

Standard Recovery Diodes (Stud Version), 70 A



DO-203AB (DO-5)

FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Leaded version available
- Types up to 1600 V V_{RRM}
- RoHS compliant
- Designed and qualified for industrial level


RoHS
COMPLIANT

TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- Battery charges

PRODUCT SUMMARY

| | |
|-------------|------|
| $I_{F(AV)}$ | 70 A |
|-------------|------|

MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER | TEST CONDITIONS | 70HF(R) | | UNITS |
|--------------|-----------------|-------------|-------------|------------------|
| | | 10 TO 120 | 140/160 | |
| $I_{F(AV)}$ | | 70 | 70 | A |
| | T_C | 140 | 110 | °C |
| $I_{F(RMS)}$ | | 110 | | A |
| I_{FSM} | 50 Hz | 1200 | | A |
| | 60 Hz | 1250 | | |
| I^2t | 50 Hz | 7100 | | A ² s |
| | 60 Hz | 6450 | | |
| V_{RRM} | Range | 100 to 1200 | 1400/1600 | V |
| T_J | | - 65 to 180 | - 65 to 150 | °C |

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 | $V_{R(BR)}$, MINIMUM AVALANCHE VOLTAGE V | I_{RRM} MAXIMUM AT $T_J = T_J$ MAXIMUM mA |
|-------------|--------------|--|--|--|--|
| 70HF(R) | 10 | 100 | 200 | 200 | 15 |
| | 20 | 200 | 300 | 300 | |
| | 40 | 400 | 500 | 500 | |
| | 60 | 600 | 720 | 725 | 9 |
| | 80 | 800 | 960 | 950 | |
| | 100 | 1000 | 1200 | 1150 | |
| | 120 | 1200 | 1440 | 1350 | |
| | 140 | 1400 | 1650 | 1550 | 4.5 |
| 160 | 1600 | 1900 | 1750 | | |

70HF(R) Series



Vishay High Power Products Standard Recovery Diodes
(Stud Version), 70 A

| FORWARD CONDUCTION | | | | | | | |
|---|---------------|---|---------------------------|---|---------|-------------------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | 70HF(R) | | UNITS | |
| | | | | 10 TO 120 | 140/160 | | |
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° conduction, half sine wave | | 70 | | A | |
| | | | | 140 | 110 | °C | |
| Maximum RMS forward current | $I_{F(RMS)}$ | | | 110 | | A | |
| Maximum peak, one cycle forward, non-repetitive surge current | I_{FSM} | t = 10 ms | No voltage reapplied | Sinusoidal half wave, initial $T_J = T_J$ maximum | | 1200 | A |
| | | t = 8.3 ms | | | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | | | 1000 | |
| | | t = 8.3 ms | | | | 1050 | |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reapplied | | | 7100 | A ² s |
| | | t = 8.3 ms | | | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | | | 5000 | |
| | | t = 8.3 ms | | | | 4550 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied | | 71 000 | | A ² √s | |
| Low level value of threshold voltage | $V_{F(TO)1}$ | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 0.79 | | V | |
| High level value of threshold voltage | $V_{F(TO)2}$ | $(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 1.00 | | | |
| Low level value of forward slope resistance | r_{f1} | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 2.33 | | mΩ | |
| High level value of forward slope resistance | r_{f2} | $(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 1.53 | | | |
| Maximum forward voltage drop | V_{FM} | $I_{pk} = 220$ A, $T_J = 25$ °C, $t_p = 400$ μs rectangular wave | | 1.35 | 1.46 | V | |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | | |
|--|----------------|---|--|------------------------|-------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | 70HF(R) | | UNITS |
| | | | | 10 TO 120 | 140/160 | |
| Maximum junction and storage temperature range | T_J, T_{Stg} | | | - 65 to 180 | - 65 to 150 | °C |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | | 0.45 | | K/W |
| Thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth, flat and greased | | 0.25 | | |
| Allowable mounting torque | | Not lubricated threads | | 3.4 + 0 - 10 % (30) | | N · m (lbf · in) |
| | | Lubricated threads | | 2.3 + 0 - 10 % (20) | | |
| Approximate weight | | | | 17 | | g |
| | | | | 0.6 | | oz. |
| Case style | | See dimensions - link at the end of datasheet | | DO-203AB (DO-5) | | |



| ΔR_{thJC} CONDUCTION | | | | |
|------------------------------|-----------------------|------------------------|-------------------------------|-------|
| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS | UNITS |
| 180° | 0.08 | 0.06 | $T_J = T_{J \text{ maximum}}$ | K/W |
| 120° | 0.10 | 0.11 | | |
| 90° | 0.13 | 0.14 | | |
| 60° | 0.19 | 0.20 | | |
| 30° | 0.30 | 0.30 | | |

Note

- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

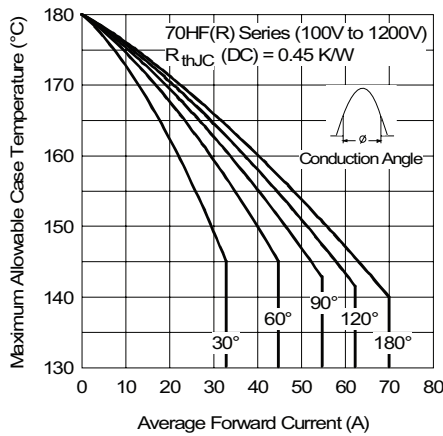


Fig. 1 - Current Ratings Characteristics

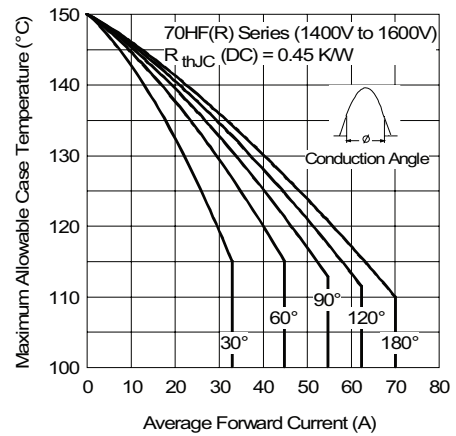


Fig. 3 - Current Ratings Characteristics

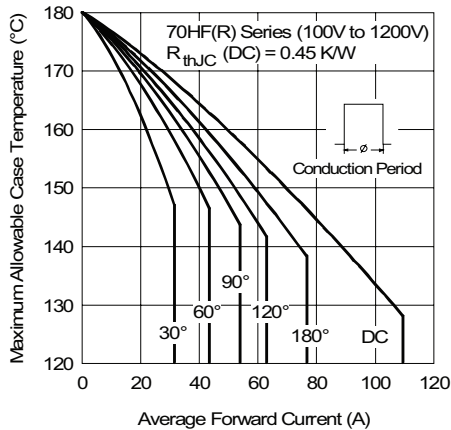


Fig. 2 - Current Ratings Characteristics

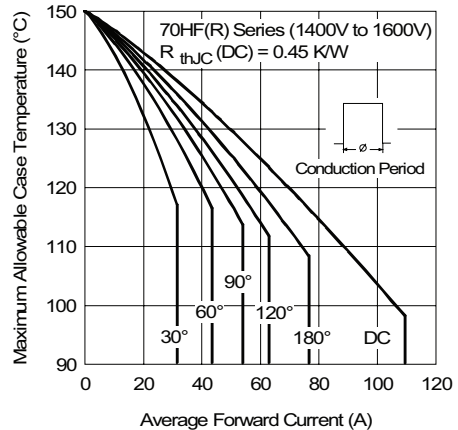


Fig. 4 - Current Ratings Characteristics

70HF(R) Series

Vishay High Power Products Standard Recovery Diodes
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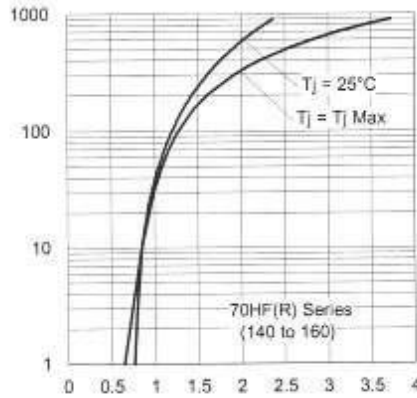


Fig. 13 - Forward Voltage Drop Characteristics

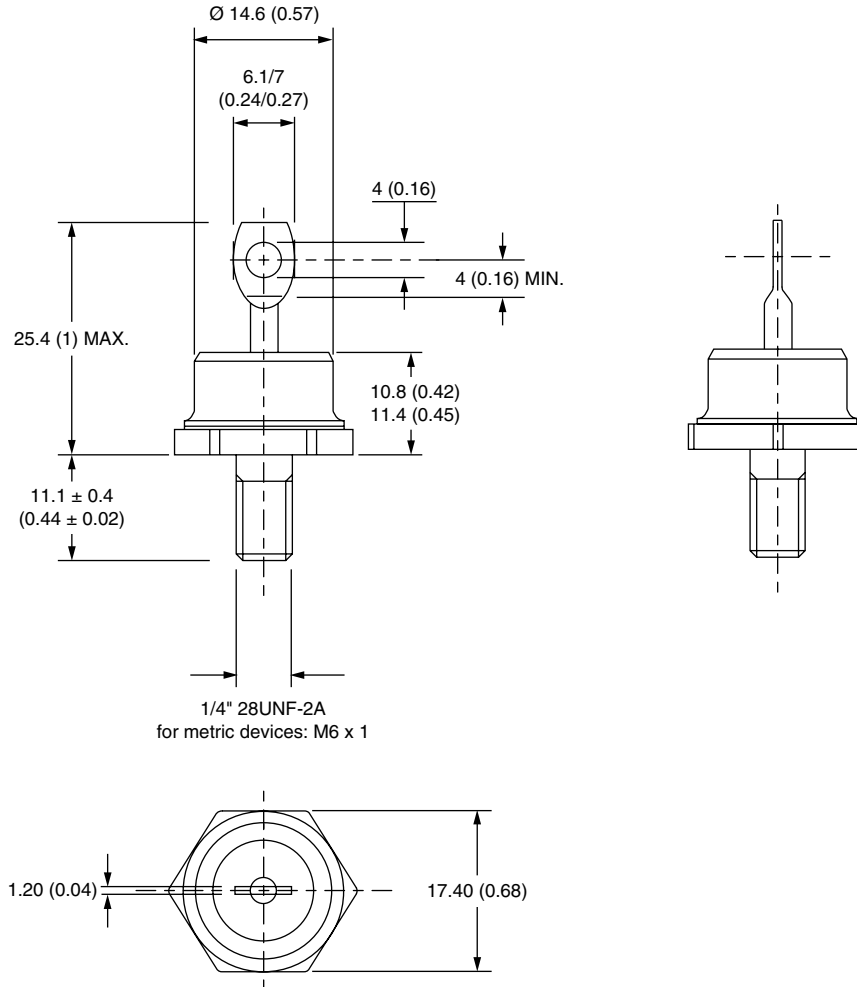
ORDERING INFORMATION TABLE

| | | | | | |
|-------------|-----------|---|----------|------------|----------|
| Device code | 70 | HF | R | 160 | M |
| | ① | ② | ③ | ④ | ⑤ |
| 1 | - | 70 = Standard device 71 = Not isolated lead 72 = Isolated lead with silicone sleeve (red = Reverse polarity) (blue = Normal polarity) | | | |
| 2 | - | HF = Standard diode | | | |
| 3 | - | • None = Stud normal polarity (cathode to stud) • R = Stud reverse polarity (anode to stud) | | | |
| 4 | - | Voltage code x 10 = V_{RRM} (see Voltage Ratings table) | | | |
| 5 | - | • None = Stud base DO-203AB (DO-5) 1/4" 28UNF-2A • M = Stud base DO-203AB (DO-5) M6 x 1 | | | |



DO-203AB (DO-5) for 70HF(R) and 71HF(R) Series

DIMENSIONS FOR 70HF(R) SERIES in millimeters (inches)



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