

N-channel 600 V, 0.55  $\Omega$  typ., 7.5 A MDmesh™ M2 Power MOSFETs in D<sup>2</sup>PAK, DPAK, TO-220 and IPAK packages

Datasheet - production data

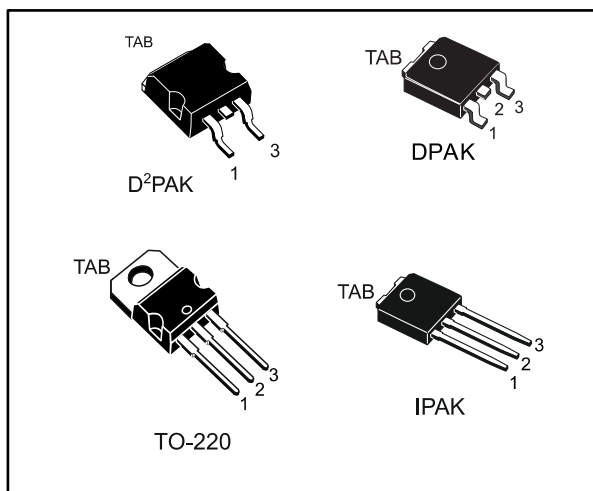
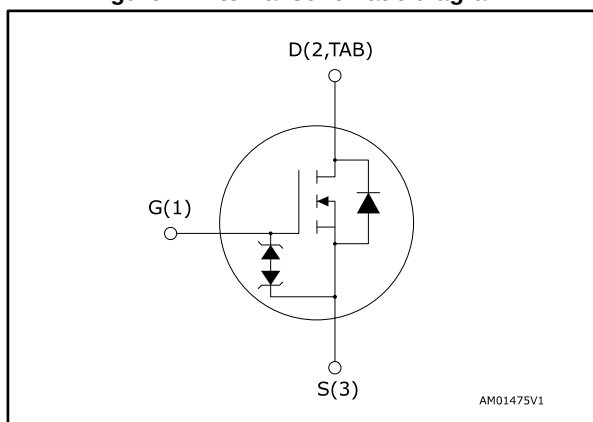


Figure 1: Internal schematic diagram



## Features

| Order code | V <sub>DS@T<sub>Jmax.</sub></sub> | R <sub>DS(on)</sub> max. | I <sub>D</sub> |
|------------|-----------------------------------|--------------------------|----------------|
| STB10N60M2 | 650 V                             | 0.60 $\Omega$            | 7.5 A          |
| STD10N60M2 |                                   |                          |                |
| STP10N60M2 |                                   |                          |                |
| STU10N60M2 |                                   |                          |                |

- Extremely low gate charge
- Excellent output capacitance (C<sub>oss</sub>) profile
- 100% avalanche tested
- Zener-protected

## Applications

- Switching applications

## Description

These devices are N-channel Power MOSFETs developed using MDmesh™ M2 technology. Thanks to their strip layout and improved vertical structure, these devices exhibit low on-resistance and optimized switching characteristics, rendering them suitable for the most demanding high efficiency converters.

Table 1: Device summary

| Order code | Marking | Package            | Packing       |
|------------|---------|--------------------|---------------|
| STB10N60M2 | 10N60M2 | D <sup>2</sup> PAK | Tape and reel |
| STD10N60M2 |         | DPAK               |               |
| STP10N60M2 |         | TO-220             | Tube          |
| STU10N60M2 |         | IPAK               |               |

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# 1 Electrical ratings

Table 2: Absolute maximum ratings

| Symbol         | Parameter                                                              | Value      | Unit               |
|----------------|------------------------------------------------------------------------|------------|--------------------|
| $V_{GS}$       | Gate-source voltage                                                    | $\pm 25$   | V                  |
| $I_D$          | Drain current (continuous) at $T_{case} = 25\text{ }^{\circ}\text{C}$  | 7.5        | A                  |
|                | Drain current (continuous) at $T_{case} = 100\text{ }^{\circ}\text{C}$ | 4.9        |                    |
| $I_{DM}^{(1)}$ | Drain current (pulsed)                                                 | 30         | A                  |
| $P_{TOT}$      | Total dissipation at $T_{case} = 25\text{ }^{\circ}\text{C}$           | 85         | W                  |
| $dv/dt^{(2)}$  | Peak diode recovery voltage slope                                      | 15         | V/ns               |
| $dv/dt^{(3)}$  | MOSFET $dv/dt$ ruggedness                                              | 50         |                    |
| $T_{stg}$      | Storage temperature range                                              | -55 to 150 | $^{\circ}\text{C}$ |
| $T_j$          | Operating junction temperature range                                   |            |                    |

**Notes:**

(1) Pulse limited by safe operating area.

(2)  $I_{SD} \leq 7.5\text{ A}$ ,  $di/dt \leq 400\text{ A}/\mu\text{s}$ ;  $V_{DS\text{ peak}} < V_{(BR)DSS}$ ,  $V_{DD} = 400\text{ V}$ (3)  $V_{DS} \leq 480\text{ V}$ .

Table 3: Thermal data

| Symbol         | Parameter                                      | Value              |      |        |      | Unit                        |
|----------------|------------------------------------------------|--------------------|------|--------|------|-----------------------------|
|                |                                                | D <sup>2</sup> PAK | DPAK | TO-220 | IPAK |                             |
| $R_{thj-case}$ | Thermal resistance junction-case               | 1.47               |      |        |      | $^{\circ}\text{C}/\text{W}$ |
| $R_{thj-pcb}$  | Thermal resistance junction-pcb <sup>(1)</sup> | 30                 | 50   |        |      |                             |
| $R_{thj-amb}$  | Thermal resistance junction-ambient            |                    |      | 62.5   | 100  |                             |

**Notes:**(1) When mounted on 1 inch<sup>2</sup> FR-4, 2 Oz copper board.

Table 4: Avalanche characteristics

| Symbol         | Parameter                                       | Value | Unit |
|----------------|-------------------------------------------------|-------|------|
| $I_{AR}^{(1)}$ | Avalanche current, repetitive or not repetitive | 1.5   | A    |
| $E_{AS}^{(2)}$ | Single pulse avalanche energy                   | 110   | mJ   |

**Notes:**(1) Pulse width limited by  $T_{jmax}$ .(2) Starting  $T_j = 25\text{ }^{\circ}\text{C}$ ,  $I_D = I_{AR}$ ,  $V_{DD} = 50\text{ V}$ .

## 2 Electrical characteristics

(T<sub>case</sub> = 25 °C unless otherwise specified)

Table 5: Static

| Symbol               | Parameter                         | Test conditions                                                                              | Min. | Typ. | Max. | Unit |
|----------------------|-----------------------------------|----------------------------------------------------------------------------------------------|------|------|------|------|
| V <sub>(BR)DSS</sub> | Drain-source breakdown voltage    | V <sub>GS</sub> = 0 V, I <sub>D</sub> = 1 mA                                                 | 600  |      |      | V    |
| I <sub>DSS</sub>     | Zero gate voltage drain current   | V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 600 V                                               |      |      | 1    | μA   |
|                      |                                   | V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 600 V,<br>T <sub>case</sub> = 125 °C <sup>(1)</sup> |      |      | 100  |      |
| I <sub>GSS</sub>     | Gate-body leakage current         | V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±25 V                                               |      |      | ±10  | μA   |
| V <sub>GS(th)</sub>  | Gate threshold voltage            | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA                                  | 2    | 3    | 4    | V    |
| R <sub>DS(on)</sub>  | Static drain-source on-resistance | V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3 A                                                 |      | 0.55 | 0.60 | Ω    |

**Notes:**

<sup>(1)</sup>Defined by design, not subject to production test.

Table 6: Dynamic

| Symbol                                 | Parameter                     | Test conditions                                                                                                                                           | Min. | Typ. | Max. | Unit |
|----------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| C <sub>iss</sub>                       | Input capacitance             | V <sub>DS</sub> = 100 V, f = 1 MHz,<br>V <sub>GS</sub> = 0 V                                                                                              | -    | 400  | -    | pF   |
| C <sub>oss</sub>                       | Output capacitance            |                                                                                                                                                           | -    | 22   | -    |      |
| C <sub>rss</sub>                       | Reverse transfer capacitance  |                                                                                                                                                           | -    | 0.84 | -    |      |
| C <sub>oss</sub><br>eq. <sup>(1)</sup> | Equivalent output capacitance | V <sub>DS</sub> = 0 to 480 V, V <sub>GS</sub> = 0 V                                                                                                       | -    | 83   | -    | pF   |
| R <sub>G</sub>                         | Intrinsic gate resistance     | f = 1 MHz, I <sub>D</sub> = 0 A                                                                                                                           | -    | 6.4  | -    | Ω    |
| Q <sub>g</sub>                         | Total gate charge             | V <sub>DD</sub> = 480 V, I <sub>D</sub> = 7.5 A,<br>V <sub>GS</sub> = 0 to 10 V (see <a href="#">Figure 17: "Test circuit for gate charge behavior"</a> ) | -    | 13.5 | -    | nC   |
| Q <sub>gs</sub>                        | Gate-source charge            |                                                                                                                                                           | -    | 2.1  | -    |      |
| Q <sub>gd</sub>                        | Gate-drain charge             |                                                                                                                                                           | -    | 7.2  | -    |      |

**Notes:**

<sup>(1)</sup> C<sub>oss</sub> eq. is defined as a constant equivalent capacitance giving the same charging time as C<sub>oss</sub> when V<sub>DS</sub> increases from 0 to 80% V<sub>DSS</sub>.

Table 7: Switching times

| Symbol              | Parameter           | Test conditions                                                                                                                                                                                                                                 | Min. | Typ. | Max. | Unit |
|---------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| t <sub>d(on)</sub>  | Turn-on delay time  | V <sub>DD</sub> = 300 V, I <sub>D</sub> = 3.75 A<br>R <sub>G</sub> = 4.7 Ω, V <sub>GS</sub> = 10 V (see <a href="#">Figure 16: "Test circuit for resistive load switching times"</a> and <a href="#">Figure 21: "Switching time waveform"</a> ) | -    | 8.8  | -    | ns   |
| t <sub>r</sub>      | Rise time           |                                                                                                                                                                                                                                                 | -    | 8    | -    |      |
| t <sub>d(off)</sub> | Turn-off delay time |                                                                                                                                                                                                                                                 | -    | 32.5 | -    |      |
| t <sub>f</sub>      | Fall time           |                                                                                                                                                                                                                                                 | -    | 13.2 | -    |      |

Table 8: Source-drain diode

| Symbol          | Parameter                     | Test conditions                                                                                                                                                                                                                              | Min. | Typ. | Max. | Unit          |
|-----------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| $I_{SD}$        | Source-drain current          |                                                                                                                                                                                                                                              | -    |      | 7.5  | A             |
| $I_{SDM}^{(1)}$ | Source-drain current (pulsed) |                                                                                                                                                                                                                                              | -    |      | 30   | A             |
| $V_{SD}^{(2)}$  | Forward on voltage            | $V_{GS} = 0\text{ V}$ , $I_{SD} = 7.5\text{ A}$                                                                                                                                                                                              | -    |      | 1.6  | V             |
| $t_{rr}$        | Reverse recovery time         | $I_{SD} = 7.5\text{ A}$ , $di/dt = 100\text{ A}/\mu\text{s}$ ,<br>$V_{DD} = 60\text{ V}$ (see <a href="#">Figure 18</a> :<br>"Test circuit for inductive load<br>switching and diode recovery<br>times")                                     | -    | 270  |      | ns            |
| $Q_{rr}$        | Reverse recovery charge       |                                                                                                                                                                                                                                              | -    | 2    |      | $\mu\text{C}$ |
| $I_{RRM}$       | Reverse recovery current      |                                                                                                                                                                                                                                              | -    | 14.4 |      | A             |
| $t_{rr}$        | Reverse recovery time         | $I_{SD} = 7.5\text{ A}$ , $di/dt = 100\text{ A}/\mu\text{s}$ ,<br>$V_{DD} = 60\text{ V}$ , $T_j = 150\text{ }^\circ\text{C}$ (see<br><a href="#">Figure 18</a> : "Test circuit for<br>inductive load switching and<br>diode recovery times") | -    | 376  |      | ns            |
| $Q_{rr}$        | Reverse recovery charge       |                                                                                                                                                                                                                                              | -    | 2.8  |      | $\mu\text{C}$ |
| $I_{RRM}$       | Reverse recovery current      |                                                                                                                                                                                                                                              | -    | 15   |      | A             |

**Notes:**

<sup>(1)</sup> Pulse width is limited by safe operating area.

<sup>(2)</sup> Pulse test: pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5%.

## 2.1 Electrical characteristics (curves)

Figure 2: Safe operating area for DPAK and IPAK

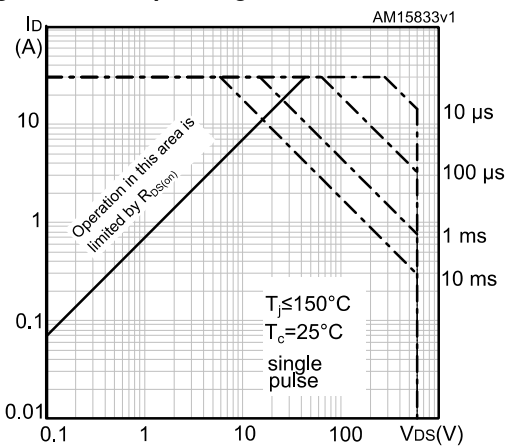


Figure 3: Thermal impedance for DPAK and IPAK

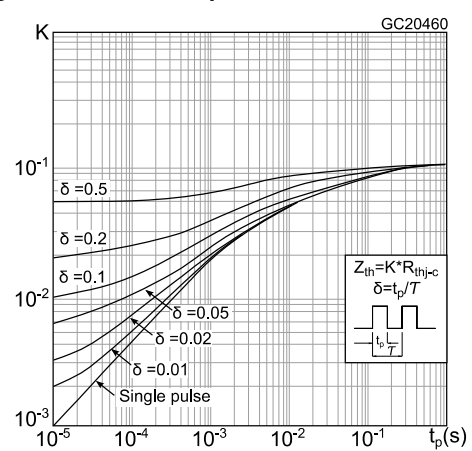
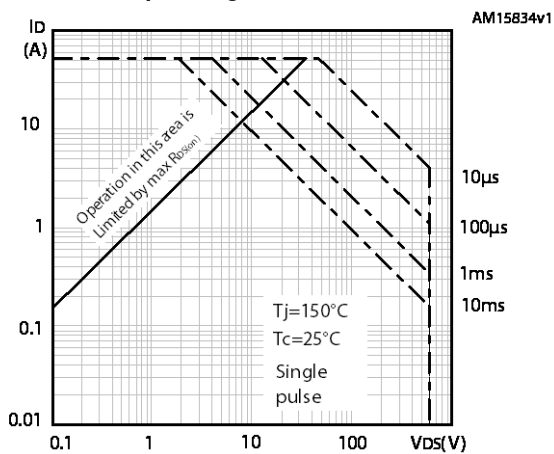
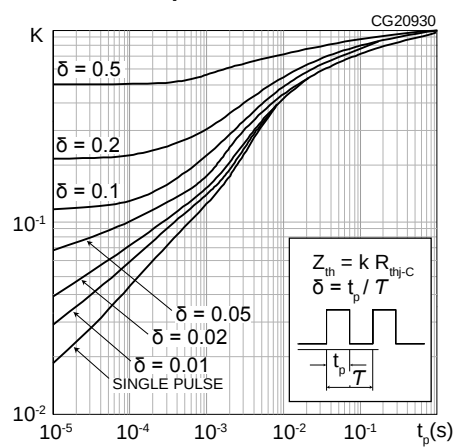
Figure 4: Safe operating area for D<sup>2</sup>PAK and TO-220Figure 5: Thermal impedance for D<sup>2</sup>PAK and TO-220

Figure 6: Output characteristics

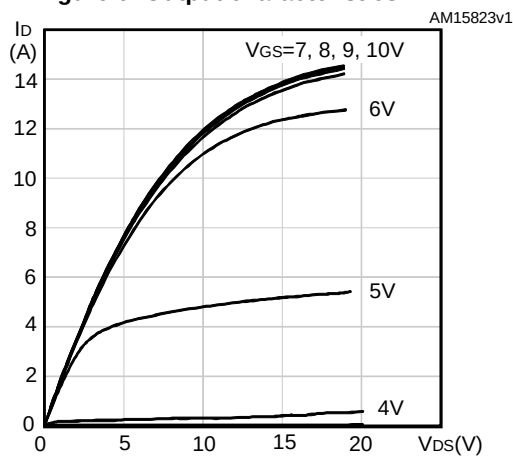


Figure 7: Transfer characteristics

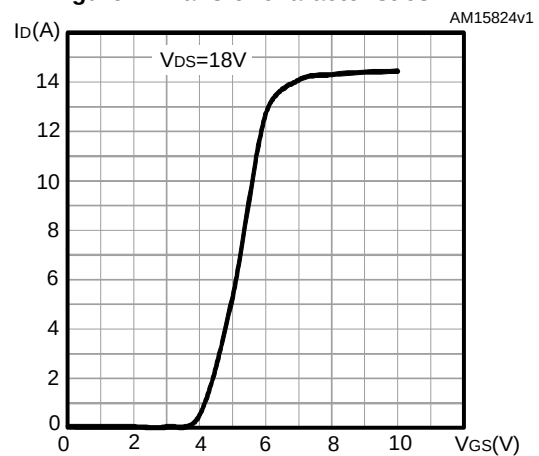


Figure 8: Gate charge vs gate-source voltage

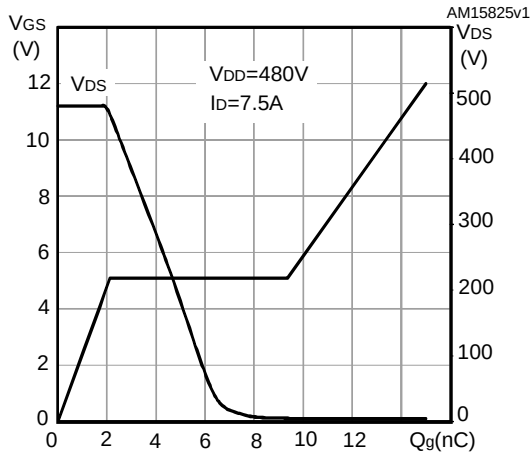


Figure 9: Static drain-source on-resistance

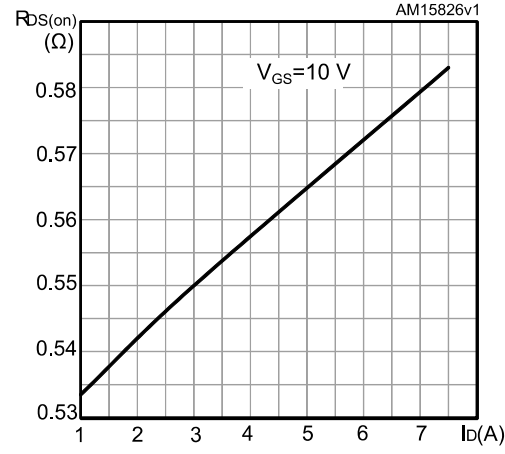


Figure 10: Capacitance variations

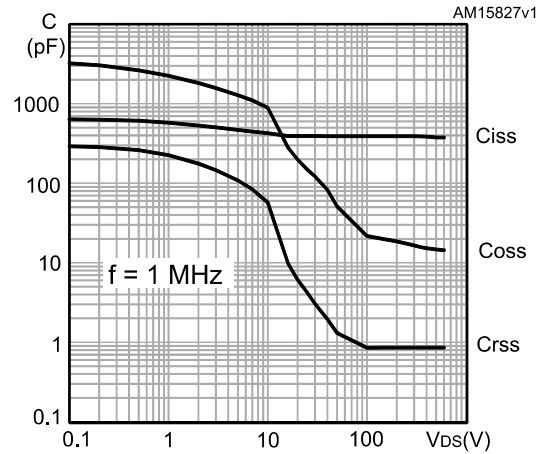


Figure 11: Normalized gate threshold voltage vs temperature

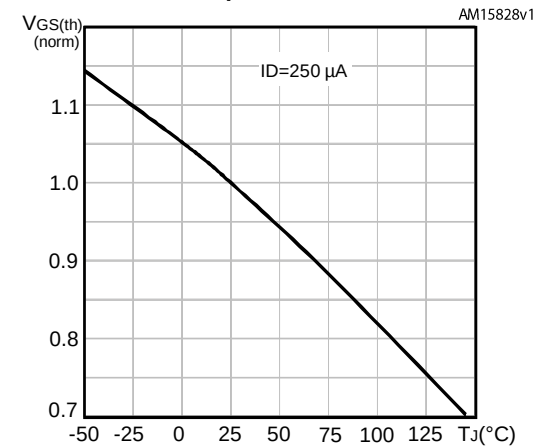


Figure 12: Normalized on-resistance vs temperature

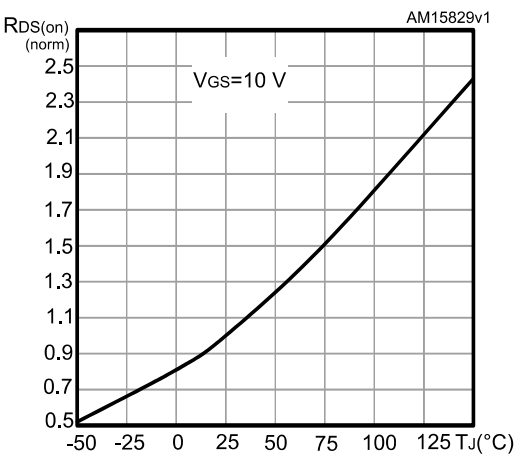


Figure 13: Normalized  $V_{(BR)DSS}$  vs temperature

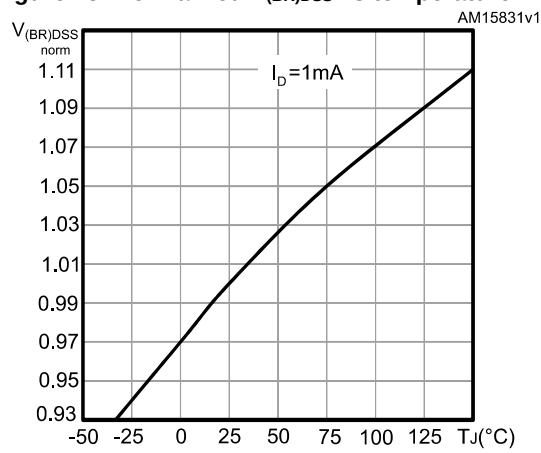


Figure 14: Source-drain diode forward characteristics

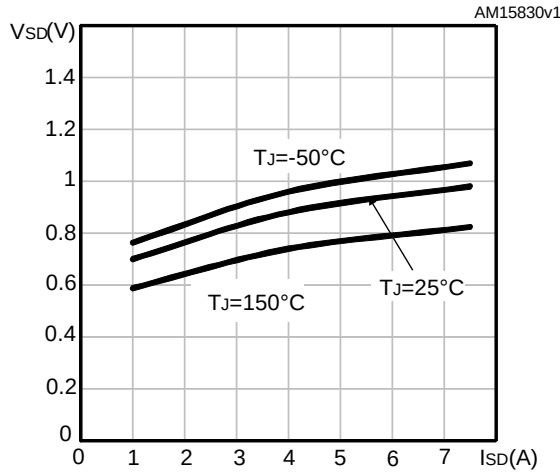
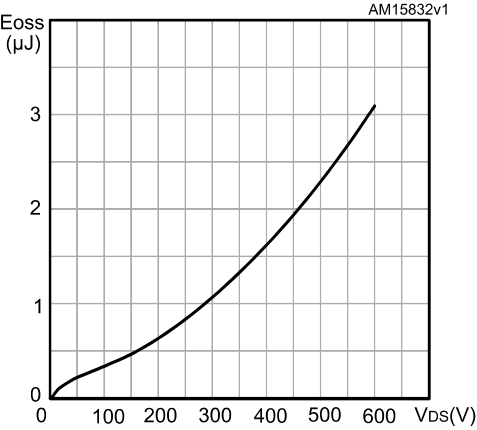


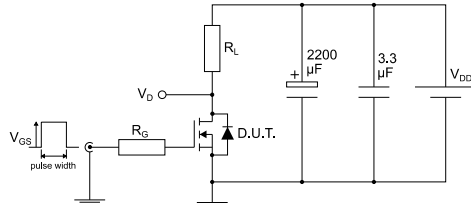
Figure 15: Output capacitance stored energy





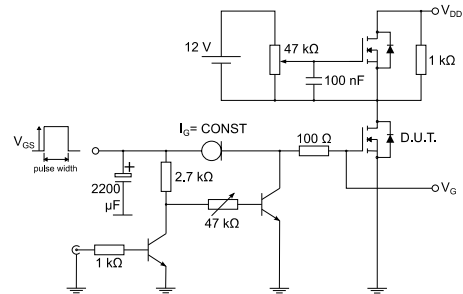
### 3 Test circuits

**Figure 16: Test circuit for resistive load switching times**



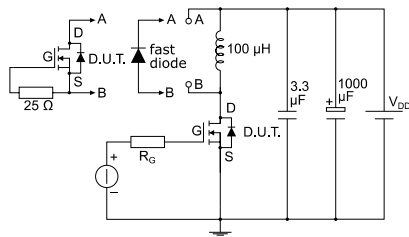
AM01468v1

**Figure 17: Test circuit for gate charge behavior**



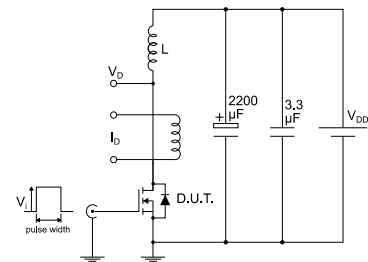
AM01469v1

**Figure 18: Test circuit for inductive load switching and diode recovery times**



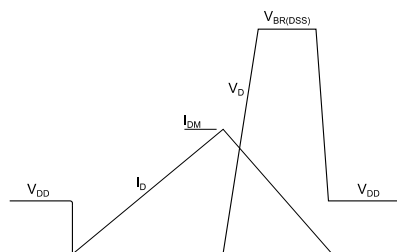
AM01470v1

**Figure 19: Unclamped inductive load test circuit**



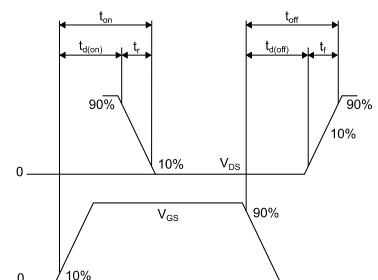
AM01471v1

**Figure 20: Unclamped inductive waveform**



AM01472v1

**Figure 21: Switching time waveform**



AM01473v1

## 4 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

### 4.1 D<sup>2</sup>PAK (TO-263) type A package information

Figure 22: D<sup>2</sup>PAK (TO-263) type A package outline

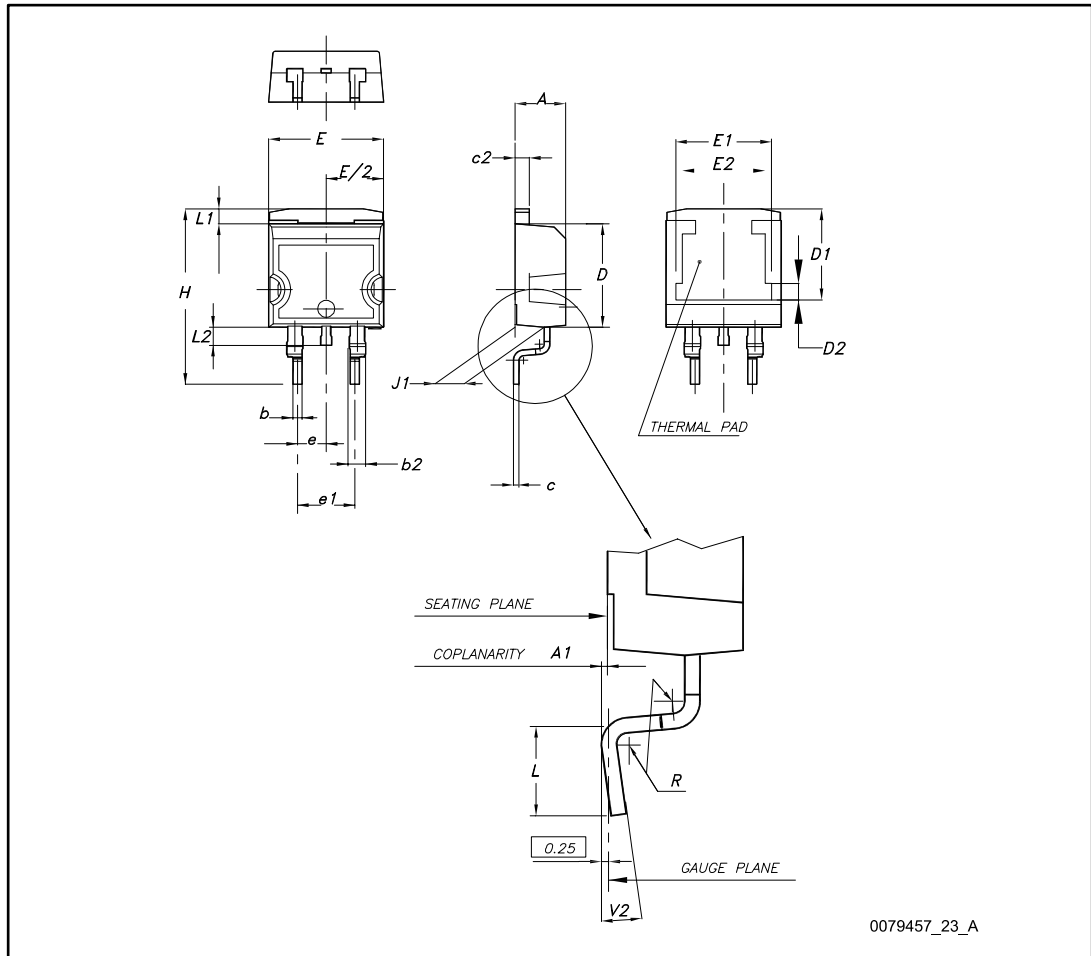
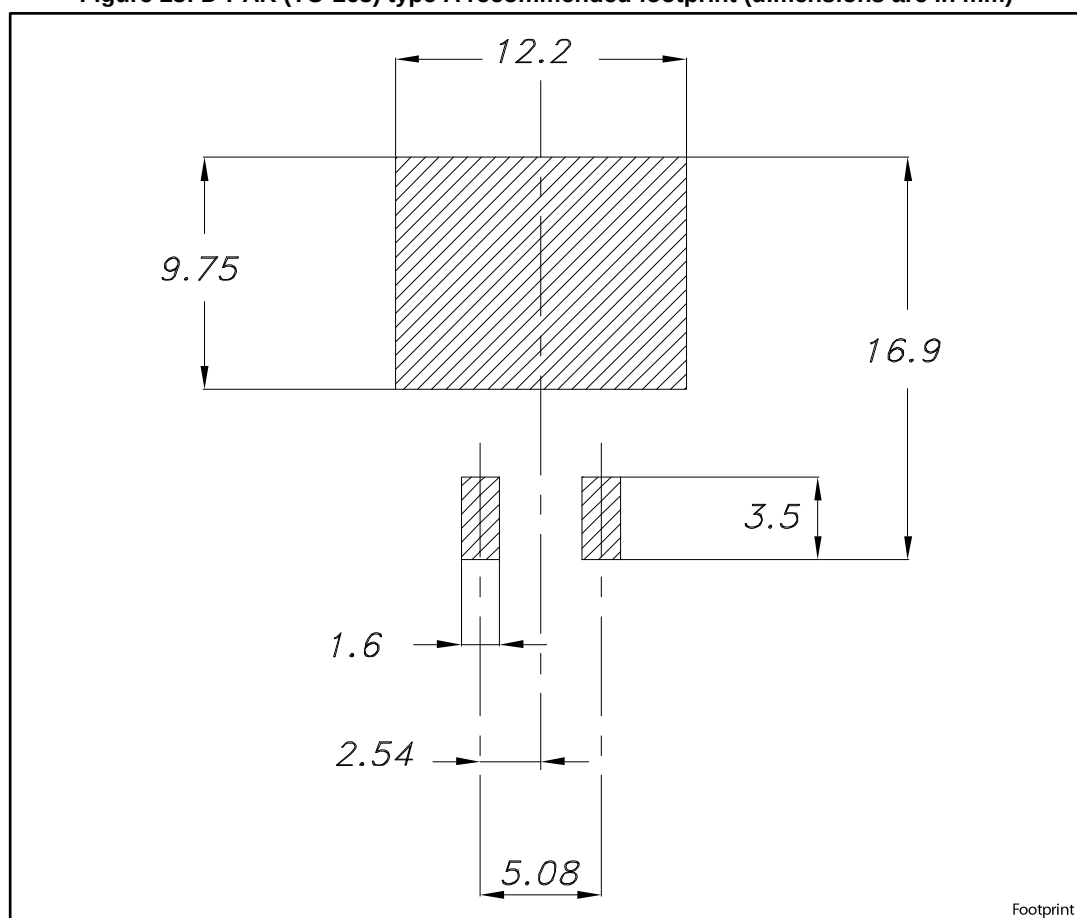


Table 9: D<sup>2</sup>PAK (TO-263) type A package mechanical data

| Dim. | mm    |      |       |
|------|-------|------|-------|
|      | Min.  | Typ. | Max.  |
| A    | 4.40  |      | 4.60  |
| A1   | 0.03  |      | 0.23  |
| b    | 0.70  |      | 0.93  |
| b2   | 1.14  |      | 1.70  |
| c    | 0.45  |      | 0.60  |
| c2   | 1.23  |      | 1.36  |
| D    | 8.95  |      | 9.35  |
| D1   | 7.50  | 7.75 | 8.00  |
| D2   | 1.10  | 1.30 | 1.50  |
| E    | 10.00 |      | 10.40 |
| E1   | 8.50  | 8.70 | 8.90  |
| E2   | 6.85  | 7.05 | 7.25  |
| e    |       | 2.54 |       |
| e1   | 4.88  |      | 5.28  |
| H    | 15.00 |      | 15.85 |
| J1   | 2.49  |      | 2.69  |
| L    | 2.29  |      | 2.79  |
| L1   | 1.27  |      | 1.40  |
| L2   | 1.30  |      | 1.75  |
| R    |       | 0.40 |       |
| V2   | 0°    |      | 8°    |

Figure 23: D<sup>2</sup>PAK (TO-263) type A recommended footprint (dimensions are in mm)

## 4.2 DPAK (TO-252) type A package information

Figure 24: DPAK (TO-252) type A package outline

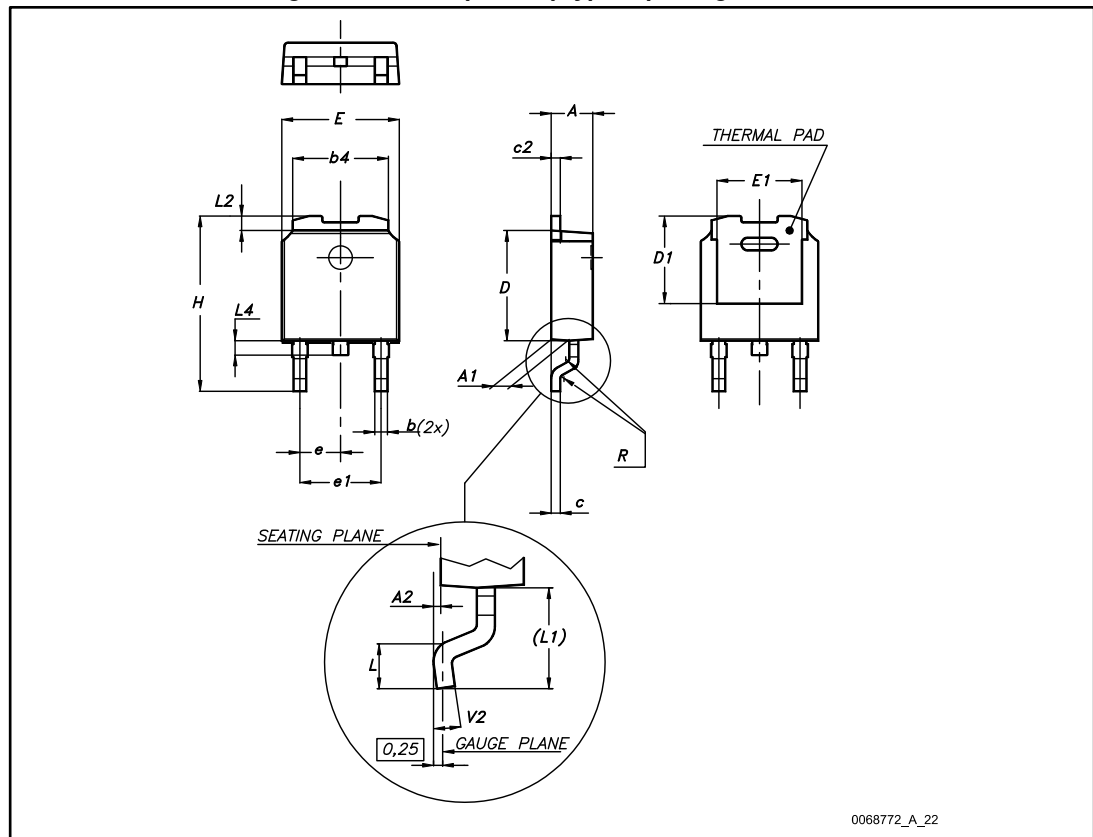


Table 10: DPAK (TO-252) type A mechanical data

| Dim. | mm   |      |       |
|------|------|------|-------|
|      | Min. | Typ. | Max.  |
| A    | 2.20 |      | 2.40  |
| A1   | 0.90 |      | 1.10  |
| A2   | 0.03 |      | 0.23  |
| b    | 0.64 |      | 0.90  |
| b4   | 5.20 |      | 5.40  |
| c    | 0.45 |      | 0.60  |
| c2   | 0.48 |      | 0.60  |
| D    | 6.00 |      | 6.20  |
| D1   | 4.95 | 5.10 | 5.25  |
| E    | 6.40 |      | 6.60  |
| E1   | 4.60 | 4.70 | 4.80  |
| e    | 2.16 | 2.28 | 2.40  |
| e1   | 4.40 |      | 4.60  |
| H    | 9.35 |      | 10.10 |
| L    | 1.00 |      | 1.50  |
| (L1) | 2.60 | 2.80 | 3.00  |
| L2   | 0.65 | 0.80 | 0.95  |
| L4   | 0.60 |      | 1.00  |
| R    |      | 0.20 |       |
| V2   | 0°   |      | 8°    |

### 4.3 DPAK (TO-252) type C package information

Figure 25: DPAK (TO-252) type C package outline

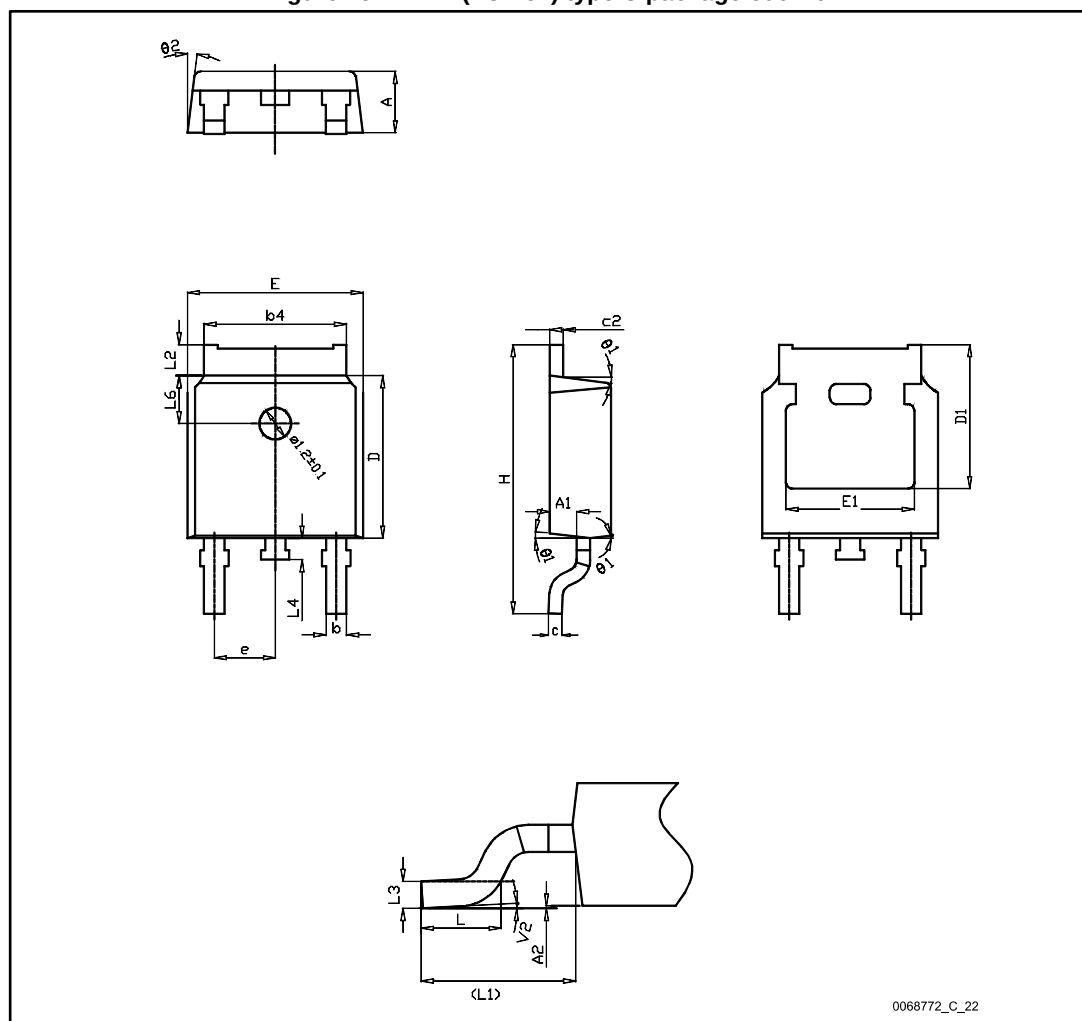


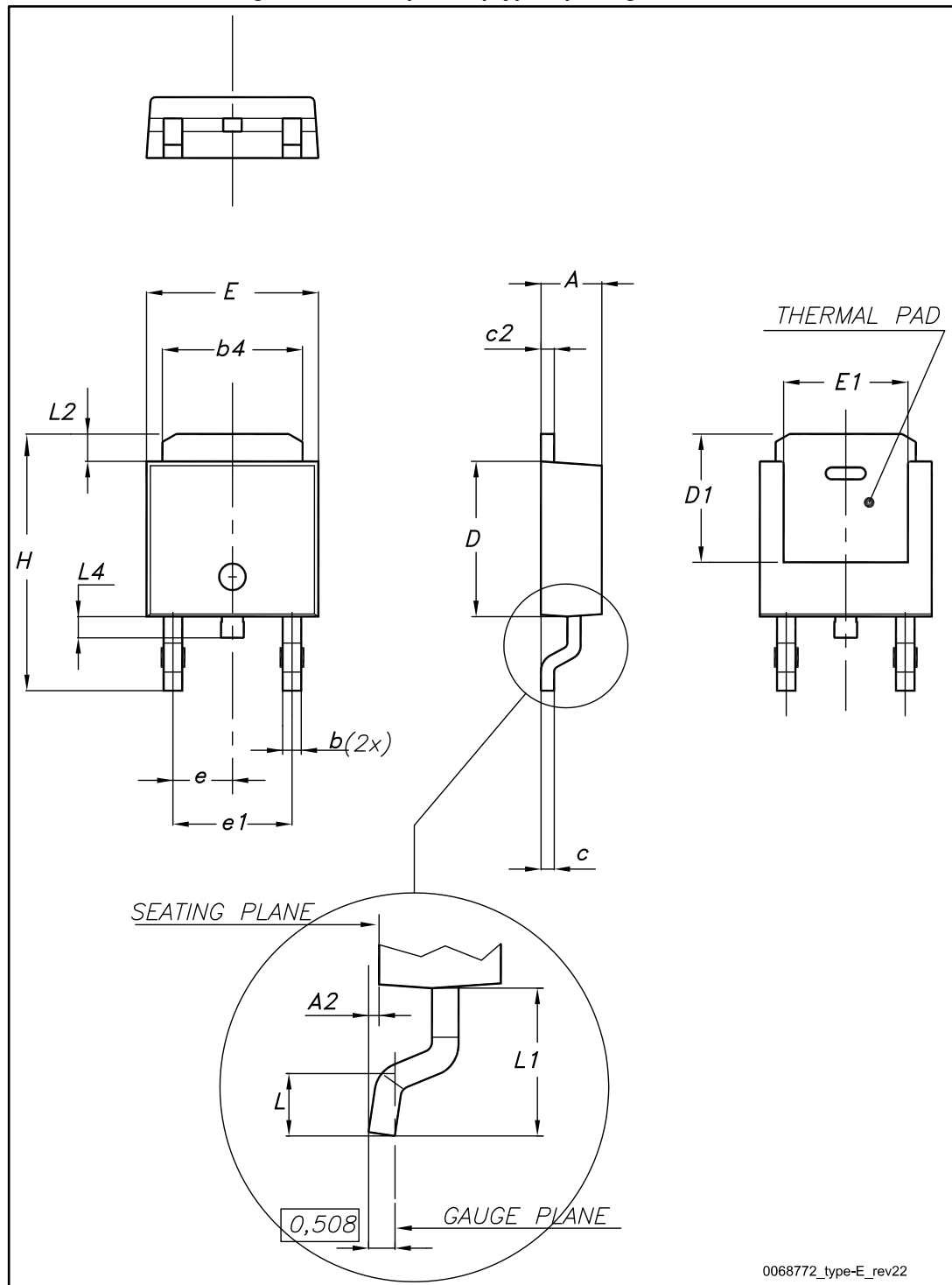
Table 11: DPAK (TO-252) type C mechanical data

| Dim. | mm       |       |       |
|------|----------|-------|-------|
|      | Min.     | Typ.  | Max.  |
| A    | 2.20     | 2.30  | 2.38  |
| A1   | 0.90     | 1.01  | 1.10  |
| A2   | 0.00     |       | 0.10  |
| b    | 0.72     |       | 0.85  |
| b4   | 5.13     | 5.33  | 5.46  |
| c    | 0.47     |       | 0.60  |
| c2   | 0.47     |       | 0.60  |
| D    | 6.00     | 6.10  | 6.20  |
| D1   | 5.25     |       |       |
| E    | 6.50     | 6.60  | 6.70  |
| E1   | 4.70     |       |       |
| e    | 2.186    | 2.286 | 2.386 |
| H    | 9.80     | 10.10 | 10.40 |
| L    | 1.40     | 1.50  | 1.70  |
| L1   | 2.90 REF |       |       |
| L2   | 0.90     |       | 1.25  |
| L3   | 0.51 BSC |       |       |
| L4   | 0.60     | 0.80  | 1.00  |
| L6   | 1.80 BSC |       |       |
| θ1   | 5°       | 7°    | 9°    |
| θ2   | 5°       | 7°    | 9°    |
| V2   | 0°       |       | 8°    |



#### 4.4 DPAK (TO-252) type E package information

Figure 26: DPAK (TO-252) type E package outline

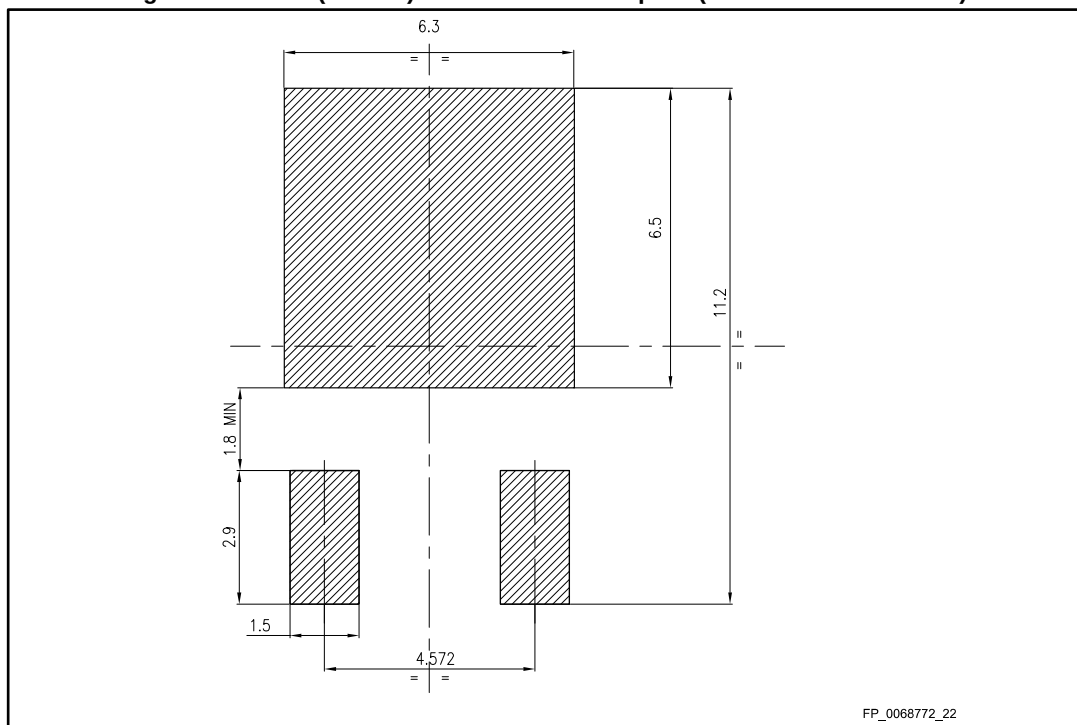


0068772\_type-E\_rev22

Table 12: DPAK (TO-252) type E mechanical data

| Dim. | mm   |       |       |
|------|------|-------|-------|
|      | Min. | Typ.  | Max.  |
| A    | 2.18 |       | 2.39  |
| A2   |      |       | 0.13  |
| b    | 0.65 |       | 0.884 |
| b4   | 4.95 |       | 5.46  |
| c    | 0.46 |       | 0.61  |
| c2   | 0.46 |       | 0.60  |
| D    | 5.97 |       | 6.22  |
| D1   | 5.21 |       |       |
| E    | 6.35 |       | 6.73  |
| E1   | 4.32 |       |       |
| e    |      | 2.286 |       |
| e1   |      | 4.572 |       |
| H    | 9.94 |       | 10.34 |
| L    | 1.50 |       | 1.78  |
| L1   |      | 2.74  |       |
| L2   | 0.89 |       | 1.27  |
| L4   |      |       | 1.02  |

Figure 27: DPAK (TO-252) recommended footprint (dimensions are in mm)



## 4.5 TO-220 type A package information

Figure 28: TO-220 type A package outline

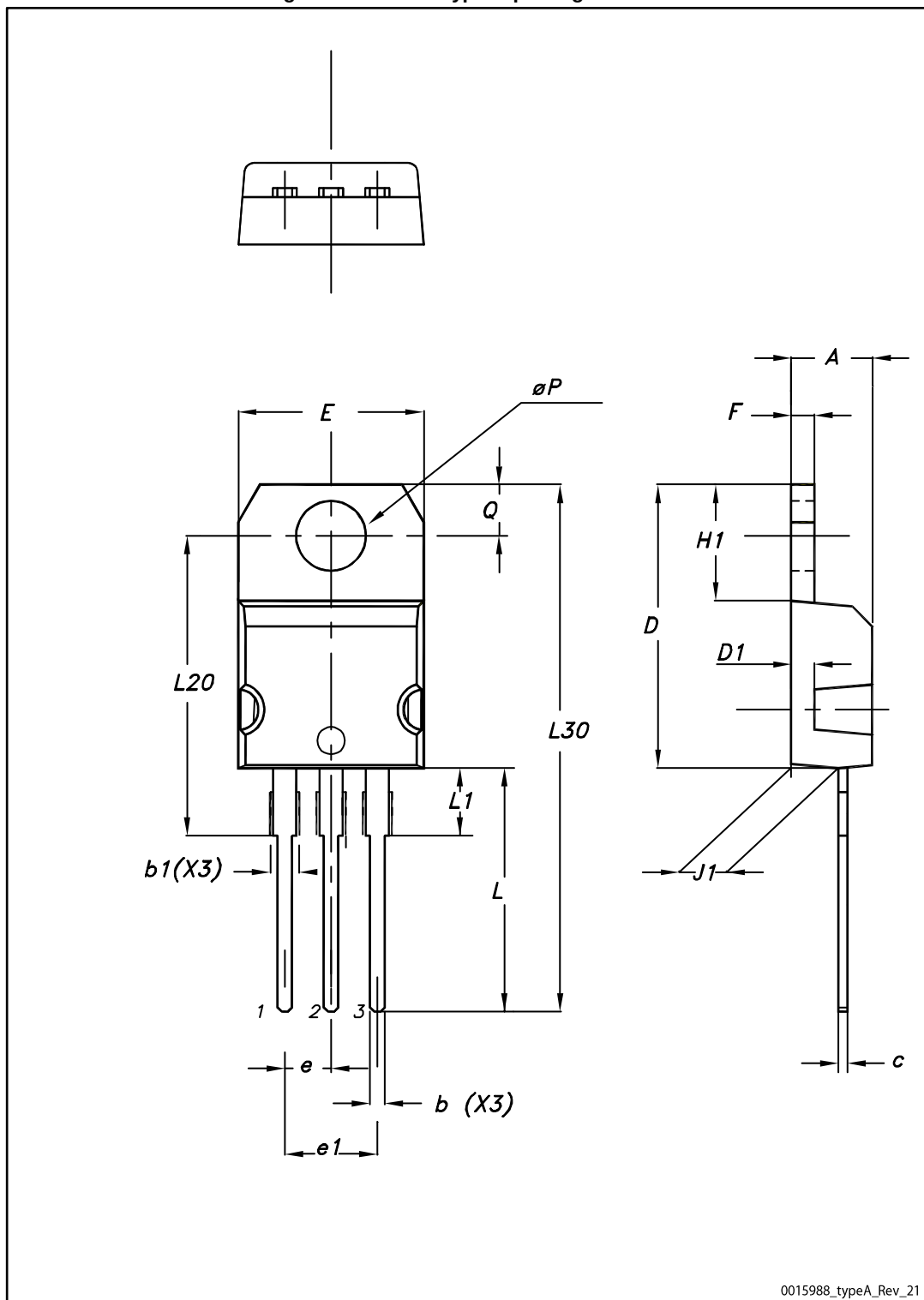


Table 13: TO-220 type A mechanical data

| Dim. | mm    |       |       |
|------|-------|-------|-------|
|      | Min.  | Typ.  | Max.  |
| A    | 4.40  |       | 4.60  |
| b    | 0.61  |       | 0.88  |
| b1   | 1.14  |       | 1.55  |
| c    | 0.48  |       | 0.70  |
| D    | 15.25 |       | 15.75 |
| D1   |       | 1.27  |       |
| E    | 10.00 |       | 10.40 |
| e    | 2.40  |       | 2.70  |
| e1   | 4.95  |       | 5.15  |
| F    | 1.23  |       | 1.32  |
| H1   | 6.20  |       | 6.60  |
| J1   | 2.40  |       | 2.72  |
| L    | 13.00 |       | 14.00 |
| L1   | 3.50  |       | 3.93  |
| L20  |       | 16.40 |       |
| L30  |       | 28.90 |       |
| øP   | 3.75  |       | 3.85  |
| Q    | 2.65  |       | 2.95  |

## 4.6 IPAK (TO-251) type A package information

Figure 29: IPAK (TO-251) type A package outline

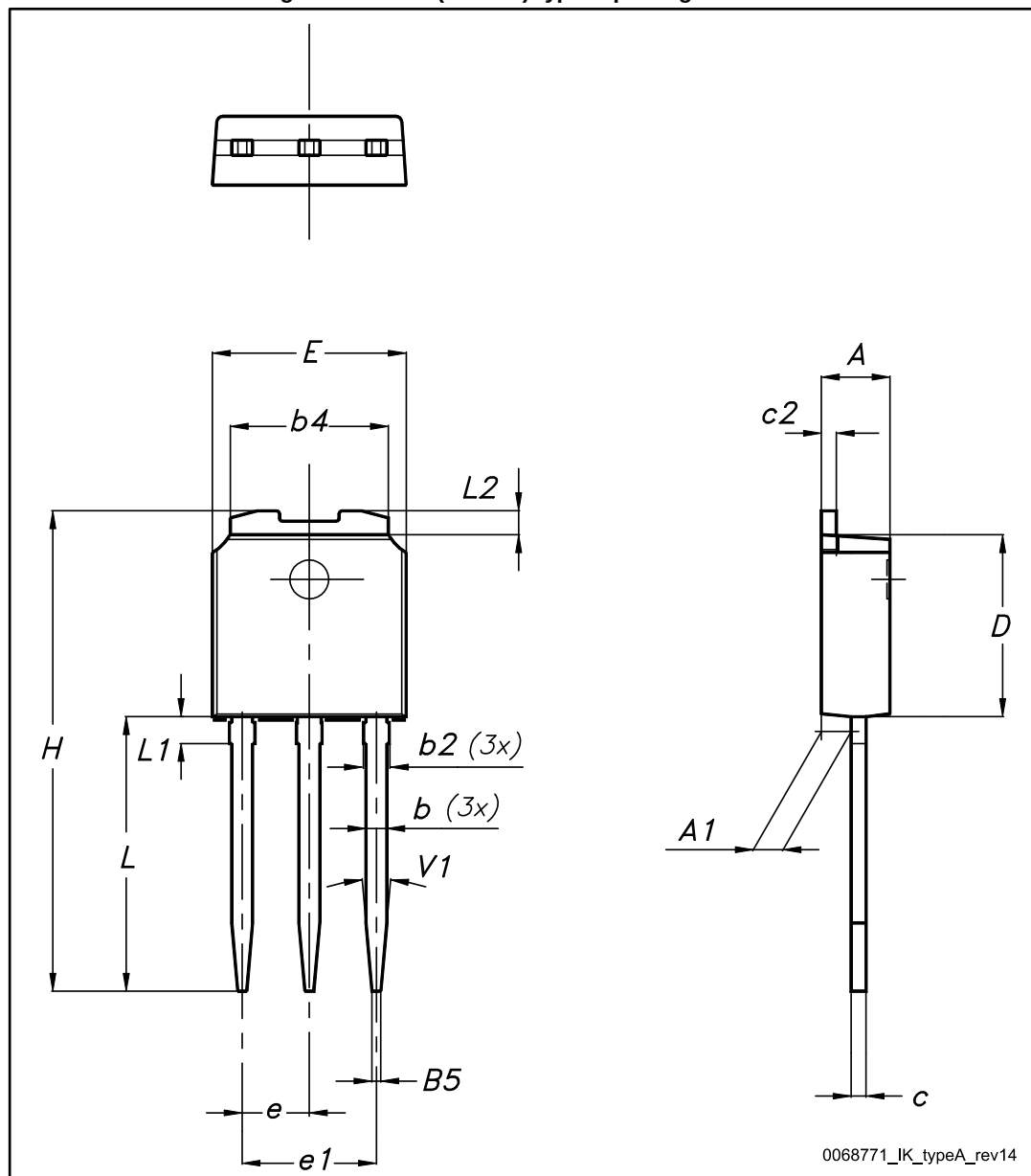


Table 14: IPAK (TO-251) type A package mechanical data

| Dim. | mm   |       |      |
|------|------|-------|------|
|      | Min. | Typ.  | Max. |
| A    | 2.20 |       | 2.40 |
| A1   | 0.90 |       | 1.10 |
| b    | 0.64 |       | 0.90 |
| b2   |      |       | 0.95 |
| b4   | 5.20 |       | 5.40 |
| B5   |      | 0.30  |      |
| c    | 0.45 |       | 0.60 |
| c2   | 0.48 |       | 0.60 |
| D    | 6.00 |       | 6.20 |
| E    | 6.40 |       | 6.60 |
| e    |      | 2.28  |      |
| e1   | 4.40 |       | 4.60 |
| H    |      | 16.10 |      |
| L    | 9.00 |       | 9.40 |
| L1   | 0.80 |       | 1.20 |
| L2   |      | 0.80  | 1.00 |
| V1   |      | 10°   |      |

## 4.7 IPAK (TO-251) type C package information

Figure 30: IPAK (TO-251) type C package outline

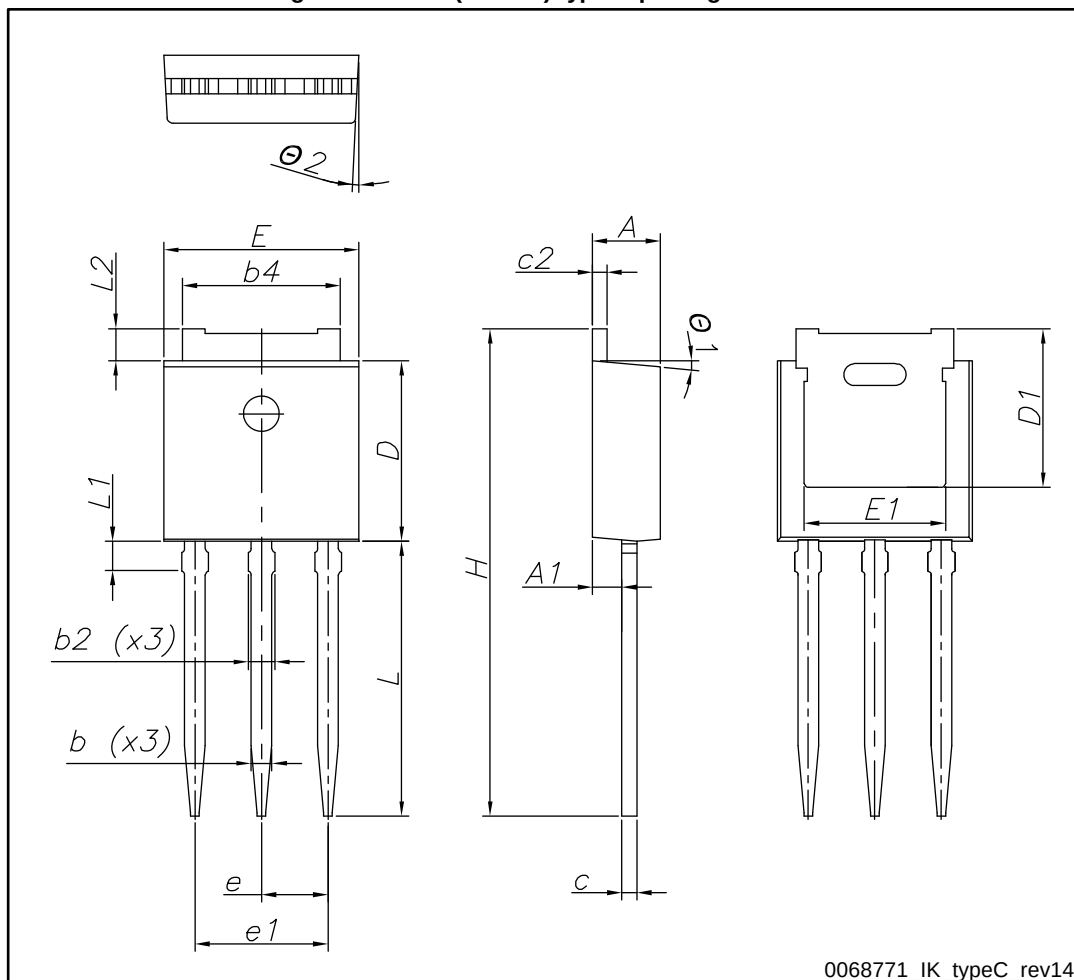


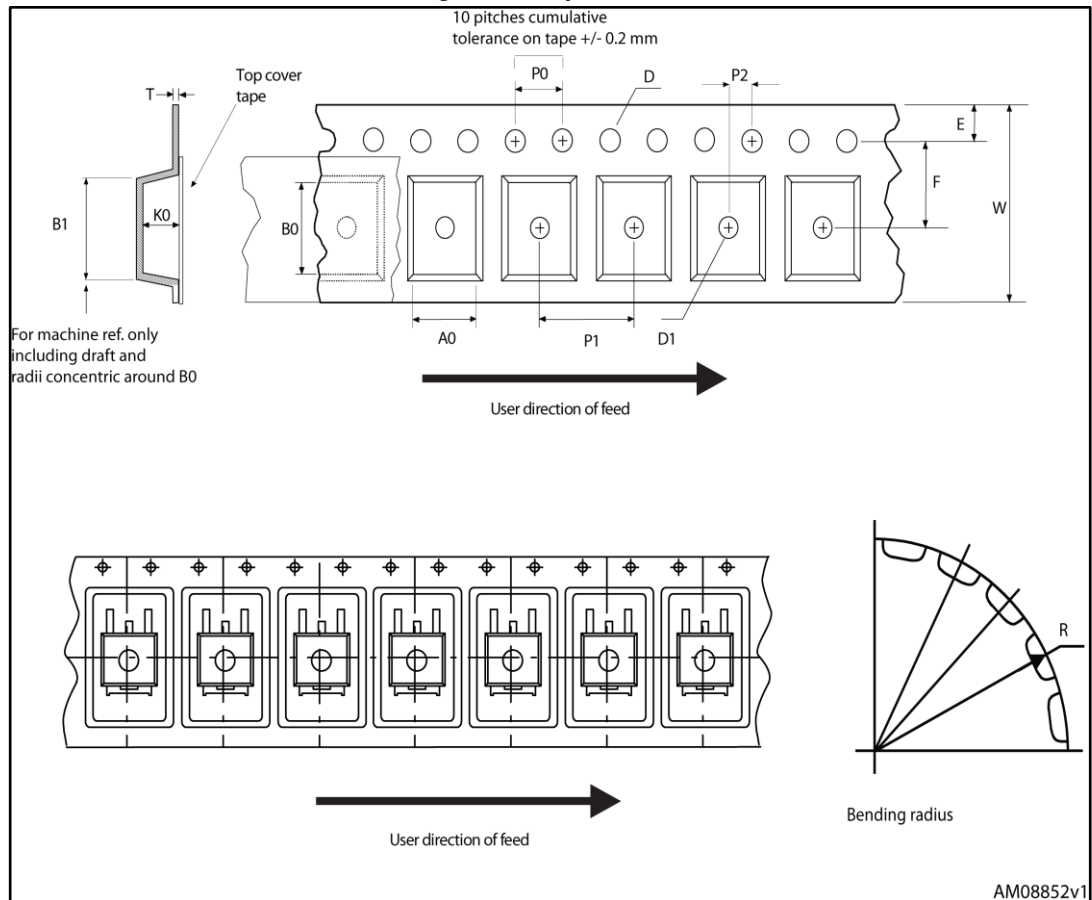
Table 15: IPAK (TO-251) type C package mechanical data

| Dim. | mm    |       |       |
|------|-------|-------|-------|
|      | Min.  | Typ.  | Max.  |
| A    | 2.20  | 2.30  | 2.35  |
| A1   | 0.90  | 1.00  | 1.10  |
| b    | 0.66  |       | 0.79  |
| b2   |       |       | 0.90  |
| b4   | 5.23  | 5.33  | 5.43  |
| c    | 0.46  |       | 0.59  |
| c2   | 0.46  |       | 0.59  |
| D    | 6.00  | 6.10  | 6.20  |
| D1   | 5.20  | 5.37  | 5.55  |
| E    | 6.50  | 6.60  | 6.70  |
| E1   | 4.60  | 4.78  | 4.95  |
| e    | 2.20  | 2.25  | 2.30  |
| e1   | 4.40  | 4.50  | 4.60  |
| H    | 16.18 | 16.48 | 16.78 |
| L    | 9.00  | 9.30  | 9.60  |
| L1   | 0.80  | 1.00  | 1.20  |
| L2   | 0.90  | 1.08  | 1.25  |
| θ1   | 3°    | 5°    | 7°    |
| θ2   | 1°    | 3°    | 5°    |



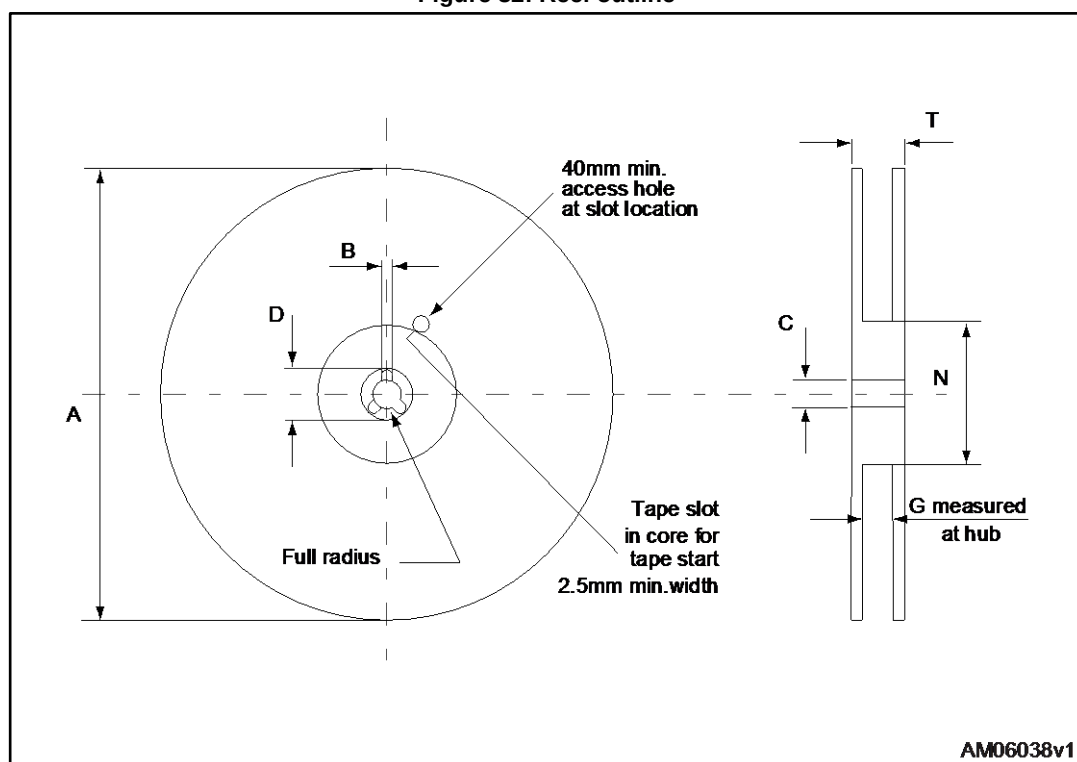
## 4.8 D<sup>2</sup>PAK and DPAK packing information

Figure 31: Tape outline



AM08852v1

Figure 32: Reel outline

Table 16: D<sup>2</sup>PAK tape and reel mechanical data

| Tape |      |      | Reel          |      |      |
|------|------|------|---------------|------|------|
| Dim. | mm   |      | Dim.          | mm   |      |
|      | Min. | Max. |               | Min. | Max. |
| A0   | 10.5 | 10.7 | A             |      | 330  |
| B0   | 15.7 | 15.9 | B             | 1.5  |      |
| D    | 1.5  | 1.6  | C             | 12.8 | 13.2 |
| D1   | 1.59 | 1.61 | D             | 20.2 |      |
| E    | 1.65 | 1.85 | G             | 24.4 | 26.4 |
| F    | 11.4 | 11.6 | N             | 100  |      |
| K0   | 4.8  | 5.0  | T             |      | 30.4 |
| P0   | 3.9  | 4.1  |               |      |      |
| P1   | 11.9 | 12.1 | Base quantity |      | 1000 |
| P2   | 1.9  | 2.1  | Bulk quantity |      | 1000 |
| R    | 50   |      |               |      |      |
| T    | 0.25 | 0.35 |               |      |      |
| W    | 23.7 | 24.3 |               |      |      |

Table 17: DPAK tape and reel mechanical data

| Tape |      |      | Reel      |      |      |
|------|------|------|-----------|------|------|
| Dim. | mm   |      | Dim.      | mm   |      |
|      | Min. | Max. |           | Min. | Max. |
| A0   | 6.8  | 7    | A         |      | 330  |
| B0   | 10.4 | 10.6 | B         | 1.5  |      |
| B1   |      | 12.1 | C         | 12.8 | 13.2 |
| D    | 1.5  | 1.6  | D         | 20.2 |      |
| D1   | 1.5  |      | G         | 16.4 | 18.4 |
| E    | 1.65 | 1.85 | N         | 50   |      |
| F    | 7.4  | 7.6  | T         |      | 22.4 |
| K0   | 2.55 | 2.75 |           |      |      |
| P0   | 3.9  | 4.1  | Base qty. |      | 2500 |
| P1   | 7.9  | 8.1  | Bulk qty. |      | 2500 |
| P2   | 1.9  | 2.1  |           |      |      |
| R    | 40   |      |           |      |      |
| T    | 0.25 | 0.35 |           |      |      |
| W    | 15.7 | 16.3 |           |      |      |

## 5 Revision history

Table 18: Document revision history

| Date        | Revision | Changes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29-May-2013 | 1        | First release.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 06-Dec-2013 | 2        | <ul style="list-style-type: none"><li>– Added: D<sup>2</sup>PAK package</li><li>– Modified: title and <math>R_{DS(on)}</math> values in cover page</li><li>– Modified: <math>R_{DS(on)}</math> values in Table 5</li><li>– Modified: <math>R_G</math> value in Table 6</li><li>– Modified: Figure 9 and <math>I_D</math> value in Figure 12</li><li>– Added: Table 9, 13, Figure 22 and 23</li><li>– Updated: Table 10, 11, Figure 24, 25 and 26</li><li>– Minor text changes</li></ul> |
| 13-Mar-2017 | 3        | <p>Updated the title and the description in cover page.</p> <p>Updated <a href="#">Table 4: "Avalanche characteristics"</a>.</p> <p>Updated <a href="#">Section 4.2: "DPAK (TO-252) type A package information"</a>.</p> <p>Added <a href="#">Section 4.4: "DPAK (TO-252) type E package information"</a> and <a href="#">Section 4.7: "IPAK (TO-251) type C package information"</a>.</p> <p>Minor text changes.</p>                                                                   |

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