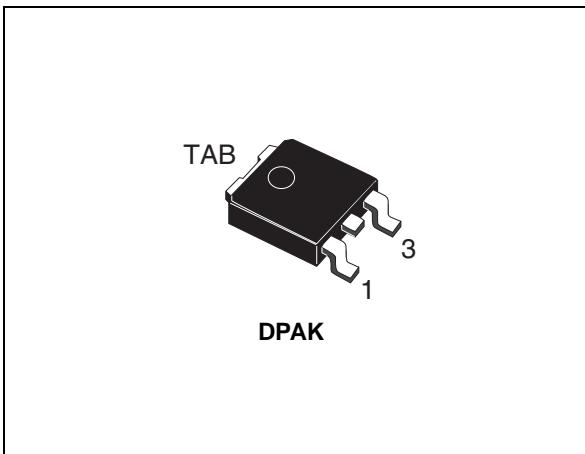
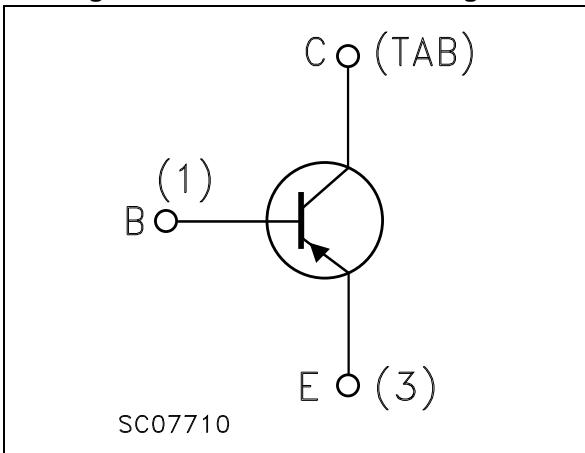


## Automotive-grade low voltage PNP power transistor

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

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# 1 Electrical ratings

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{CBO}$	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 $T_c = 25^\circ\text{C}$	15	W
$T_{stg}$	Storage temperature range	-65 to 150	$^\circ\text{C}$
$T_j$	Operating junction temperature range		

**Table 3. Thermal data**

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal resistance junction-case	8.3	$^\circ\text{C/W}$
$R_{thj-pcb}^{(1)}$	Thermal resistance junction-pcb	50	$^\circ\text{C/W}$

1. When mounted on a 1-inch<sup>2</sup> FR-4 board, 2oz Cu

## 2 Electrical characteristics

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

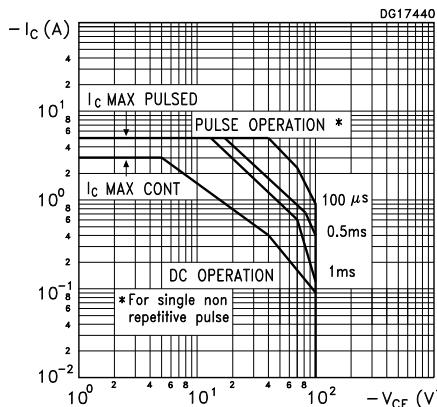
**Table 4. On/off states**

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

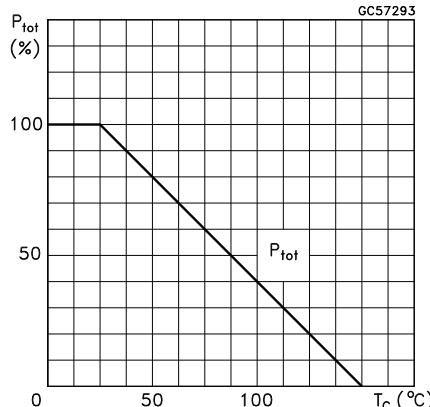
1. Pulse test: pulse duration  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$

## 2.1 Electrical characteristics (curves)

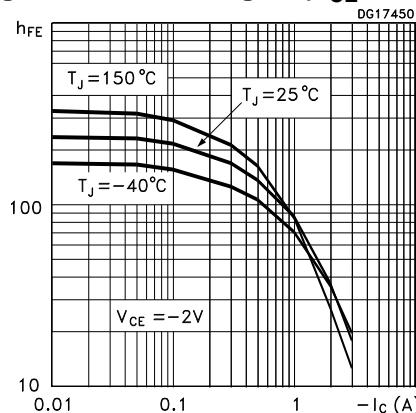
**Figure 2. Safe operating area**



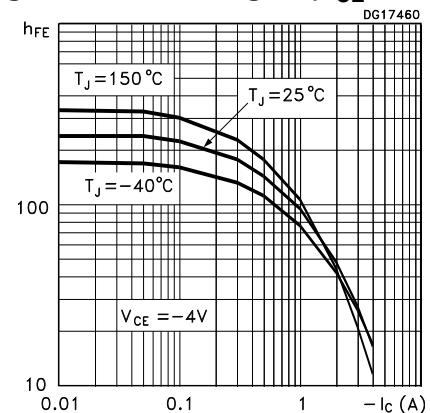
**Figure 3. Derating curve**



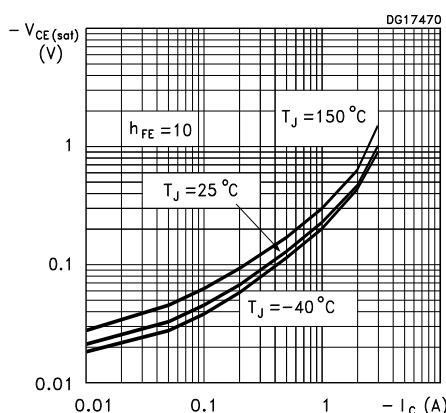
**Figure 4. DC current gain ( $V_{CE} = -2\text{ V}$ )**



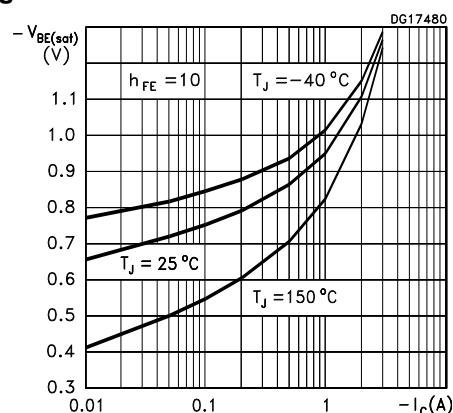
**Figure 5. DC current gain ( $V_{CE} = -4\text{ V}$ )**

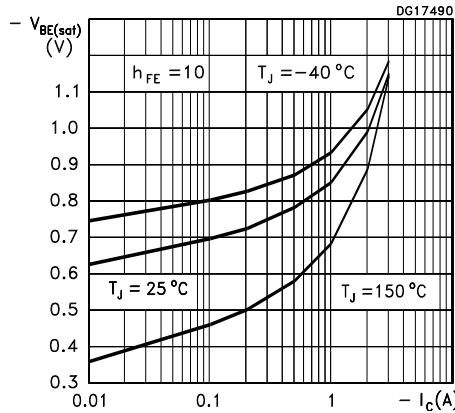
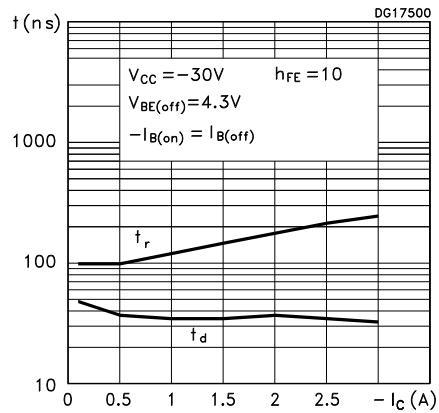
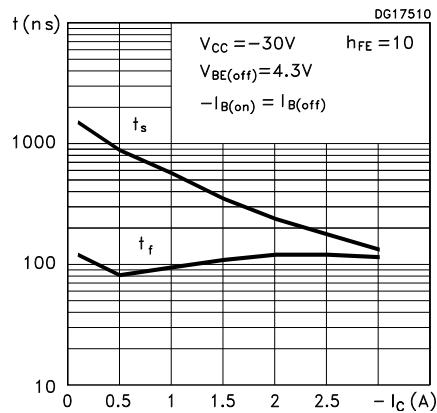


**Figure 6. Collector-emitter saturation voltage**



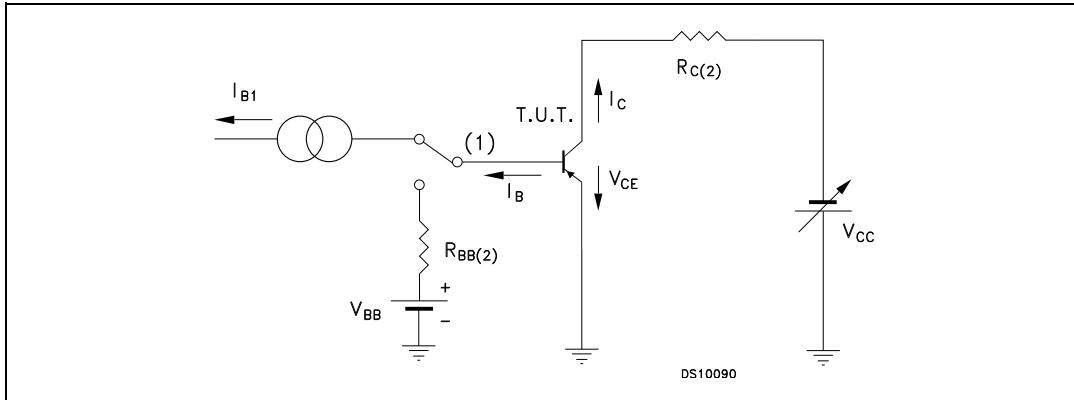
**Figure 7. Base-emitter saturation voltage**



**Figure 8. Base-emitter on voltage****Figure 9. Resistive load switching time (on)****Figure 10. Resistive load switching time (off)**

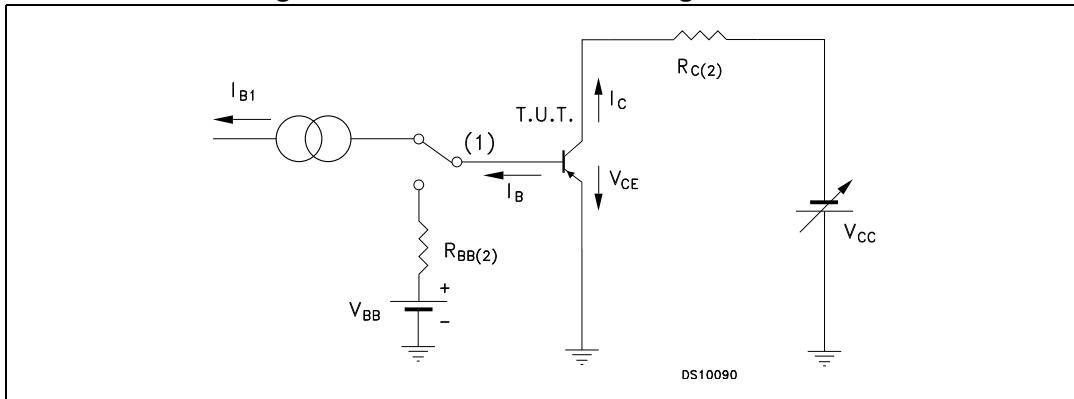
### 3 Test circuits

Figure 11. Resistive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor

Figure 12. Inductive load switching test circuit



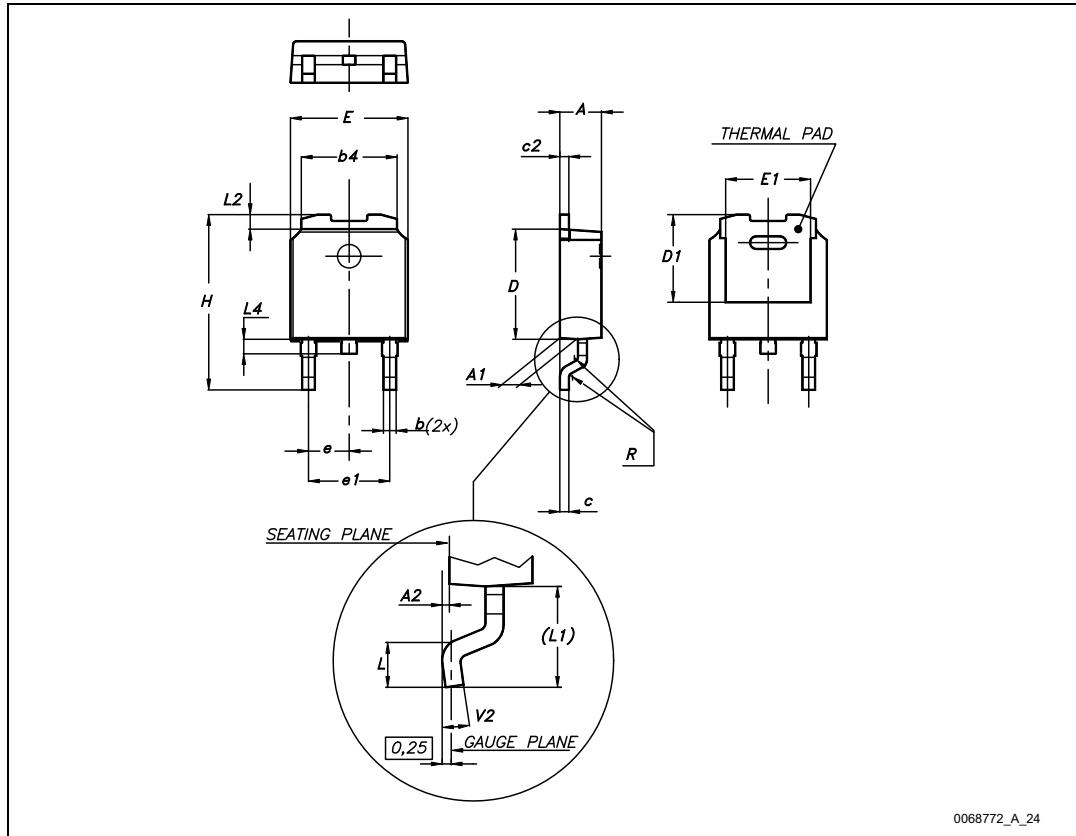
1. Fast electronic switch
2. Non-inductive resistor
3. Fast recovery rectifier

## 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](http://www.st.com).  
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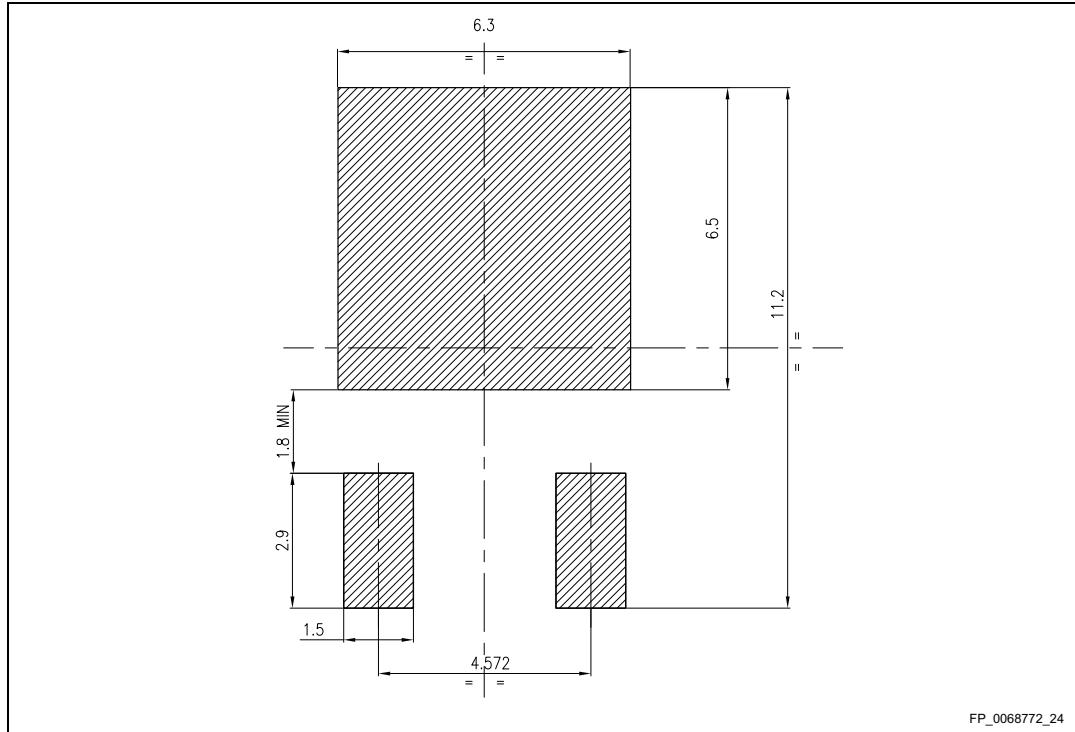
### 4.1 DPAK (TO-252) type A package information

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

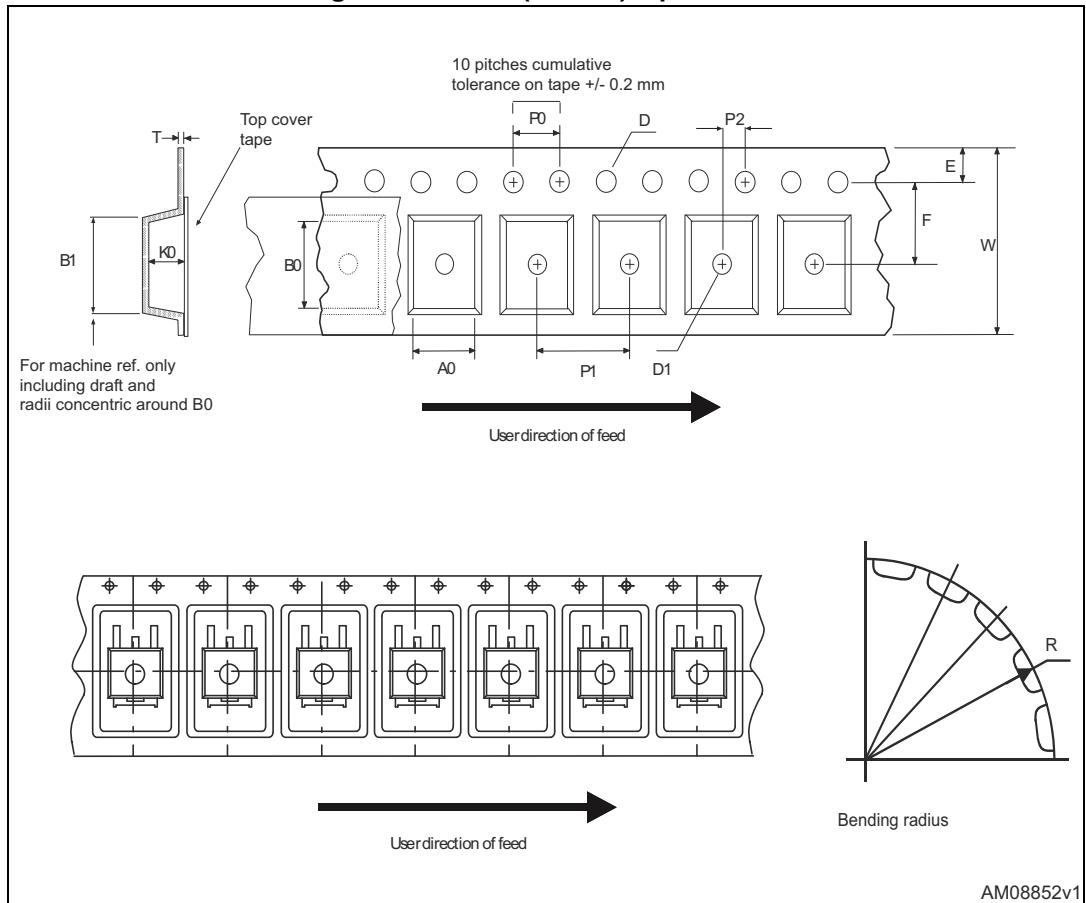


Figure 16. DPAK (TO-252) reel outline

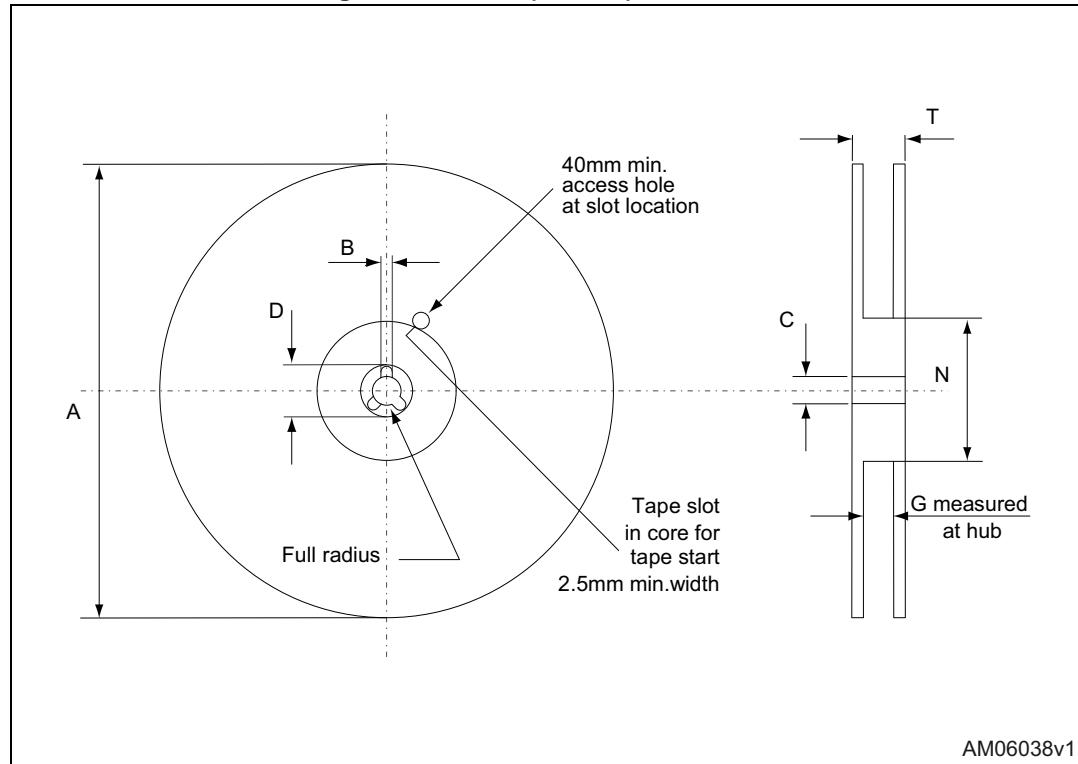


Table 6. DPAK (TO-252) tape and reel mechanical data

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 <a href="#">Section 4: Package information</a> . Minor text changes.

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#### Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: [org@eplast1.ru](mailto:org@eplast1.ru)

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.