

1 Characteristics

Table 2. Absolute ratings (limiting values at 25 °C unless otherwise specified)

| Symbol | Parameter | | Value | Unit |
|--------------|---|--|-------------|------|
| V_{RRM} | Repetitive peak reverse voltage | | 1200 | V |
| $I_{F(RMS)}$ | Forward rms current | | 11 | A |
| $I_{F(AV)}$ | Average forward current | $T_C = 125\text{ °C}$, $\delta = 0.5$, DC | 6 | A |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10\text{ ms}$ sinusoidal, $T_C = 25\text{ °C}$ | 36 | A |
| | | $t_p = 10\text{ ms}$ sinusoidal, $T_C = 150\text{ °C}$ | 30 | |
| | | $t_p = 10\text{ }\mu\text{s}$ square, $T_C = 25\text{ °C}$ | 100 | |
| I_{FRM} | Repetitive peak forward current | $\delta = 0.1$, $T_C = 125\text{ °C}$ | 28 | A |
| T_{stg} | Storage temperature range | | -65 to +175 | °C |
| T_j | Operating junction temperature range ⁽¹⁾ | | -40 to +175 | °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 resistance

| Symbol | Parameter | Typ. | Max. | Unit |
|---------------|------------------|------|------|------|
| $R_{th(j-c)}$ | Junction to case | 1.3 | 1.9 | °C/W |

Table 4. Static electrical characteristics

| Symbol | Parameter | Tests conditions | | Min. | Typ. | Max. | Unit |
|-------------|-------------------------|-----------------------|--------------------|------|------|------|---------------|
| $I_R^{(1)}$ | Reverse leakage current | $T_j = 25\text{ °C}$ | $V_R = V_{RRM}$ | - | 100 | 400 | μA |
| | | $T_j = 150\text{ °C}$ | | - | 0.65 | 1.5 | mA |
| $V_F^{(2)}$ | Forward voltage drop | $T_j = 25\text{ °C}$ | $I_F = 6\text{ A}$ | - | 1.55 | 1.9 | V |
| | | $T_j = 150\text{ °C}$ | | - | 2.05 | 2.6 | |

1. $t_p = 10\text{ ms}$, $\delta < 2\%$

2. $t_p = 500\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.89 \times I_{F(AV)} + 0.285 \times I_{F(RMS)}^2$$

Table 5. Dynamic electrical characteristics

| Symbol | Parameter | Test conditions | Typ. | Unit |
|----------------|-------------------------|--|------|------|
| $Q_{cj}^{(1)}$ | Total capacitive charge | $V_R = 800\text{ V}$ | 29 | nC |
| C_j | Total capacitance | $V_R = 0\text{ V}$, $T_C = 25\text{ °C}$, $F = 1\text{ MHz}$ | 330 | pF |
| | | $V_R = 300\text{ V}$, $T_C = 25\text{ °C}$, $F = 1\text{ MHz}$ | 30 | |

1. Most accurate value for the capacitive charge: $Q_{cj} = \int_0^{V_{OUT}} C_j(V_R) \cdot dV_R$

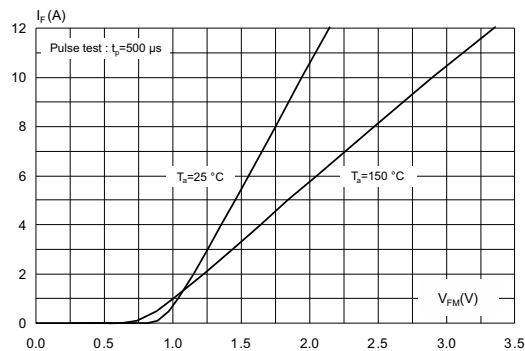
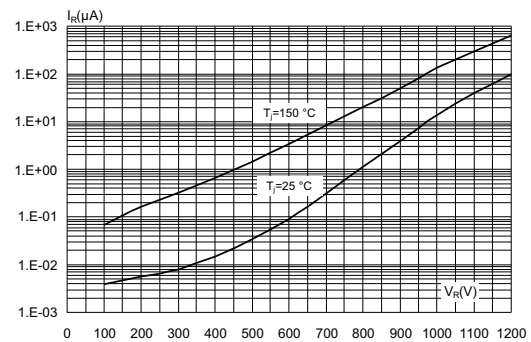
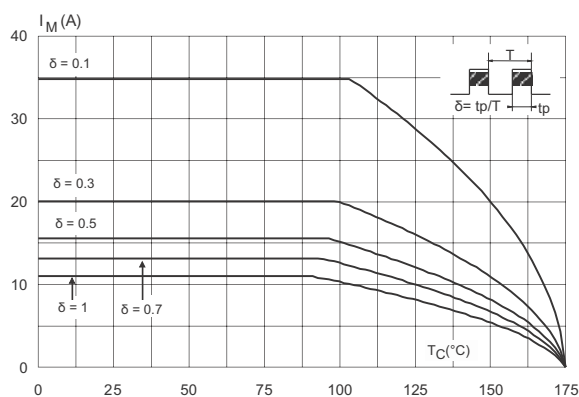
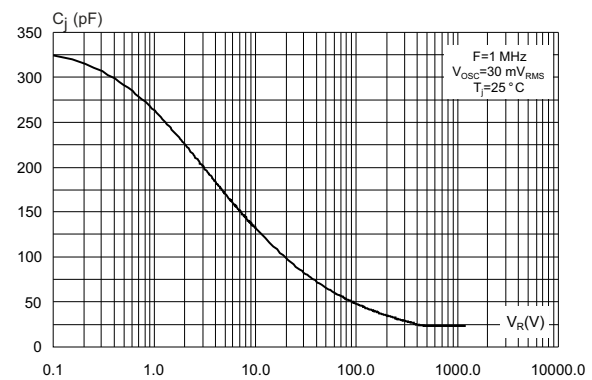
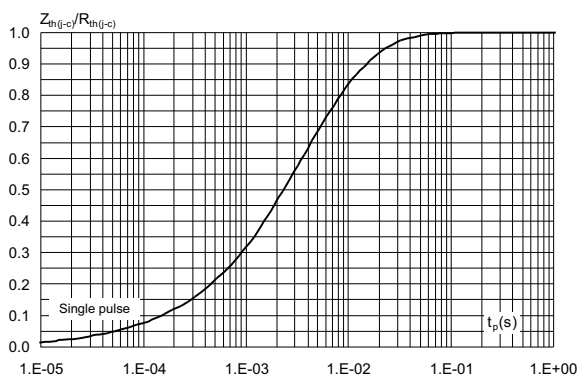
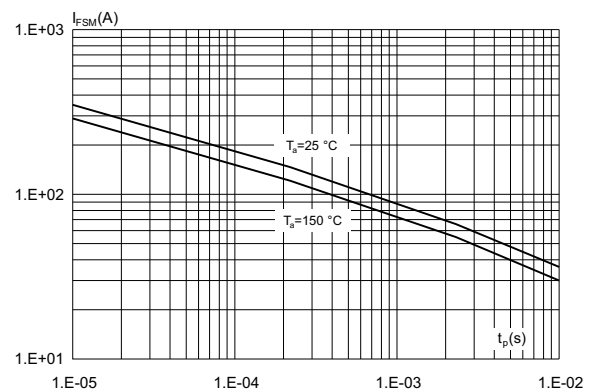
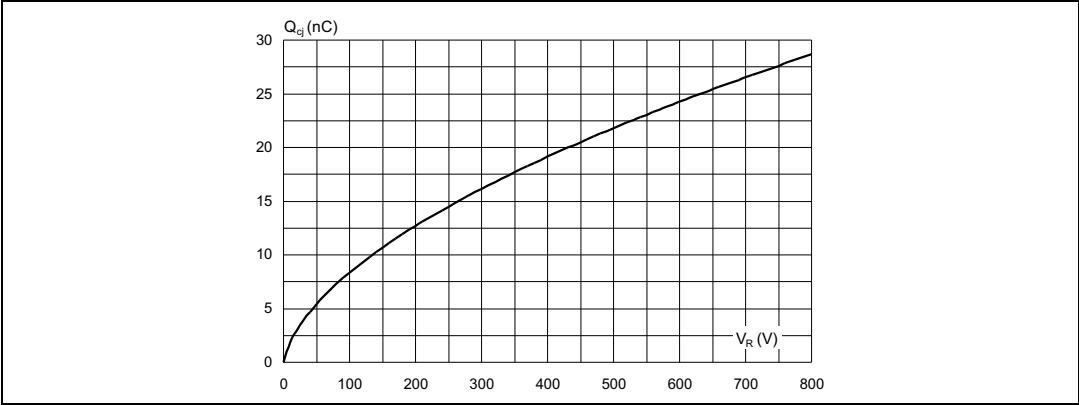
Figure 1. Forward voltage drop versus forward current (typical values)**Figure 2. Reverse leakage current versus reverse voltage applied (typical values)****Figure 3. Peak forward current versus case temperature****Figure 4. Junction capacitance versus reverse voltage applied (typical values)****Figure 5. Relative variation of thermal impedance junction to case versus pulse duration****Figure 6. Non-repetitive peak surge forward current versus pulse duration (sinusoidal waveform)**

Figure 7. Total capacitive charges versus reverse voltage applied (typical values)



2 Package information

- Epoxy meets UL94, V0
- Lead-free package

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2.1 DPAK HV 2L package information

Figure 8. DPAK HV 2L package outline

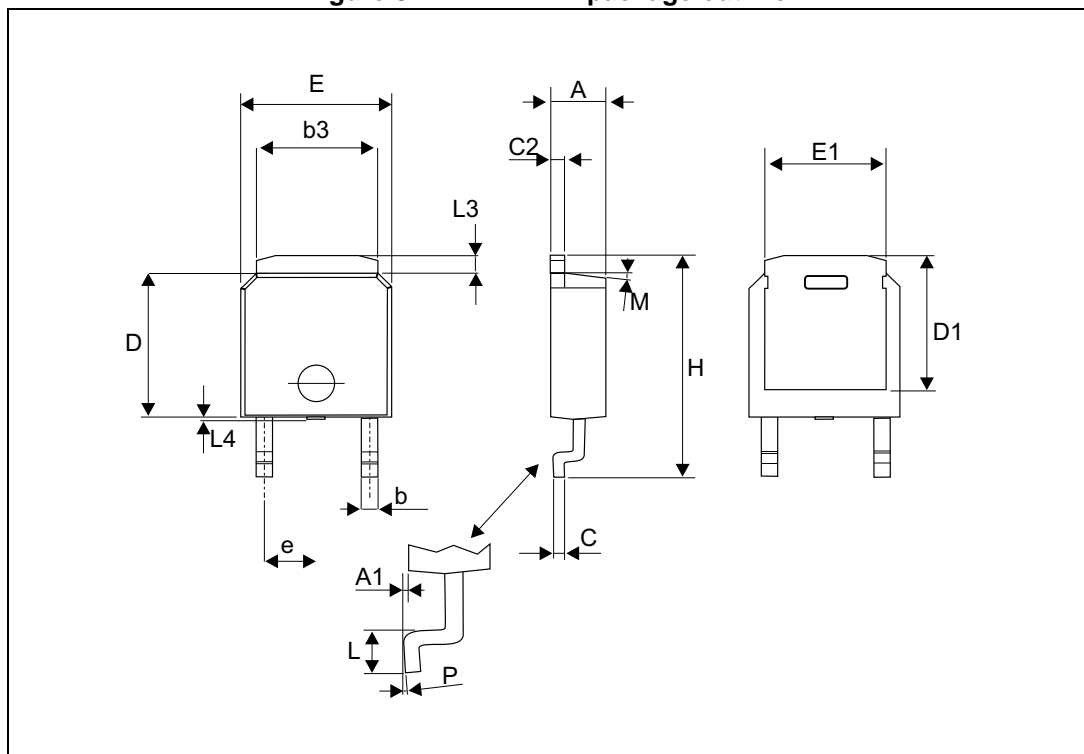
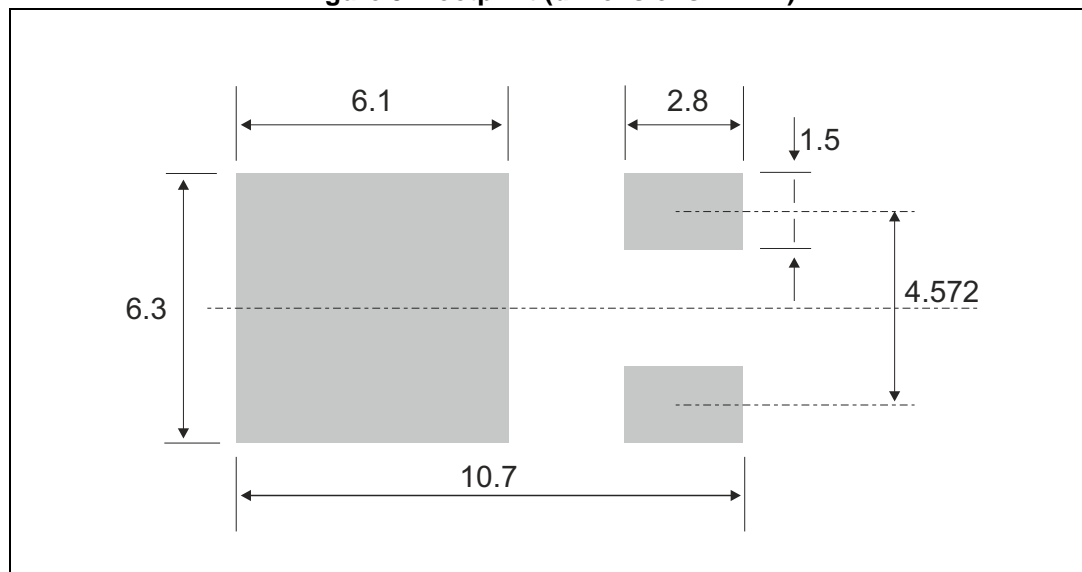


Table 6. DPAK HV 2L package mechanical data

| Ref. | Dimensions | | | | | |
|-------------------|-------------|------|-------|-----------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.16 | 2.29 | 2.40 | 0.085 | 0.090 | 0.094 |
| A1 | 0.06 | 0.08 | 0.13 | 0.002 | 0.003 | 0.005 |
| b | 0.71 | 0.76 | 1.07 | 0.028 | 0.029 | 0.030 |
| b3 | 5.004 | 5.10 | 5.21 | 0.197 | 0.201 | 0.205 |
| c | 0.46 | 0.51 | 0.56 | 0.018 | 0.020 | 0.025 |
| c2 | 0.76 | 0.81 | 0.86 | 0.029 | 0.032 | 0.034 |
| D | 5.97 | 6.10 | 6.22 | 0.235 | 0.240 | 0.245 |
| D1 | 5.84 REF | | | 0.230 REF | | |
| E | 6.48 | 6.60 | 6.73 | 0.255 | 0.260 | 0.265 |
| E1 | 4.95 | 5.08 | 5.21 | 0.195 | 0.200 | 0.205 |
| e | 2.29 REF | | | 0.90 REF | | |
| H | 9.70 | 9.83 | 10.08 | 0.382 | 0.387 | 0.397 |
| L | 1.02 | 1.14 | 1.40 | 0.040 | 0.045 | 0.055 |
| L3 | | | 1.14 | | | 0.045 |
| L4 ⁽¹⁾ | 0.000 | | 0.15 | 0.000 | | 0.006 |
| M | | 7° | | | 7° | |
| P | | | 5° | | | 5° |

1. Maximum plastic protrusion

Figure 9. Footprint (dimensions in mm)



3 Ordering information

Table 7. Ordering information

| Order code | Marking | Package | Weight | Base qty | Delivery mode |
|----------------|------------|------------|--------|----------|---------------|
| STPSC6H12B-TR1 | STPSC 6H12 | DPAK HV 2L | 0.368g | 2500 | Tape and reel |

4 Revision history

Table 8. Document revision history

| Date | Revision | Changes |
|-------------|----------|---|
| 02-Aug-2013 | 1 | First issue. |
| 05-Aug-2013 | 2 | Corrected typographical error in <i>Table 7</i> . |
| 13-Mar-2015 | 3 | Updated marking information in <i>Table 7: Ordering information</i> . |
| 06-May-2015 | 4 | Updated cover page. Format updated to current standard. |
| 01-Sep-2016 | 5 | Updated cover image and Figure 8 . |

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