



| ELECTRICAL SPECIFICATIONS ( $T_J = 25\text{ }^{\circ}\text{C}$ unless otherwise specified) |          |                                                                        |            |      |      |                   |
|--------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------|------------|------|------|-------------------|
| PARAMETER                                                                                  | SYMBOL   | TEST CONDITIONS                                                        |            | MIN. | TYP. | MAX. UNITS        |
| Cathode to anode breakdown voltage                                                         | $V_{BR}$ | $I_R = 100\text{ }\mu\text{A}$                                         |            | 600  | -    | - V               |
| Maximum forward voltage                                                                    | $V_{FM}$ | $I_F = 8.0\text{ A}$                                                   | See fig. 1 | -    | 1.4  | 1.7               |
|                                                                                            |          | $I_F = 16\text{ A}$                                                    |            | -    | 1.7  | 2.1               |
|                                                                                            |          | $I_F = 8.0\text{ A}, T_J = 125\text{ }^{\circ}\text{C}$                |            | -    | 1.4  | 1.7               |
| Maximum reverse leakage current                                                            | $I_{RM}$ | $V_R = V_R\text{ rated}$                                               | See fig. 2 | -    | 0.3  | 5.0 $\mu\text{A}$ |
|                                                                                            |          | $T_J = 125\text{ }^{\circ}\text{C}, V_R = 0.8 \times V_R\text{ rated}$ |            | -    | 100  | 500               |
| Junction capacitance                                                                       | $C_T$    | $V_R = 200\text{ V}$                                                   | See fig. 3 | -    | 10   | 25 pF             |
| Series inductance                                                                          | $L_S$    | Measured lead to lead 5 mm from package body                           |            | -    | 8.0  | - nH              |

| DYNAMIC RECOVERY CHARACTERISTICS ( $T_J = 25\text{ }^{\circ}\text{C}$ unless otherwise specified) |                   |                                                                             |                                                                                      |      |      |                    |
|---------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------|------|--------------------|
| PARAMETER                                                                                         | SYMBOL            | TEST CONDITIONS                                                             |                                                                                      | MIN. | TYP. | MAX. UNITS         |
| Reverse recovery time<br>See fig. 5, 10                                                           | $t_{rr}$          | $I_F = 1.0\text{ A}, dI_F/dt = 200\text{ A}/\mu\text{s}, V_R = 30\text{ V}$ |                                                                                      | -    | 18   | - ns               |
|                                                                                                   | $t_{rr1}$         | $T_J = 25\text{ }^{\circ}\text{C}$                                          | $I_F = 8.0\text{ A}$<br>$dI_F/dt = 200\text{ A}/\mu\text{s}$<br>$V_R = 200\text{ V}$ | -    | 37   | 55                 |
|                                                                                                   | $t_{rr2}$         | $T_J = 125\text{ }^{\circ}\text{C}$                                         |                                                                                      | -    | 55   | 90                 |
| Peak recovery current<br>See fig. 6                                                               | $I_{RRM1}$        | $T_J = 25\text{ }^{\circ}\text{C}$                                          |                                                                                      | -    | 3.5  | 5.0 A              |
|                                                                                                   | $I_{RRM2}$        | $T_J = 125\text{ }^{\circ}\text{C}$                                         |                                                                                      | -    | 4.5  | 8.0                |
| Reverse recovery charge<br>See fig. 7                                                             | $Q_{rr1}$         | $T_J = 25\text{ }^{\circ}\text{C}$                                          |                                                                                      | -    | 65   | 138 nC             |
|                                                                                                   | $Q_{rr2}$         | $T_J = 125\text{ }^{\circ}\text{C}$                                         |                                                                                      | -    | 124  | 360                |
| Peak rate of fall of recovery current during $t_b$<br>See fig. 8                                  | $dI_{(rec)M}/dt1$ | $T_J = 25\text{ }^{\circ}\text{C}$                                          |                                                                                      | -    | 240  | - A/ $\mu\text{s}$ |
|                                                                                                   | $dI_{(rec)M}/dt2$ | $T_J = 125\text{ }^{\circ}\text{C}$                                         |                                                                                      | -    | 210  | -                  |

| THERMAL - MECHANICAL SPECIFICATIONS     |                 |                                            |           |      |         |                     |
|-----------------------------------------|-----------------|--------------------------------------------|-----------|------|---------|---------------------|
| PARAMETER                               | SYMBOL          | TEST CONDITIONS                            | MIN.      | TYP. | MAX.    | UNITS               |
| Lead temperature                        | $T_{lead}$      | 0.063" from case (1.6 mm) for 10 s         | -         | -    | 300     | $^{\circ}\text{C}$  |
| Thermal resistance, junction to case    | $R_{\theta JC}$ |                                            | -         | -    | 3.5     | K/W                 |
| Thermal resistance, junction to ambient | $R_{\theta JA}$ | Typical socket mount                       | -         | -    | 40      |                     |
| Thermal resistance, case to heatsink    | $R_{\theta CS}$ | Mounting surface, flat, smooth and greased | -         | 0.25 | -       |                     |
| Weight                                  |                 |                                            | -         | 6.0  | -       | g                   |
|                                         |                 |                                            | -         | 0.21 | -       | oz.                 |
| Mounting torque                         |                 |                                            | 6.0 (5.0) | -    | 12 (10) | kgf · cm (lbf · in) |
| Marking device                          |                 | Case style TO-247AC modified (JEDEC)       | HFA08PB60 |      |         |                     |

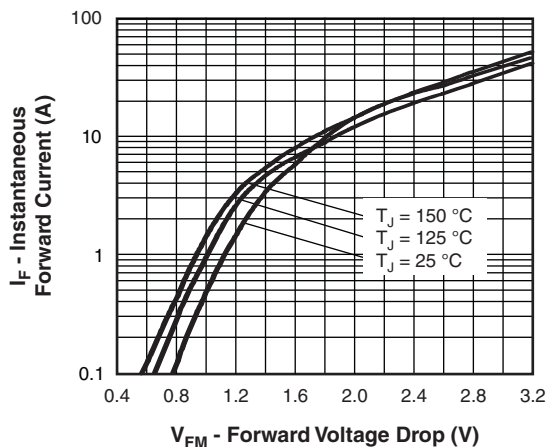


Fig. 1 - Maximum Forward Voltage Drop vs. Instantaneous Forward Current

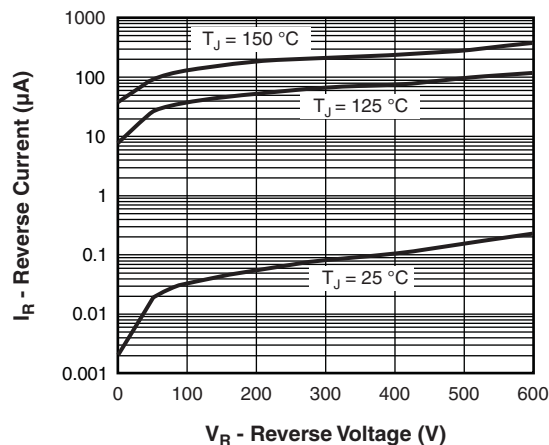


Fig. 2 - Typical Reverse Current vs. Reverse Voltage

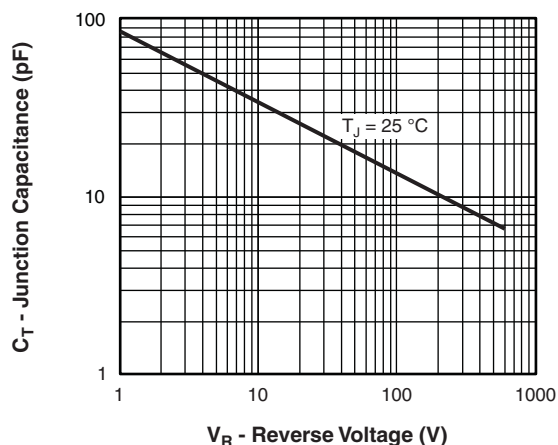


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

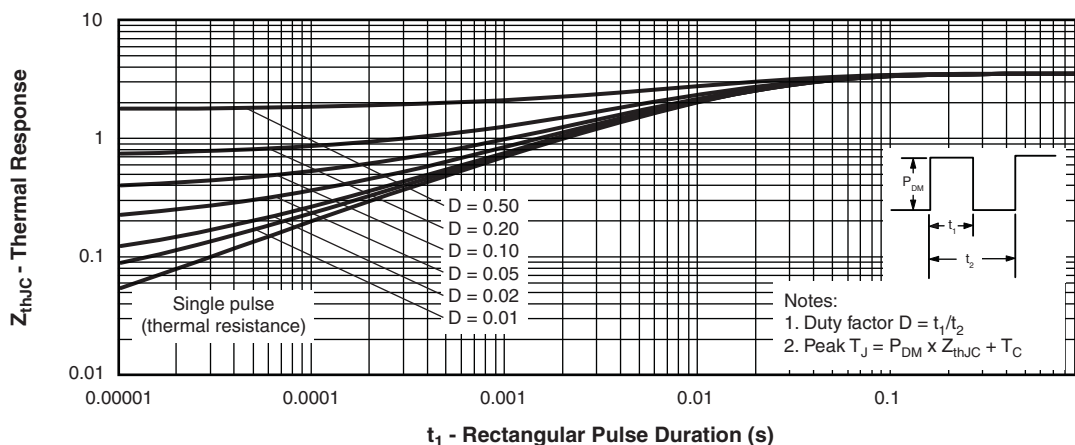


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

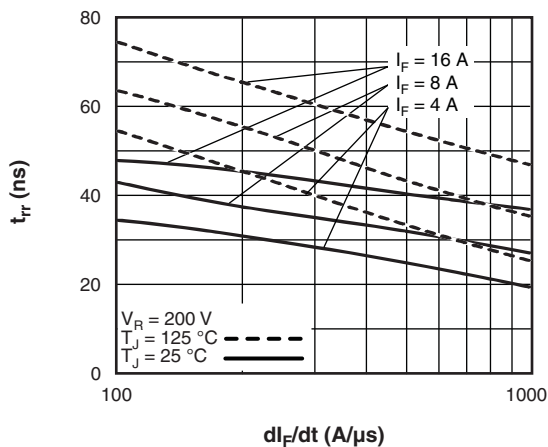


Fig. 5 - Typical Reverse Recovery Time vs.  $dI_F/dt$  (Per Leg)

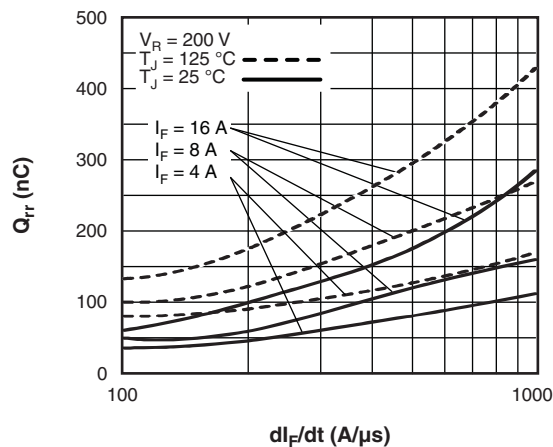


Fig. 7 - Typical Stored Charge vs.  $dI_F/dt$  (Per Leg)

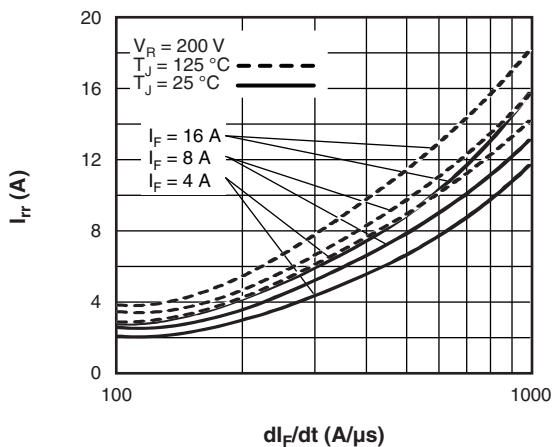


Fig. 6 - Typical Recovery Current vs.  $dI_F/dt$  (Per Leg)

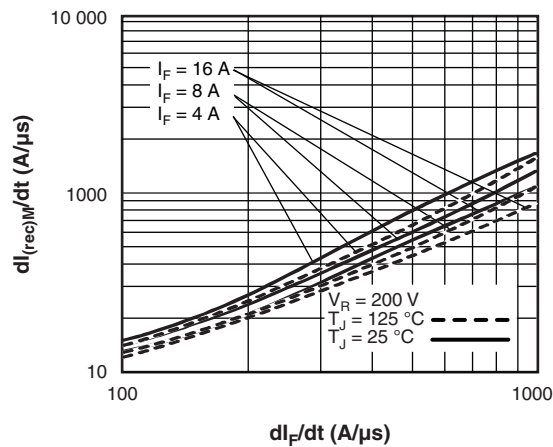


Fig. 8 - Typical  $dI_{(rec)M}/dt$  vs.  $dI_F/dt$  (Per Leg)

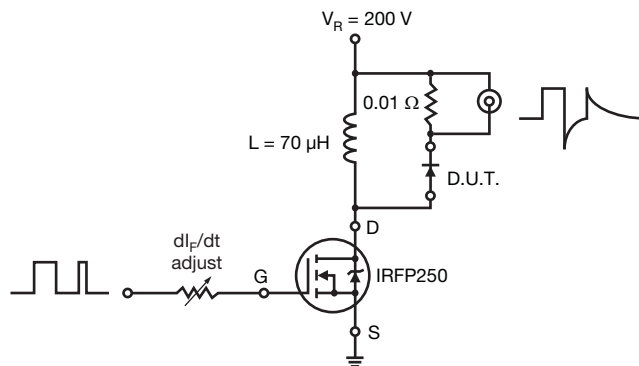


Fig. 9 - Reverse Recovery Parameter Test Circuit

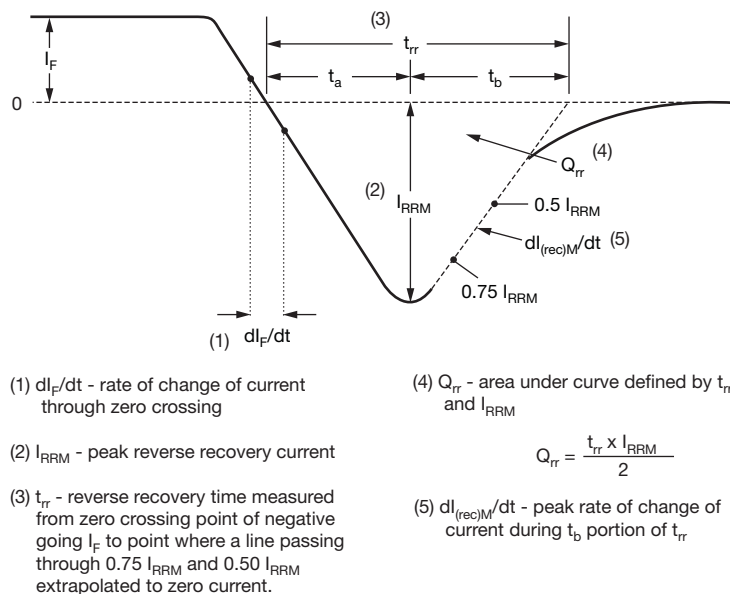


Fig. 10 - Reverse Recovery Waveform and Definitions



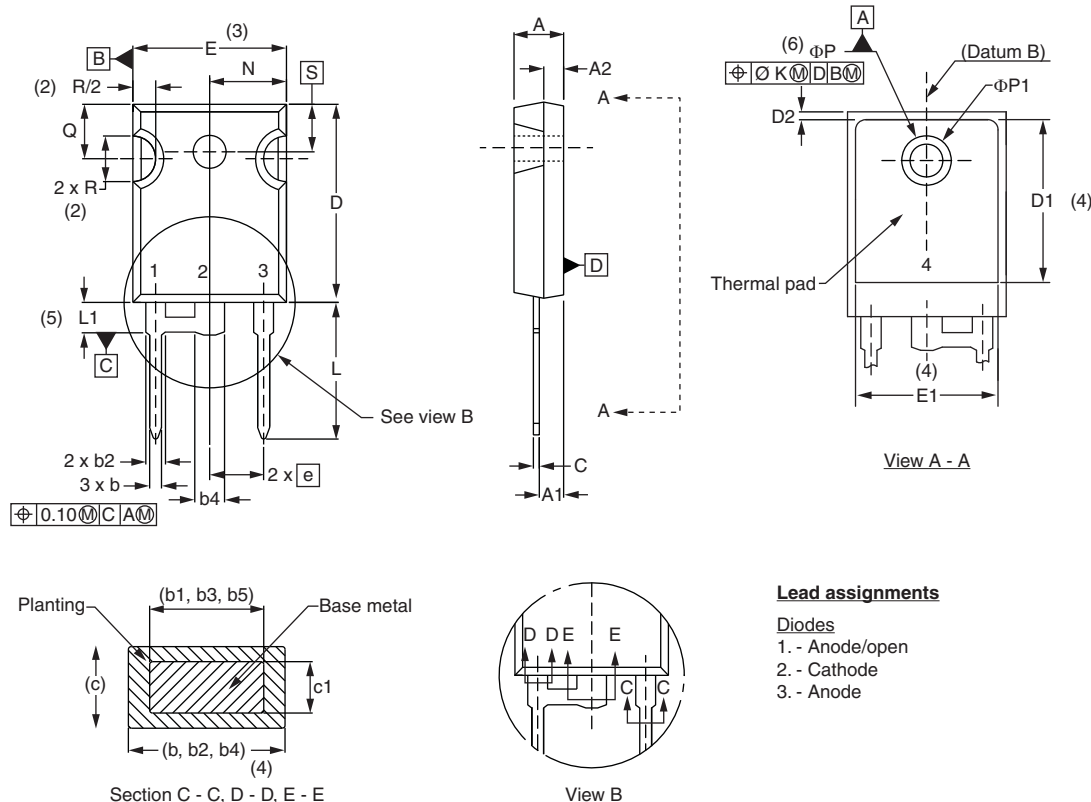
## ORDERING INFORMATION TABLE

|             |     |    |   |    |    |    |     |
|-------------|-----|----|---|----|----|----|-----|
| Device code | VS- | HF | A | 08 | PB | 60 | PbF |
|             | ①   | ②  | ③ | ④  | ⑤  | ⑥  | ⑦   |

- |          |   |                               |
|----------|---|-------------------------------|
| <b>1</b> | - | Vishay Semiconductors product |
| <b>2</b> | - | HEXFRED® family               |
| <b>3</b> | - | Electron irradiated           |
| <b>4</b> | - | Current rating (08 = 8A)      |
| <b>5</b> | - | PB = TO-247AC modified        |
| <b>6</b> | - | Voltage rating: (60 = 600 V)  |
| <b>7</b> | - | Environmental digit:          |
- PbF = Lead (Pb)-free and RoHS compliant  
-N3 = Halogen-free, RoHS compliant and totally lead (Pb)-free

| ORDERING INFORMATION (Example) |                  |                        |                         |
|--------------------------------|------------------|------------------------|-------------------------|
| PREFERRED P/N                  | QUANTITY PER T/R | MINIMUM ORDER QUANTITY | PACKAGING DESCRIPTION   |
| VS-HFA08PB60PbF                | 25               | 500                    | Antistatic plastic tube |
| VS-HFA08PB60-N3                | 25               | 500                    | Antistatic plastic tube |

| LINKS TO RELATED DOCUMENTS |                       |                                                                        |
|----------------------------|-----------------------|------------------------------------------------------------------------|
| Dimensions                 |                       | <a href="http://www.vishay.com/doc?95253">www.vishay.com/doc?95253</a> |
| Part marking information   | TO-247AC modified PbF | <a href="http://www.vishay.com/doc?95255">www.vishay.com/doc?95255</a> |
|                            | TO-247AC modified -N3 | <a href="http://www.vishay.com/doc?95442">www.vishay.com/doc?95442</a> |

**DIMENSIONS** in millimeters and inches**Lead assignments****Diodes**

1. - Anode/open
2. - Cathode
3. - Anode

| SYMBOL | MILLIMETERS |       | INCHES |       | NOTES |
|--------|-------------|-------|--------|-------|-------|
|        | MIN.        | MAX.  | MIN.   | MAX.  |       |
| A      | 4.65        | 5.31  | 0.183  | 0.209 |       |
| A1     | 2.21        | 2.59  | 0.087  | 0.102 |       |
| A2     | 1.50        | 2.49  | 0.059  | 0.098 |       |
| b      | 0.99        | 1.40  | 0.039  | 0.055 |       |
| b1     | 0.99        | 1.35  | 0.039  | 0.053 |       |
| b2     | 1.65        | 2.39  | 0.065  | 0.094 |       |
| b3     | 1.65        | 2.37  | 0.065  | 0.094 |       |
| b4     | 2.59        | 3.43  | 0.102  | 0.135 |       |
| b5     | 2.59        | 3.38  | 0.102  | 0.133 |       |
| c      | 0.38        | 0.86  | 0.015  | 0.034 |       |
| c1     | 0.38        | 0.76  | 0.015  | 0.030 |       |
| D      | 19.71       | 20.70 | 0.776  | 0.815 | 3     |
| D1     | 13.08       | -     | 0.515  | -     | 4     |

| SYMBOL    | MILLIMETERS |       | INCHES    |       | NOTES |
|-----------|-------------|-------|-----------|-------|-------|
|           | MIN.        | MAX.  | MIN.      | MAX.  |       |
| D2        | 0.51        | 1.30  | 0.020     | 0.051 |       |
| E         | 15.29       | 15.87 | 0.602     | 0.625 | 3     |
| E1        | 13.72       | -     | 0.540     | -     |       |
| e         | 5.46 BSC    |       | 0.215 BSC |       |       |
| $\Phi K$  | 2.54        |       | 0.010     |       |       |
| L         | 14.20       | 16.10 | 0.559     | 0.634 |       |
| L1        | 3.71        | 4.29  | 0.146     | 0.169 |       |
| N         | 7.62 BSC    |       | 0.3       |       |       |
| $\Phi P$  | 3.56        | 3.66  | 0.14      | 0.144 |       |
| $\Phi P1$ | -           | 6.98  | -         | 0.275 |       |
| Q         | 5.31        | 5.69  | 0.209     | 0.224 |       |
| R         | 4.52        | 5.49  | 1.78      | 0.216 |       |
| S         | 5.51 BSC    |       | 0.217 BSC |       |       |

**Notes**

- (1) Dimensioning and tolerance per ASME Y14.5M-1994
- (2) Contour of slot optional
- (3) Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outermost extremes of the plastic body
- (4) Thermal pad contour optional with dimensions D1 and E1
- (5) Lead finish uncontrolled in L1
- (6)  $\Phi P$  to have a maximum draft angle of 1.5 to the top of the part with a maximum hole diameter of 3.91 mm (0.154")
- (7) Outline conforms to JEDEC outline TO-247 with exception of dimension c



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