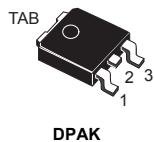


## Low voltage NPN power transistor

**Features**

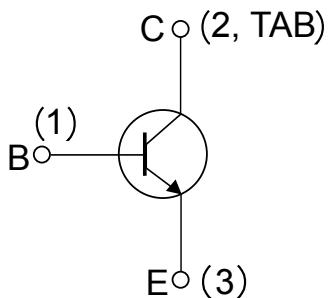
- Surface-mounting DPAK (TO-252) power package in tape and reel
- Electrically similar to MJE3055T

**Application**

- General purpose switching and amplifier

**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.

**Product status link**

MJD3055T4

**Product summary**

Order code	MJD3055T4
Marking	MJD3055
Package	DPAK
Packing	Tape and reel

## 1 Electrical ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base voltage ( $I_E = 0 \text{ V}$ )	70	V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0 \text{ A}$ )	60	V
$V_{EBO}$	Collector-base voltage ( $I_C = 0 \text{ A}$ )	5	V
$I_C$	Collector current	10	A
$I_B$	Base current	6	A
$P_{TOT}$	Total power dissipation at $T_c = 25^\circ\text{C}$	20	W
$T_{stg}$	Storage temperature range	-65 to 150	$^\circ\text{C}$
$T_J$	Maximum operating junction temperature	150	

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{thJC}$	Thermal resistance, junction-to-case	6.25	$^\circ\text{C}/\text{W}$
$R_{thJA}$	Thermal resistance, junction-to-ambient	100	$^\circ\text{C}/\text{W}$

## 2 Electrical characteristics

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

**Table 3. Electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{CEX}$	Collector cut-off current	$V_{CE} = 70 \text{ V}, V_{BE} = -1.5 \text{ V}$			20	$\mu\text{A}$
		$V_{CE} = 70 \text{ V}, T_J = 150^\circ\text{C}, V_{BE} = -1.5 \text{ V}$ <sup>(1)</sup>			2	$\text{mA}$
$I_{CBO}$	Collector cut-off current	$V_{CB} = 70 \text{ V}, I_E = 0 \text{ A}$			20	$\mu\text{A}$
		$V_{CB} = 70 \text{ V}, T_J = 150^\circ\text{C}, I_E = 0 \text{ A}$ <sup>(1)</sup>			2	$\text{mA}$
$I_{CEO}$	Collector cut-off current	$V_{CE} = 30 \text{ V}, I_B = 0 \text{ A}$			50	$\mu\text{A}$
$I_{EBO}$	Emitter cut-off current	$V_{EB} = 5 \text{ V}$ $I_C = 0 \text{ A}$			0.5	$\text{mA}$
$V_{CEO(sus)}$ <sup>(2)</sup>	Collector-emitter sustaining voltage	$I_C = 30 \text{ mA}$ $I_B = 0 \text{ A}$	60			$\text{V}$
$V_{CE(sat)}$ <sup>(2)</sup>	Collector-emitter saturation voltage	$I_C = 4 \text{ A}, I_B = 0.4 \text{ A}$			1.1	$\text{V}$
		$I_C = 10 \text{ A}, I_B = 3.3 \text{ A}$			8	
$V_{BE(on)}$ <sup>(2)</sup>	Base-emitter voltage	$I_C = 4 \text{ A}, V_{CE} = 4 \text{ V}$			1.8	$\text{V}$
$h_{FE}$ <sup>(2)</sup>	DC current gain	$I_C = 4 \text{ A} V_{CE} = 4 \text{ V}$	20		100	
		$I_C = 10 \text{ A} V_{CE} = 4 \text{ V}$	5			
$f_T$	Transition frequency	$I_C = 0.5 \text{ A}, V_{CE} = 10 \text{ V}, f = 500 \text{ kHz}$	2			$\text{MHz}$

1. Defined by design, not subject to production test.

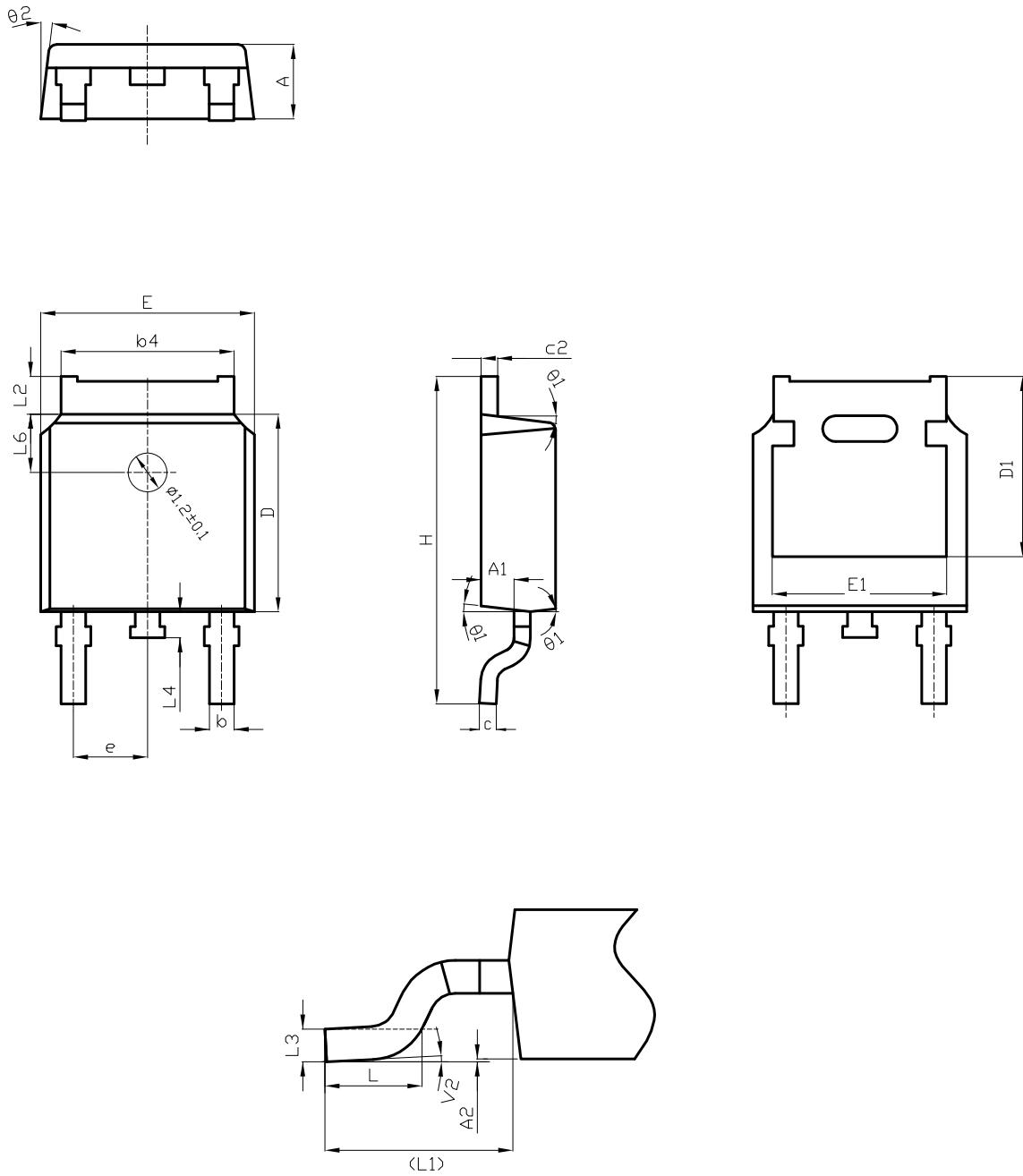
2. Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5%.

## 3 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.

### **3.1 DPAK (TO-252) type C2 package information**

**Figure 1.** DPAK (TO-252) type C2 package outline

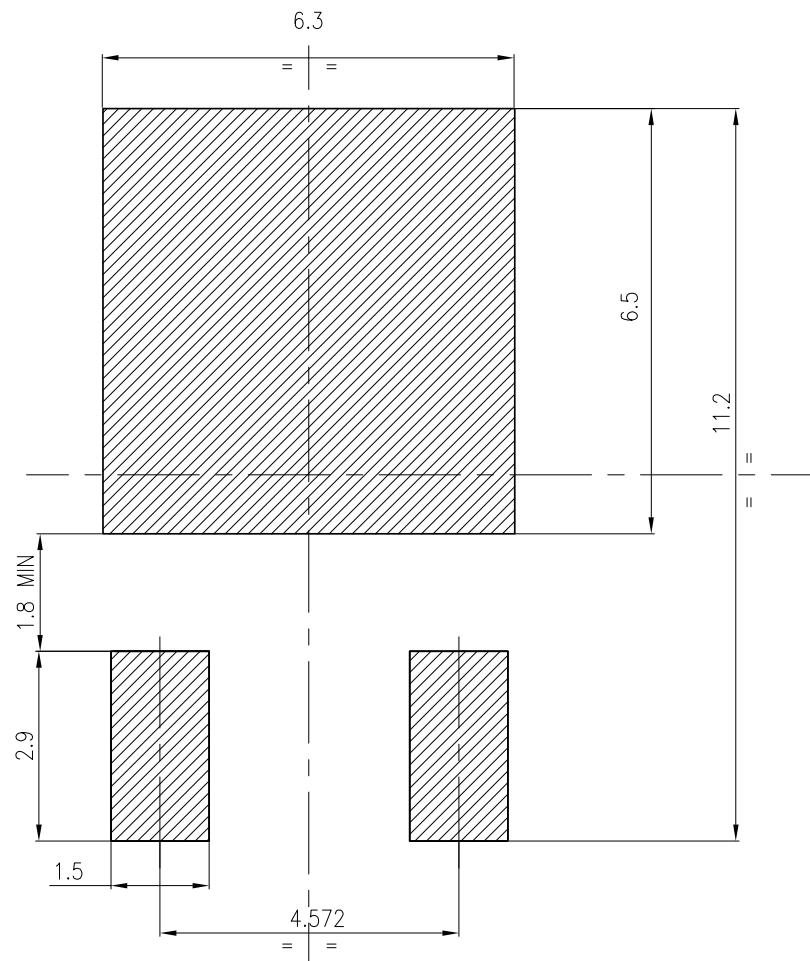


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**Table 4. DPAK (TO-252) type C2 mechanical data**

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	5.10		5.60
E	6.50	6.60	6.70
E1	5.20		5.50
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°

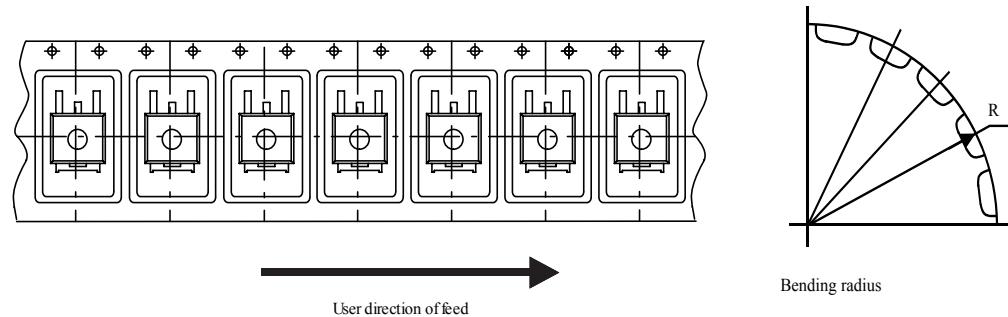
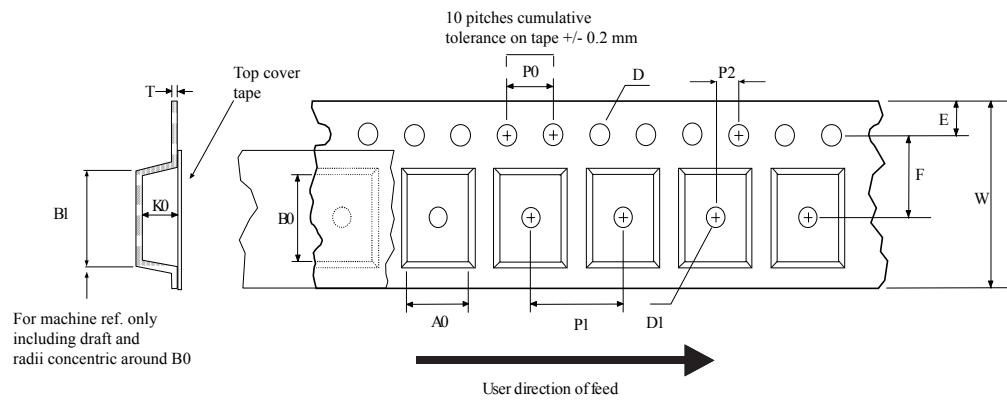
Figure 2. DPAK (TO-252) recommended footprint (dimensions are in mm)



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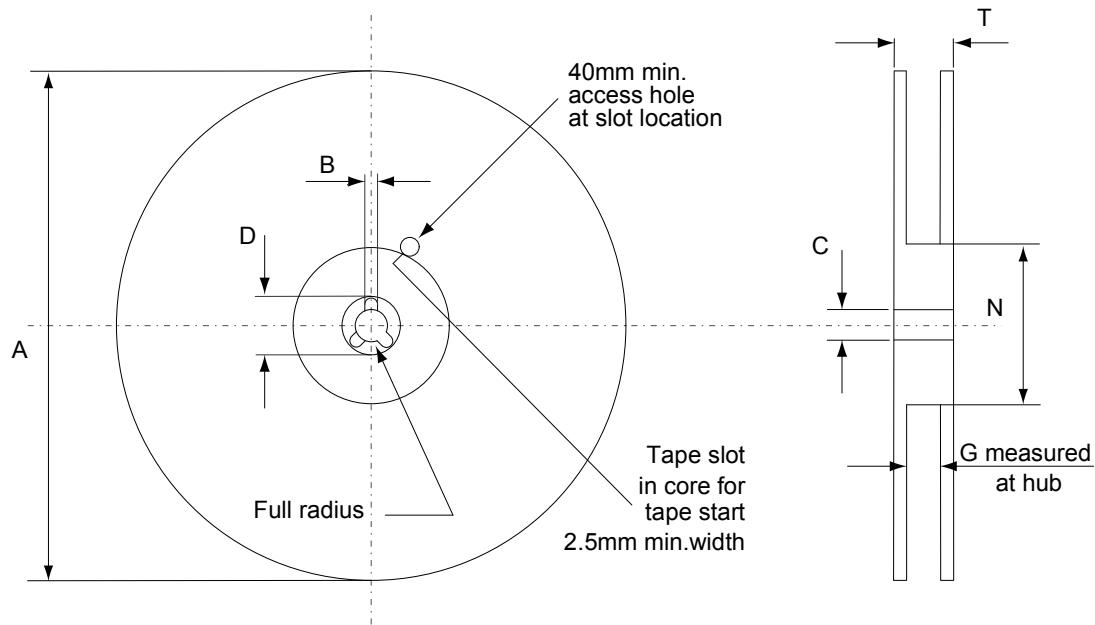
### 3.2 DPAK (TO-252) packing information

Figure 3. DPAK (TO-252) tape outline



AM08852v1

**Figure 4. DPAK (TO-252) reel outline**



AM06038v1

**Table 5. 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			

## Revision history

**Table 6. Document revision history**

Date	Version	Changes
29-Mar-2021	1	Initial release.

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