60 Hz | 325 | 660 | 920 | |
| $I^2\sqrt{t}$ | | 3650 | 7240 | 10 130 | A ² √s |
| V_{RRM} | | 1600 | | | V |
| T_{Stg} | Range | -40 to +125 | | | °C |
| T_J | | -40 to +150 | | | |

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

| TYPE NUMBER | VOLTAGE CODE REVERSE VOLTAGE V | V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V | V_{RSM} , MAXIMUM NON-REPETITIVE PEAK V | I_{RRM} MAXIMUM AT $T_J = 150\text{ °C}$ mA |
|---|--------------------------------------|--|---|---|
| VS-40MT160P-P, VS-70MT160P-P, VS-100MT160P-P | 160 | 1600 | 1700 | 5 |



| FORWARD CONDUCTION | | | | | | | | |
|--|--------------------|--|----------------------------------|--|-------------|--------------|-------------------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUE 40MT | VALUES 70MT | VALUES 100MT | UNITS | |
| Maximum DC output current at case temperature | I _o | 120° rect. to conduction angle | | 45 | 75 | 100 | A | |
| | | | | 100 | 80 | 80 | °C | |
| Maximum peak, one cycle forward, non-repetitive on state surge current | I _{FSM} | t = 10 ms | No voltage reapplied | Initial T _J = T _J maximum | 270 | 380 | 450 | A |
| | | t = 8.3 ms | | | 280 | 398 | 470 | |
| | | t = 10 ms | 100 % V _{RRM} reapplied | | 225 | 320 | 380 | |
| | | t = 8.3 ms | | | 240 | 335 | 400 | |
| Maximum I ² t for fusing | I ² t | t = 10 ms | No voltage reapplied | Initial T _J = T _J maximum | 365 | 724 | 1013 | A ² s |
| | | t = 8.3 ms | | | 325 | 660 | 920 | |
| | | t = 10 ms | 100 % V _{RRM} reapplied | | 253 | 512 | 600 | |
| | | t = 8.3 ms | | | 240 | 467 | 665 | |
| Maximum I ² √t for fusing | I ² √t | t = 0.1 ms to 10 ms, no voltage reapplied | | 3650 | 7240 | 10 130 | A ² √s | |
| Value of threshold voltage | V _{F(TO)} | T _J maximum | | 0.78 | 0.82 | 0.75 | V | |
| Slope resistance | r _t | | | 14.8 | 9.5 | 8.1 | mΩ | |
| Maximum forward voltage drop | V _{FM} | T _J = 25 °C; t _p = 400 μs single junction (40MT, I _{pk} = 40 A) (70MT, I _{pk} = 70 A) (100MT, I _{pk} = 100 A) | | 1.45 | 1.45 | 1.51 | V | |

| INSULATION TABLE | | | | | | |
|------------------------|------------------|--|------|------|-------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | 40MT | 70MT | 100MT | UNITS |
| RMS insulation voltage | V _{INS} | T _J = 25 °C, all terminal shorted, f = 50 Hz, t = 1 s | 3500 | | | V |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | | |
|---|-------------------|---|-------------|------|-------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | 40MT | 70MT | 100MT | UNITS |
| Maximum junction operating temperature range | T _J | | - 40 to 150 | | | °C |
| Maximum storage temperature range | T _{Stg} | | - 40 to 125 | | | |
| Maximum thermal resistance, junction to case | R _{thJC} | DC operation per module | 0.27 | 0.23 | 0.19 | K/W |
| | | DC operation per junction | 1.6 | 1.38 | 1.14 | |
| | | 120° rect. conduction angle per module | 0.38 | 0.29 | 0.22 | |
| | | 120° rect. conduction angle per junction | 2.25 | 1.76 | 1.29 | |
| Maximum thermal resistance, case to heatsink per module | R _{thCS} | Mounting surface smooth, flat and greased Heatsink compound thermal conductivity = 0.42 W/mK | 0.1 | | | |
| Mounting torque to heatsink ± 10 % | | 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 | | | Nm |
| Approximate weight | | | 65 | | | g |

| CLEARANCE AND CREEPAGE DISTANCES | | | |
|----------------------------------|---|--------------|-------|
| PARAMETER | TEST CONDITIONS | MTP PressFit | UNITS |
| Clearance | External shortest distances in air between terminals which are not internally short circuited together | 10.2 | mm |
| Creepage distance | Shortest distance along external surface of the insulating material between terminals which are not internally short circuited together | 13 | |

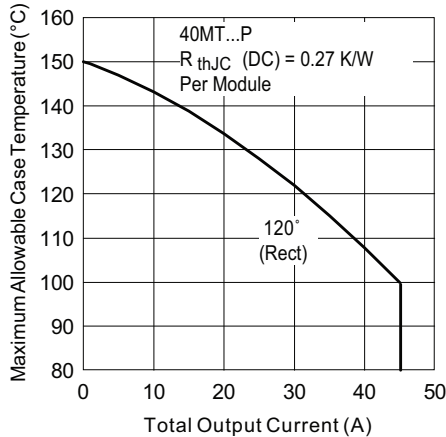


Fig. 1 - Current Rating Characteristics

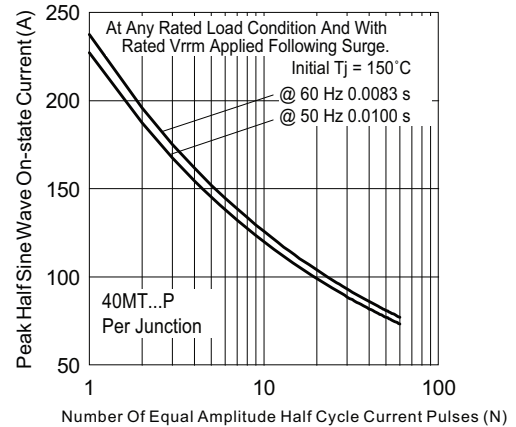


Fig. 3 - Maximum Non-Repetitive Surge Current

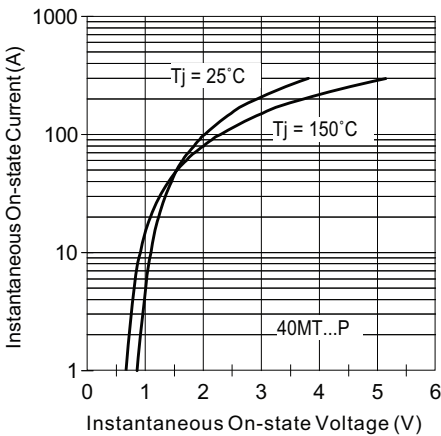


Fig. 2 - On-State Voltage Drop Characteristics

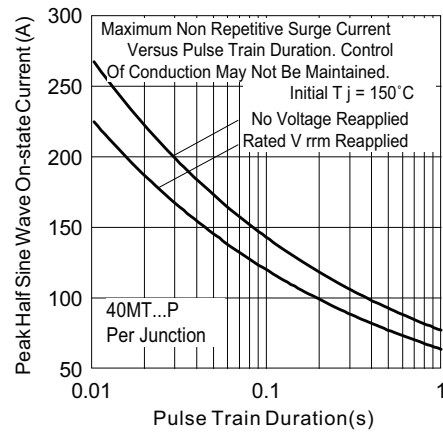


Fig. 4 - Maximum Non-Repetitive Surge Current

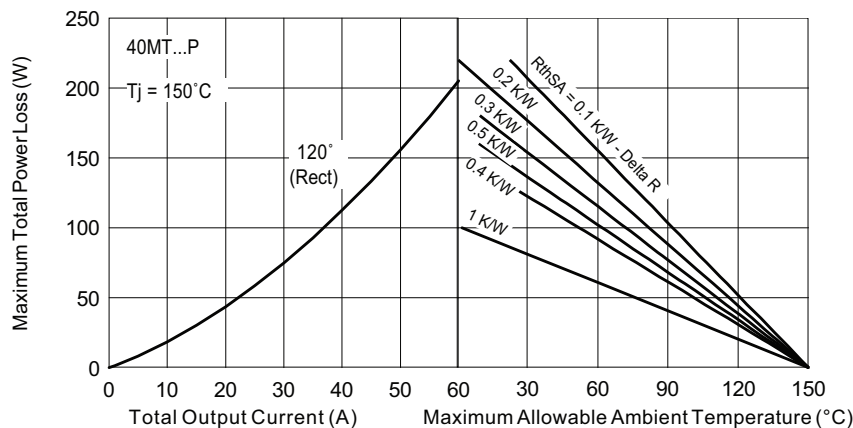


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)

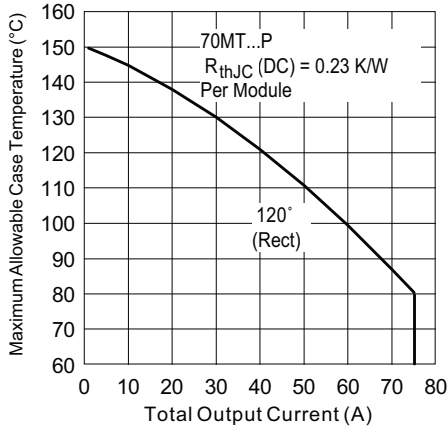


Fig. 6 - Current Rating Characteristics

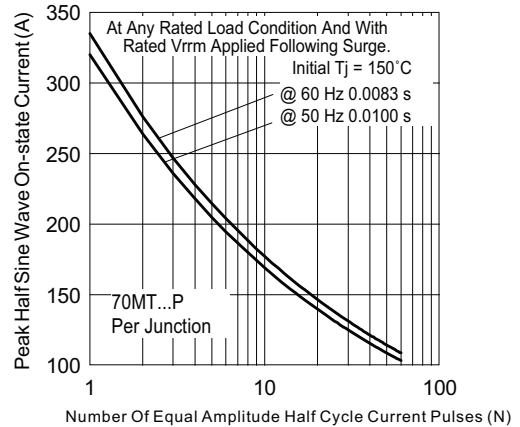


Fig. 8 - Maximum Non-Repetitive Surge Current

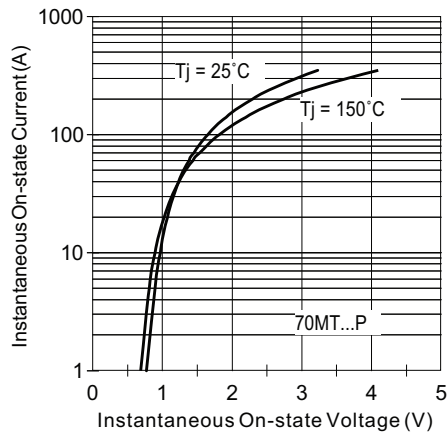


Fig. 7 - On-State Voltage Drop Characteristics

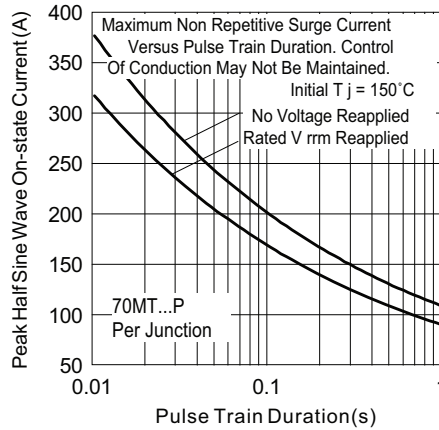


Fig. 9 - Maximum Non-Repetitive Surge Current

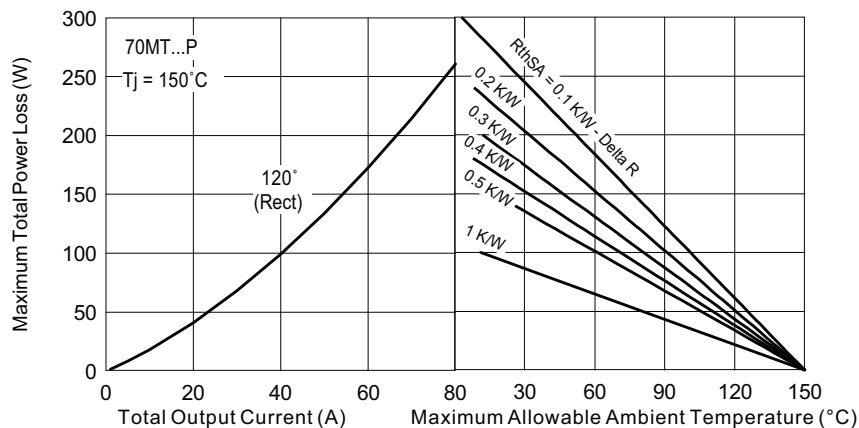


Fig. 10 - Current Rating Nomogram (1 Module Per Heatsink)

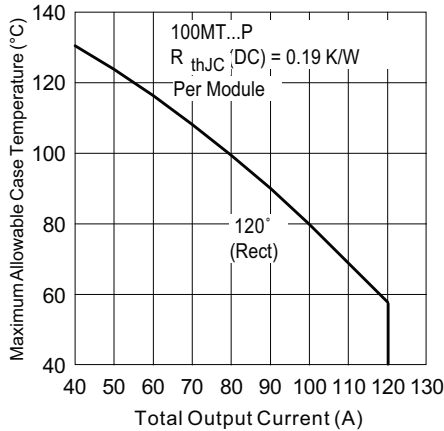


Fig. 11 - Current Rating Characteristics

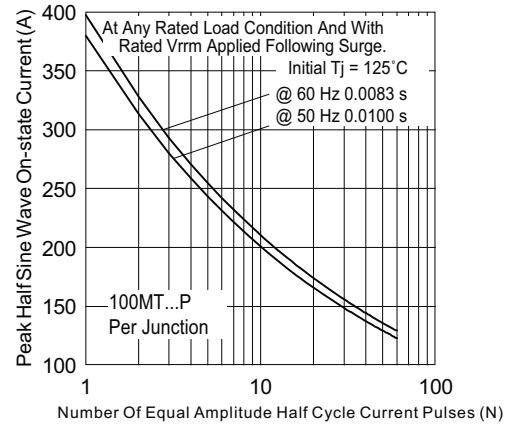


Fig. 13 - Maximum Non-Repetitive Surge Current

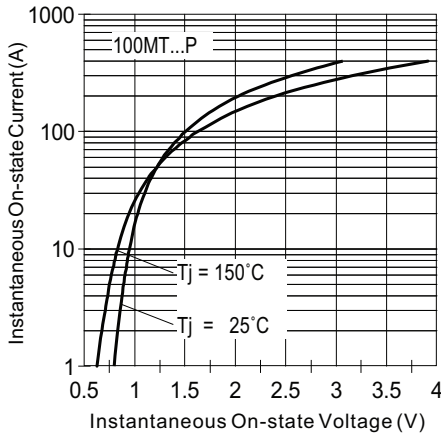


Fig. 12 - On-State Voltage Drop Characteristics

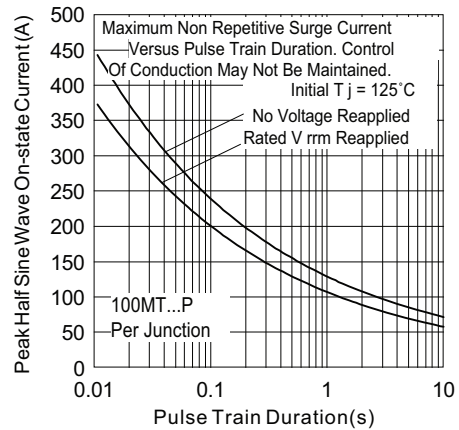


Fig. 14 - Maximum Non-Repetitive Surge Current

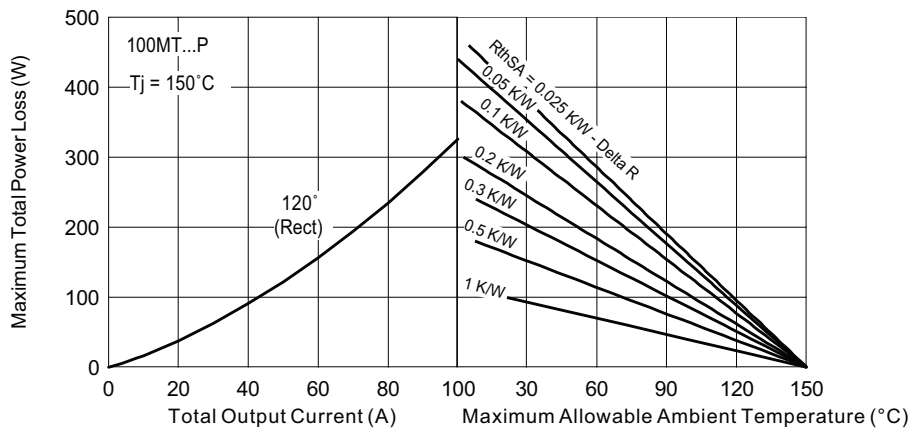
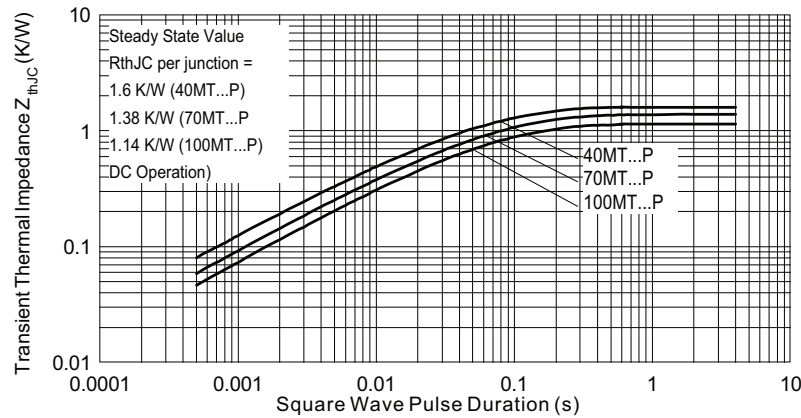


Fig. 15 - Current Rating Nomogram (1 Module Per Heatsink)


 Fig. 16 - Thermal Impedance Z_{thJC} Characteristics

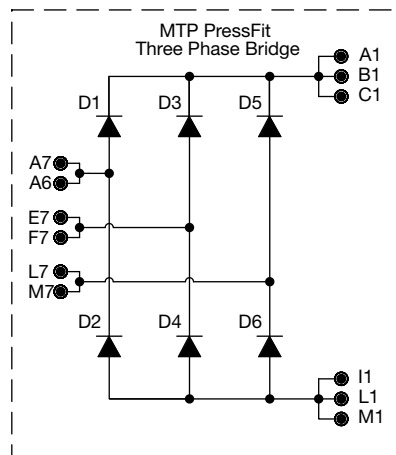
ORDERING INFORMATION TABLE

| | | | | | | | |
|-------------|------------|-----------|----------|-----------|------------|----------|-----------|
| Device code | VS- | 10 | 0 | MT | 160 | P | -P |
| | ① | ② | ③ | ④ | ⑤ | ⑥ | |
| | 1 | 2 | 3 | 4 | 5 | 6 | |

- 1 - Vishay Semiconductors product
- 2 - Current rating code

| |
|------------|
| 4 = 45 A |
| 7 = 75 A |
| 10 = 100 A |
- 3 - Circuit configuration code: 0 = Three Phase Bridge
- 4 - Package indicator
- 5 - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 6 - Pinout code (PressFit pins)

CIRCUIT CONFIGURATION



LINKS TO RELATED DOCUMENTS

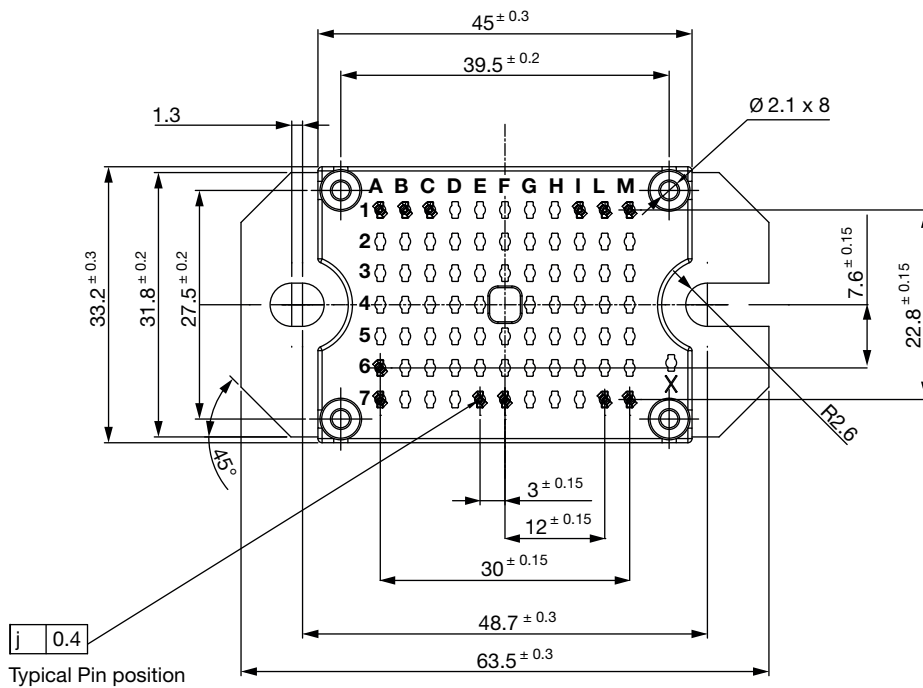
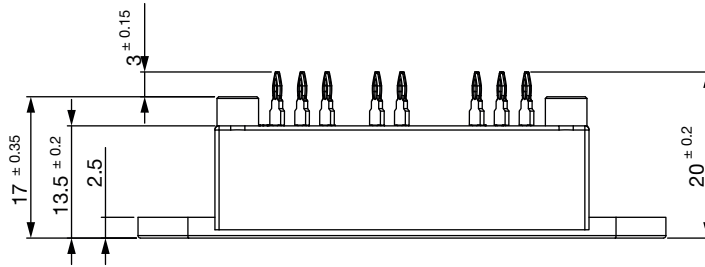
Dimensions

www.vishay.com/doc?95595



MTP PressFit

DIMENSIONS in millimeters





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

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.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.