

# 1 Characteristics

**Table 2. Absolute ratings (limiting values per diode)**

| Symbol       | Parameter   |                                     |                               | Value        | Unit               |
|--------------|---|-------------------------------------|-------------------------------|--------------|--------------------|
| $V_{RRM}$    | Repetitive peak reverse voltage                     |                                     |                               | 60           | V                  |
| $I_{F(RMS)}$ | Forward rms current                                 |                                     |                               | 30           | A                  |
| $I_{F(AV)}$  | Average forward current, $\delta = 0.5$             | $T_c = 155\text{ }^{\circ}\text{C}$ | Per diode                     | 15           | A                  |
|              |   |                                     | Total package                 | 30           |                    |
| $I_{FSM}$    | Surge non repetitive forward current                | $t_p = 10\text{ ms}$ sinusoidal     |                               | 230          | A                  |
| $P_{ARM}$    | Relative peak avalanche power                       | $T_j = 125\text{ }^{\circ}\text{C}$ | $t_p = 10\text{ }\mu\text{s}$ | 715          | W                  |
| $T_j$        | Operating junction temperature range <sup>(1)</sup> |                                     |                               | -40 to + 175 | $^{\circ}\text{C}$ |
| $T_{stg}$    | Storage temperature range                           |                                     |                               | -65 to + 175 | $^{\circ}\text{C}$ |

1.  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  condition to avoid thermal runaway for a diode on its own heatsink

**Table 3. Thermal parameters**

| Symbol        | Parameter        |           | Value | Unit                 |
|---------------|------------------|-----------|-------|----------------------|
| $R_{th(j-c)}$ | Junction to case | Per diode | 1.5   | $^{\circ}\text{C/W}$ |
|               |                  | Total     | 0.8   |                      |
| $R_{th(c)}$   | Coupling         |           | 0.1   |                      |

**Table 4. Static electrical characteristics**

| Symbol      | Parameter               | Test conditions                     |                      | Min. | Typ. | Max. | Unit          |
|-------------|-------------------------|-------------------------------------|----------------------|------|------|------|---------------|
| $I_R^{(1)}$ | Reverse leakage current | $T_j = 25\text{ }^{\circ}\text{C}$  | $V_R = V_{RRM}$      |      |      | 60   | $\mu\text{A}$ |
|             |                         | $T_j = 125\text{ }^{\circ}\text{C}$ |                      |      | 8    | 25   | mA            |
| $V_F^{(2)}$ | Forward voltage drop    | $T_j = 25\text{ }^{\circ}\text{C}$  | $I_F = 7.5\text{ A}$ |      |      | 550  | mV            |
|             |                         | $T_j = 125\text{ }^{\circ}\text{C}$ |                      |      | 435  | 470  |               |
|             |                         | $T_j = 25\text{ }^{\circ}\text{C}$  | $I_F = 15\text{ A}$  |      |      | 660  |               |
|             |                         | $T_j = 125\text{ }^{\circ}\text{C}$ |                      |      | 535  | 570  |               |
|             |                         | $T_j = 25\text{ }^{\circ}\text{C}$  | $I_F = 30\text{ A}$  |      |      | 820  |               |
|             |                         | $T_j = 125\text{ }^{\circ}\text{C}$ |                      |      | 635  | 690  |               |

1. Pulse test:  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$

2. Pulse test:  $t_p = 380\text{ }\mu\text{s}$ ,  $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.45 \times I_{F(AV)} + 0.008 \times I_{F(RMS)}^2$$

Figure 1. Conduction losses versus average forward current

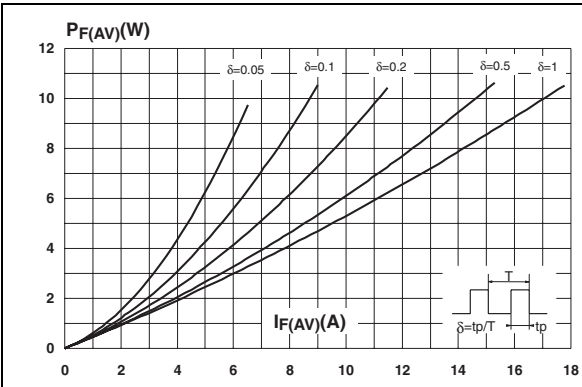


Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ , per diode)

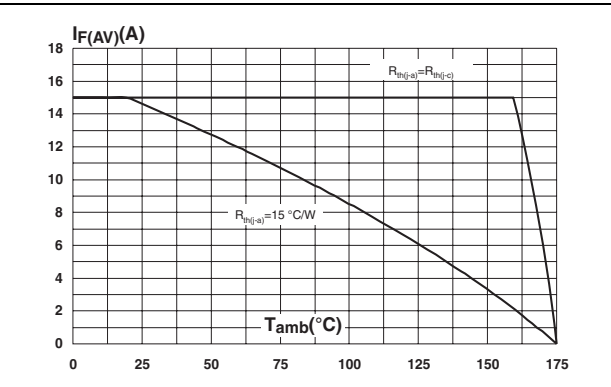


Figure 3. Normalized avalanche power derating versus pulse duration

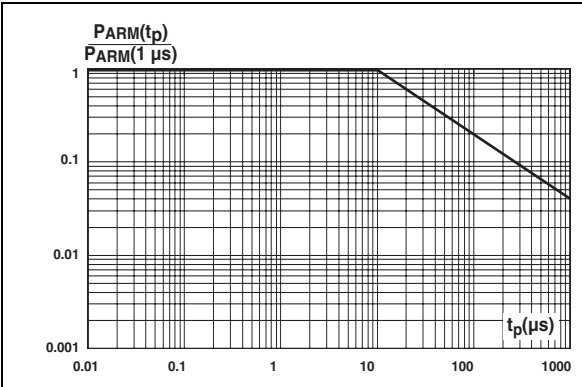


Figure 4. Relative variation of thermal impedance junction to case versus pulse duration

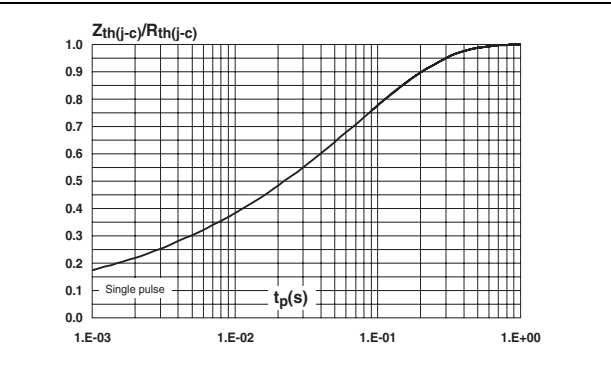


Figure 5. Reverse leakage current versus reverse voltage applied (typical values, per diode)

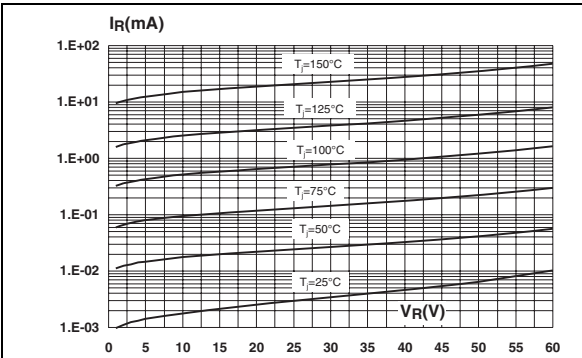


Figure 6. Junction capacitance versus reverse voltage applied (typical values, per diode)

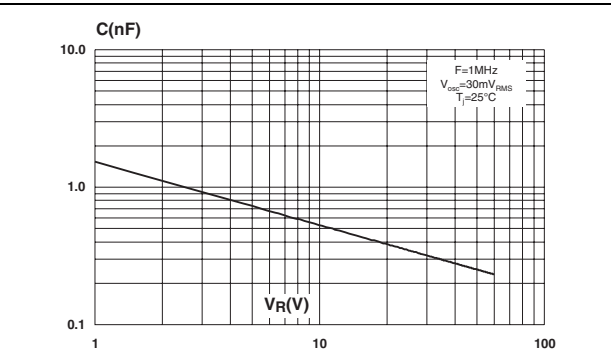


Figure 7. Forward voltage drop versus forward current (per diode)

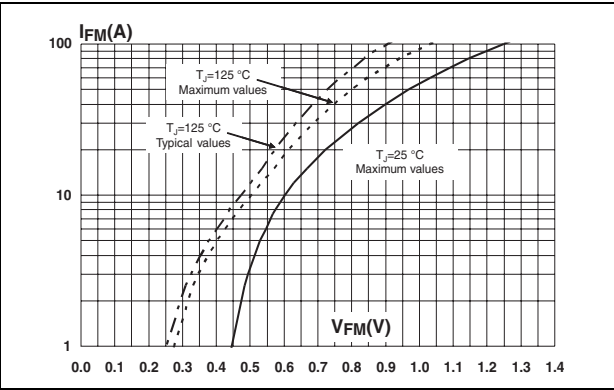
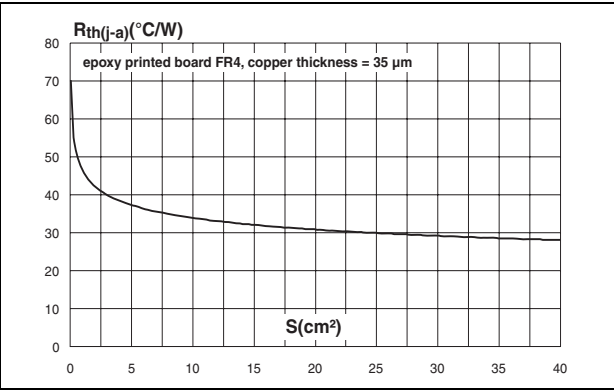


Figure 8. Thermal resistance junction to ambient versus copper surface under tab



# 2 Package information

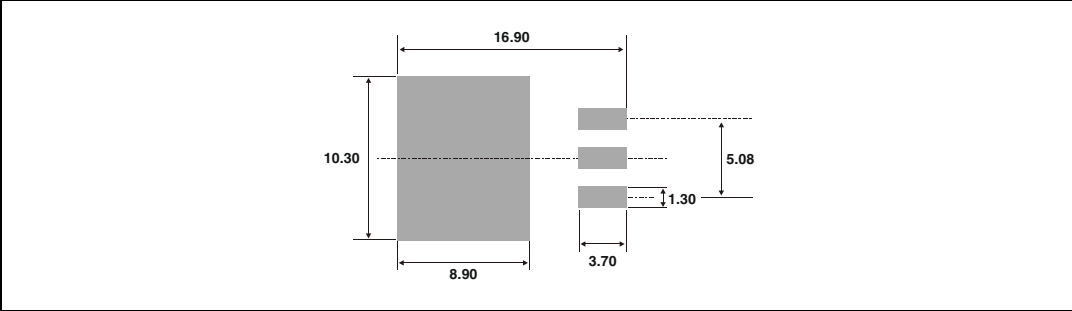
- Epoxy meets UL94, V0
- Cooling method: by conduction (C)

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Table 5. D<sup>2</sup>PAK dimensions

| Ref. | Dimensions  |       |            |       |
|------|-------------|-------|------------|-------|
|      | Millimeters |       | Inches     |       |
|      | Min.        | Max   | Min.       | Max.  |
| A    | 4.40        | 4.60  | 0.173      | 0.181 |
| A1   | 2.49        | 2.69  | 0.098      | 0.106 |
| A2   | 0.03        | 0.23  | 0.001      | 0.009 |
| B    | 0.70        | 0.93  | 0.027      | 0.037 |
| B2   | 1.14        | 1.70  | 0.045      | 0.067 |
| C    | 0.45        | 0.60  | 0.017      | 0.024 |
| C2   | 1.23        | 1.36  | 0.048      | 0.054 |
| D    | 8.95        | 9.35  | 0.352      | 0.368 |
| E    | 10.00       | 10.40 | 0.393      | 0.409 |
| G    | 4.88        | 5.28  | 0.192      | 0.208 |
| L    | 15.00       | 15.85 | 0.590      | 0.624 |
| L2   | 1.27        | 1.40  | 0.050      | 0.055 |
| L3   | 1.40        | 1.75  | 0.055      | 0.069 |
| M    | 2.40        | 3.20  | 0.094      | 0.126 |
| R    | 0.40 typ.   |       | 0.016 typ. |       |
| V2   | 0°          | 8°    | 0°         | 8°    |

Figure 9. Footprint (dimensions in millimeters)



### 3 Ordering information

**Table 6. Ordering information**

| Order code      | Marking         | Package            | Weight | Base qty | Delivery mode |
|-----------------|-----------------|--------------------|--------|----------|---------------|
| STPS30H60CGY-TR | STPS30H60CGY-TR | D <sup>2</sup> PAK | 1.48 g | 1000     | Tape and reel |

### 4 Revision history

**Table 7. Document revision history**

| Date        | Revision | Changes      |
|-------------|----------|--------------|
| 20-Mar-2012 | 1        | First issue. |

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