

Automotive-grade low voltage PNP power transistor

Datasheet - production data

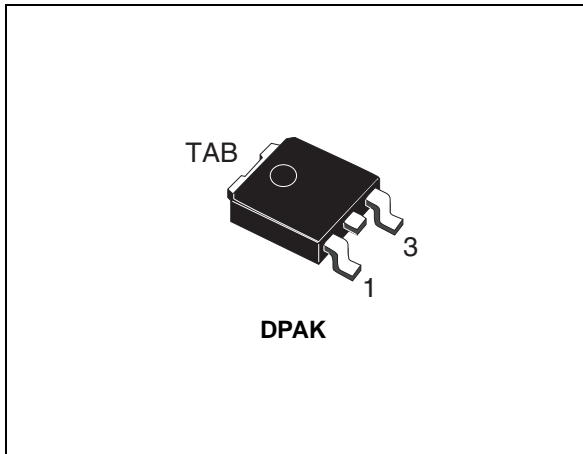
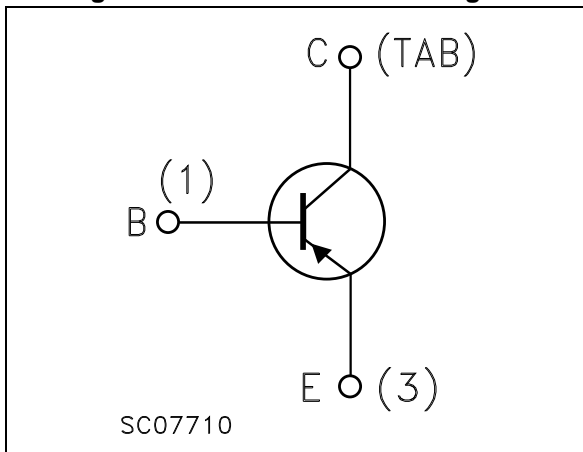



Figure 1. Internal schematic diagram



Features

- AEC-Q101 qualified 
- Surface-mounting TO-252 power package in tape and reel
- Complementary to the NPN type MJD31CT4-A

Applications

- General purpose linear and switching equipment

Description

The device is manufactured in planar technology with “base island” layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage.

Table 1. Device summary

| Order code | Marking | Package | Packing |
|------------|---------|---------|---------------|
| MJD32CT4-A | MJD32C | DPAK | Tape and reel |

Contents

- 1 Electrical ratings 3**
- 2 Electrical characteristics 4**
 - 2.1 Electrical characteristics (curves) 5
- 3 Test circuits 7**
- 4 Package information 8**
 - 4.1 DPAK (TO-252) type A package information 8
 - 4.2 DPAK (TO-252) packing information 11
- 5 Revision history 13**

1 Electrical ratings

Table 2. Absolute maximum ratings

| Symbol | Parameter | Value | Unit |
|------------------|---|------------|------|
| V _{CB0} | Collector-base voltage ($I_E = 0$) | -100 | V |
| V _{CEO} | Collector-emitter voltage ($I_B = 0$) | -100 | V |
| V _{EBO} | Emitter-base voltage ($I_C = 0$) | -5 | V |
| I _C | Collector current | -3 | A |
| I _{CM} | Collector peak current | -5 | A |
| I _B | Base current | -1 | A |
| P _{TOT} | Total dissipation at T _C = 25 °C | 15 | W |
| T _{stg} | Storage temperature range | -65 to 150 | °C |
| T _j | Operating junction temperature range | | |

Table 3. Thermal data

| Symbol | Parameter | Value | Unit |
|-------------------------------------|----------------------------------|-------|------|
| R _{thj-case} | Thermal resistance junction-case | 8.3 | °C/W |
| R _{thj-pcb} ⁽¹⁾ | Thermal resistance junction-pcb | 50 | °C/W |

1. When mounted on a 1-inch² FR-4 board, 2oz Cu

2 Electrical characteristics

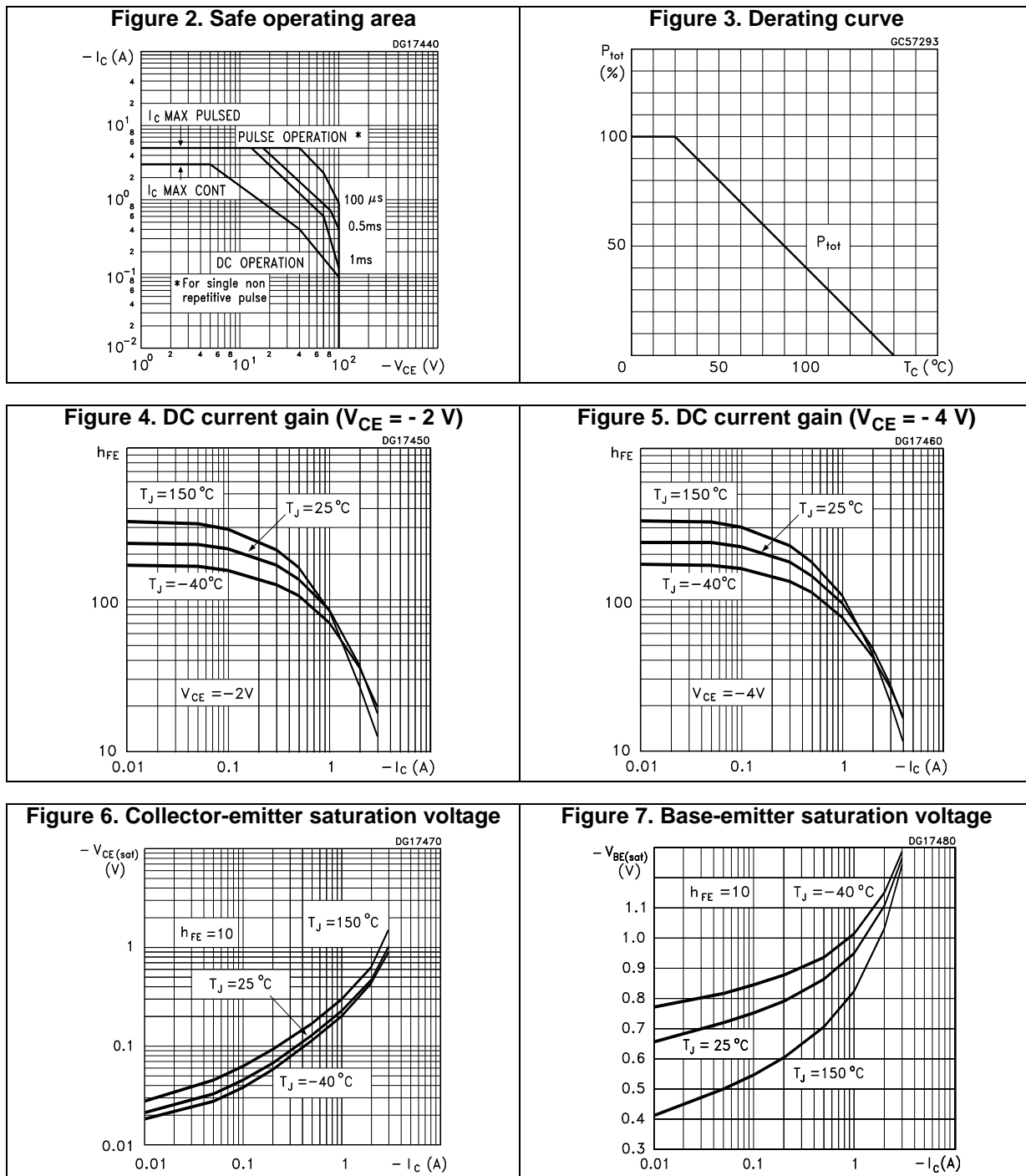
$T_{\text{case}}=25\text{ }^{\circ}\text{C}$ unless otherwise specified.

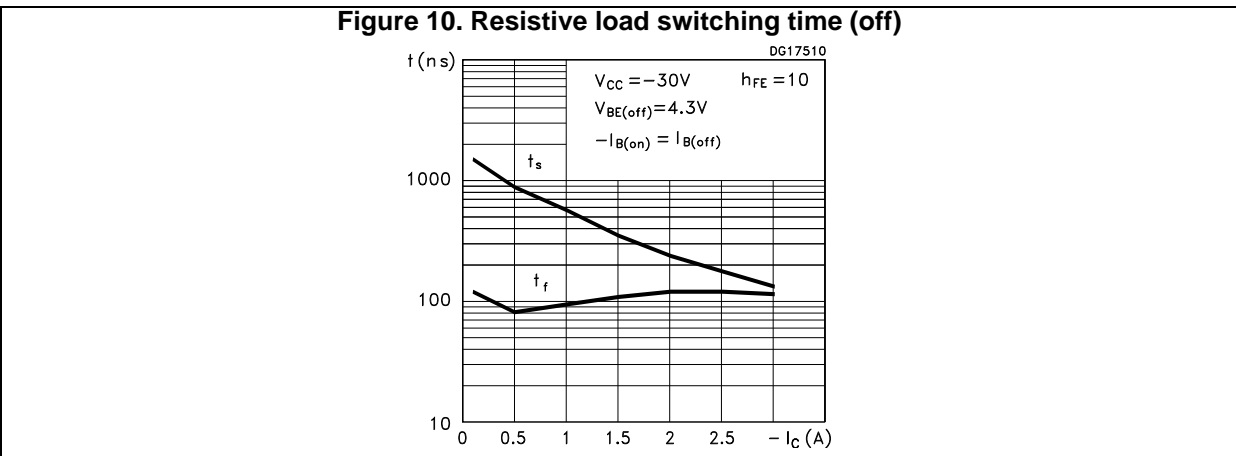
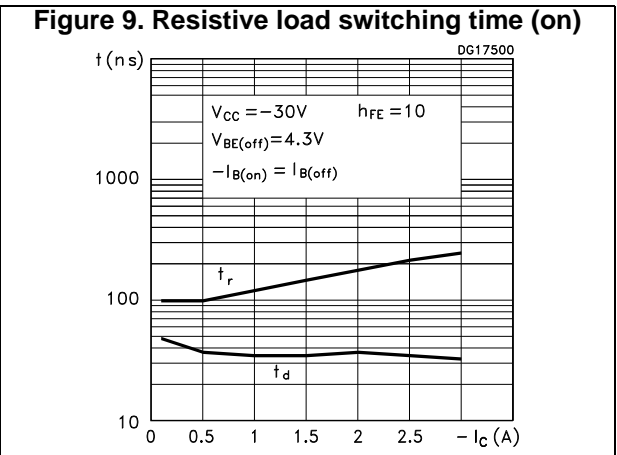
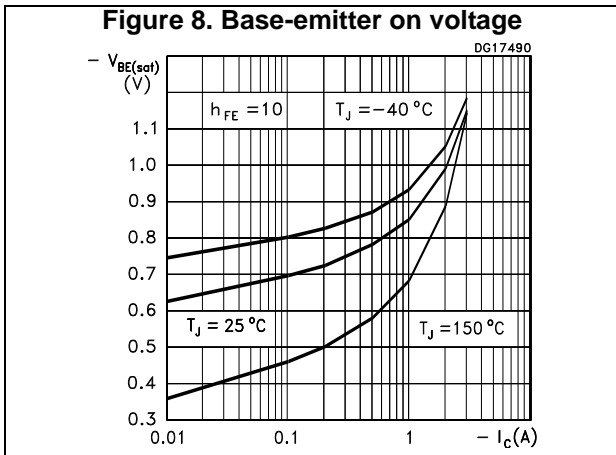
Table 4. On/off states

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|----------------------------|---|--|------|------|------|---------------|
| I_{CES} | Collector cut-off current ($V_{\text{BE}} = 0$) | $V_{\text{CE}} = -100\text{ V}$ | | - | -20 | μA |
| I_{CEO} | Collector cut-off current ($I_{\text{B}} = 0$) | $V_{\text{CB}} = -60\text{ V}$ | | - | -50 | μA |
| I_{EBO} | Emitter cut-off current ($I_{\text{C}} = 0$) | $V_{\text{EB}} = -5\text{ V}$ | | - | -0.1 | mA |
| $V_{\text{CEO(sus)}}$ | Collector-emitter sustaining voltage ($I_{\text{B}} = 0$) | $I_{\text{C}} = -30\text{ mA}$ | -100 | - | | V |
| $V_{\text{CE(sat)}}^{(1)}$ | Collector-emitter saturation voltage | $I_{\text{C}} = -3\text{ A}$, $I_{\text{B}} = -375\text{ mA}$ | | - | -1.2 | V |
| $V_{\text{BE(on)}}$ | Base-emitter on voltage | $I_{\text{C}} = -3\text{ A}$, $V_{\text{CE}} = -4\text{ V}$ | | - | -1.8 | V |
| h_{FE} | DC current gain | $I_{\text{C}} = -1\text{ A}$, $V_{\text{CE}} = -4\text{ V}$ | 25 | - | | |
| | | $I_{\text{C}} = -3\text{ A}$, $V_{\text{CE}} = -4\text{ V}$ | 10 | - | 50 | |

1. Pulse test: pulse duration $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

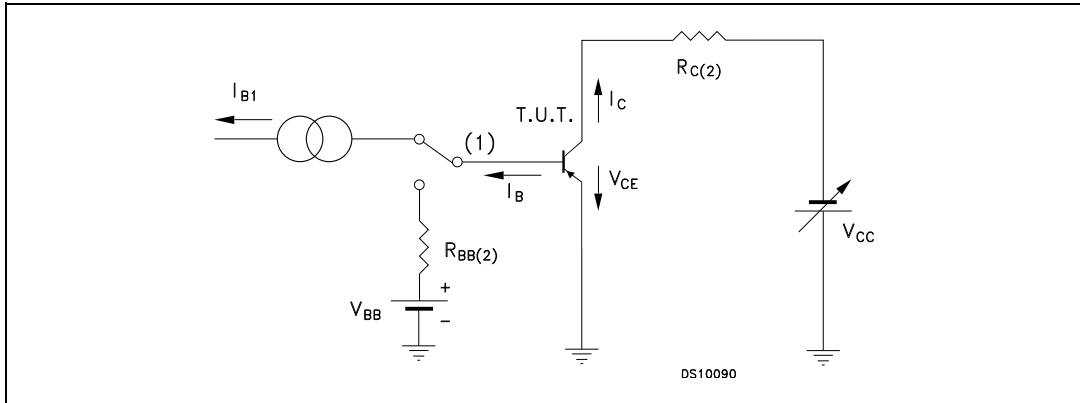
2.1 Electrical characteristics (curves)





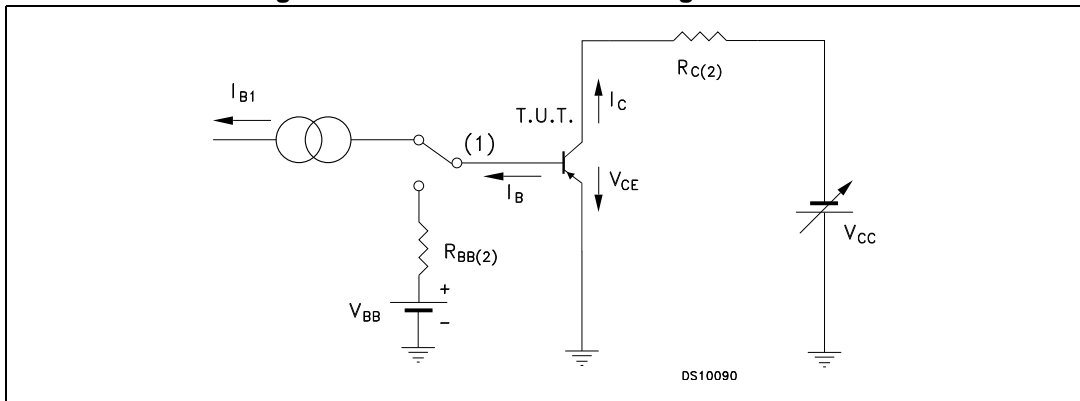
3 Test circuits

Figure 11. Resistive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor

Figure 12. Inductive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor
3. Fast recovery rectifier

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. ECOPACK[®] is an ST trademark.

4.1 DPAK (TO-252) type A package information

Figure 13. DPAK (TO-252) type A package outline

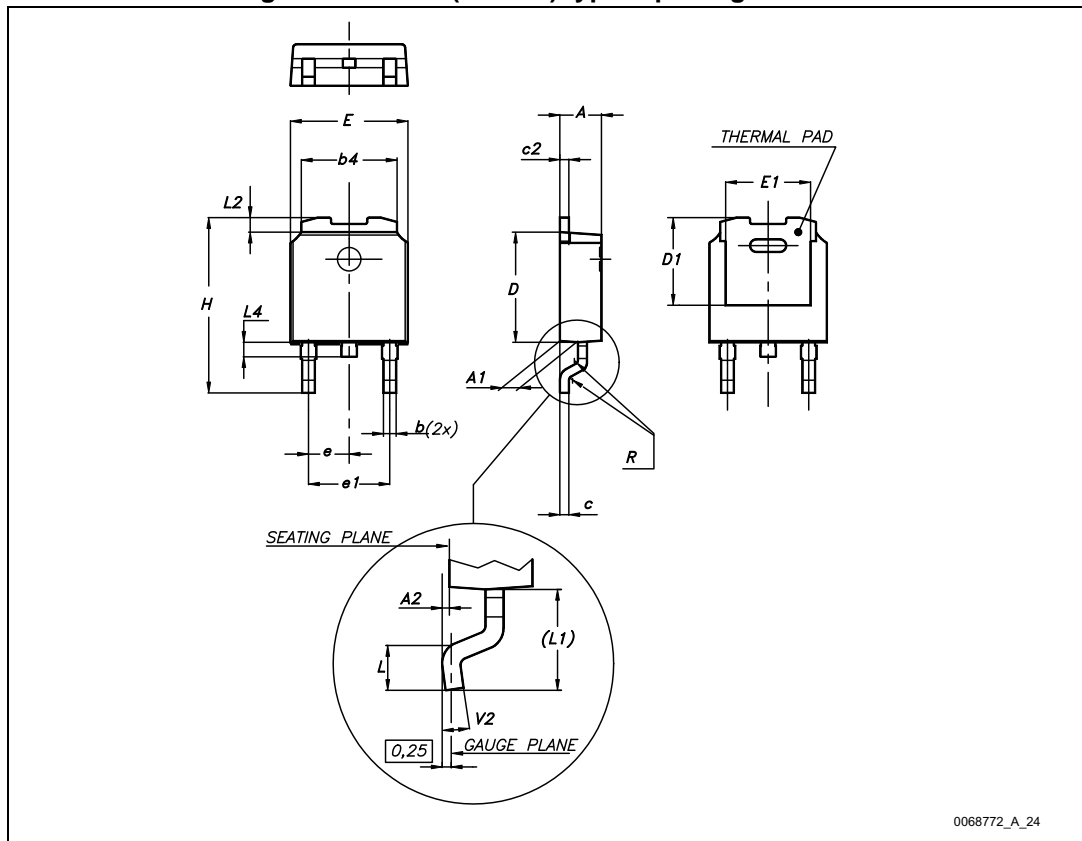
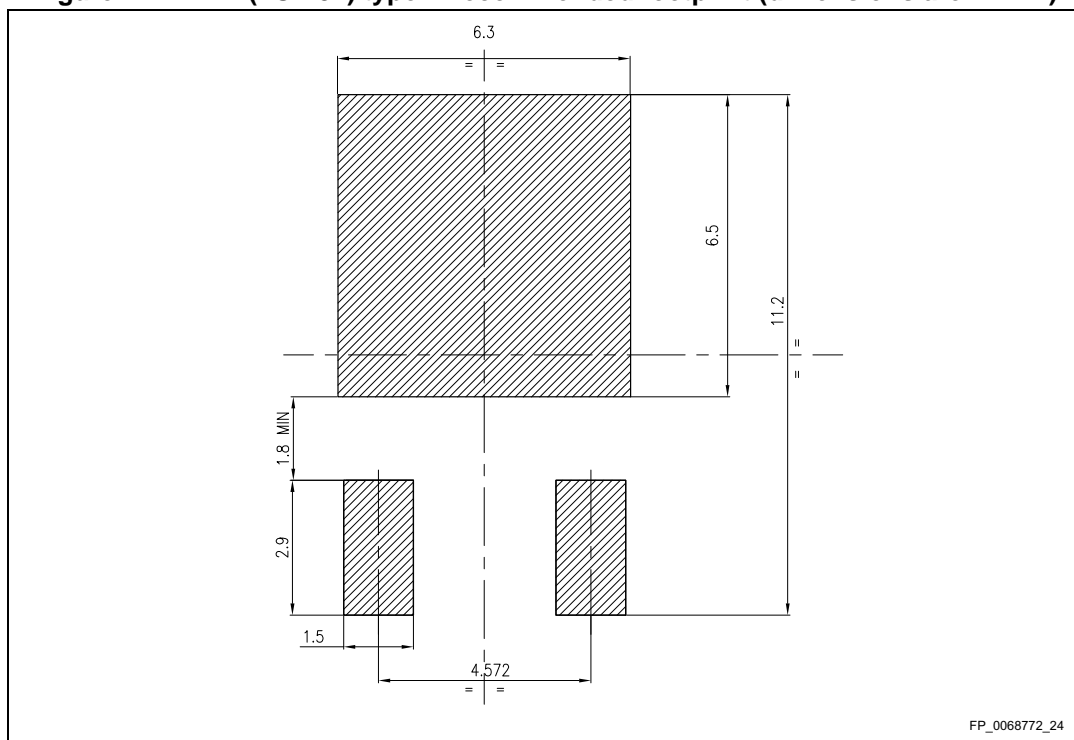


Table 5. DPAK (TO-252) type A mechanical data

| 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° |

Figure 14. DPAK (TO-252) type A recommended footprint (dimensions are in mm)



4.2 DPAK (TO-252) packing information

Figure 15. DPAK (TO-252) tape outline

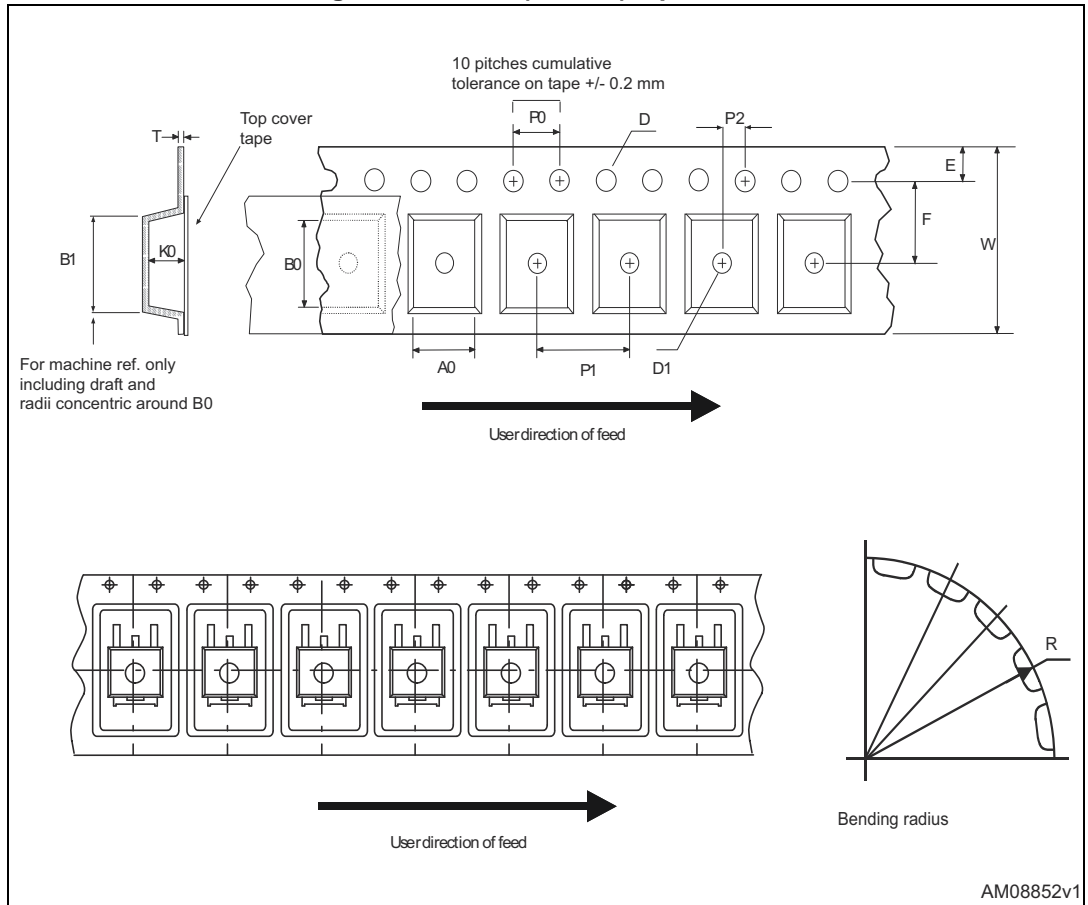
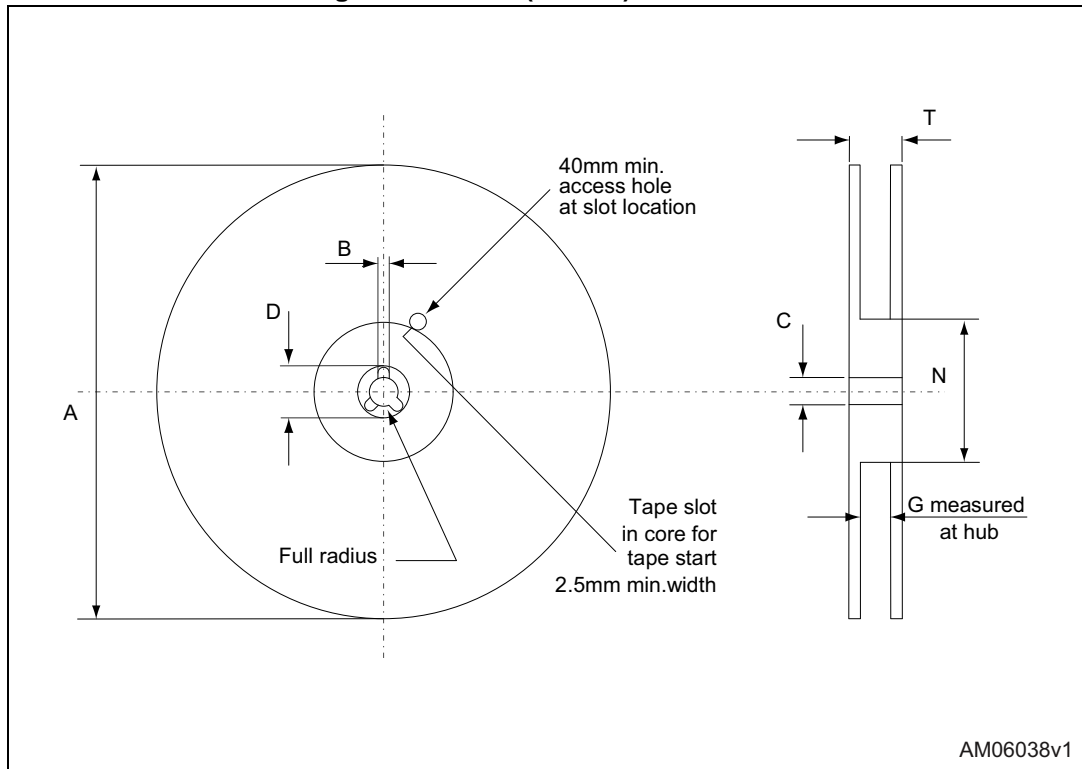


Figure 16. DPAK (TO-252) reel outline



AM06038v1

Table 6. DPAK (TO-252) 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 7. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| 01-Jun-2007 | 1 | First release |
| 09-Nov-2009 | 2 | Updated package mechanical data. |
| 14-Jan-2010 | 3 | Modified <i>Table 3 on page 2</i> . |
| 19-Jun-2012 | 4 | Modified: mechanical data updated |
| 24-Jan-2018 | 5 | Modified title. Modified features on cover page. Updated Section 4: Package information . Minor text changes. |

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2018 STMicroelectronics – All rights reserved

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[MJD32CT4-A](#)