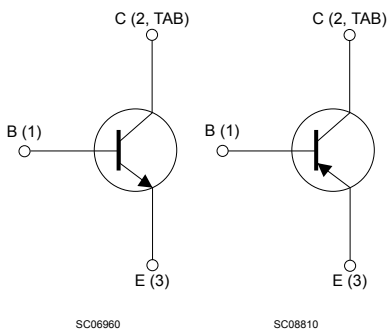
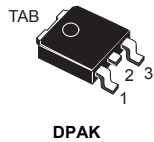


## Low voltage complementary power transistors



### Features

- Low collector-emitter saturation voltage
- Fast switching speed

### Application

- General purpose switching and amplifier

### Description

These devices are manufactured using low voltage multi epitaxial planar technology. They are intended for general-purpose linear and switching applications.

#### Product status links

[MJD44H11T4](#)

[MJD45H11T4](#)

#### Product summary

Order code	MJD44H11T4
Marking	MJD44H11
Polarity	NPN
Package	DPAK
Packing	Tape and reel
Order code	MJD45H11T4
Marking	MJD45H11
Polarity	PNP
Package	DPAK
Packing	Tape and reel

## 1 Electrical ratings

**Table 1. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ A)	80	V
$V_{EBO}$	Collector-base voltage ( $I_C = 0$ A)	5	V
$I_C$	Collector current	8	A
$I_{CM}$	Collector peak current	16	A
$P_{TOT}$	Total power dissipation at $T_C = 25^\circ\text{C}$	20	W
$T_{stg}$	Storage temperature range	-55 to 150	$^\circ\text{C}$
$T_J$	Maximum operating junction temperature	150	$^\circ\text{C}$

*Note:* For PNP types voltage and current values are negative.

**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

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

**Table 3. Electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{CEO(sus)}^{(1)}$	Collector-emitter sustaining voltage	$I_C = 30\text{ mA}, I_B = 0\text{ A}$	60	-		V
$I_{CES}$	Collector cut-off current	$V_{CE} = 80\text{ V}, V_{BE} = 0\text{ V}$		-	10	$\mu\text{A}$
$I_{EBO}$	Emitter cut-off current	$V_{EB} = 5\text{ V}, I_C = 0\text{ A}$		-	50	$\mu\text{A}$
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = 8\text{ A}, I_B = 0.4\text{ A}$		-	1	V
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = 8\text{ A}, I_B = 0.8\text{ A}$		-	1.5	V
$h_{FE}^{(1)}$	DC current gain	$I_C = 2\text{ A}, V_{CE} = 1\text{ V}$	60	-		
		$I_C = 4\text{ A}, V_{CE} = 1\text{ V}$	40	-		

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

**Note:** For PNP types voltage and current values are negative.

## 2.1 Electrical characteristics (curves)

Figure 1. Safe operating area

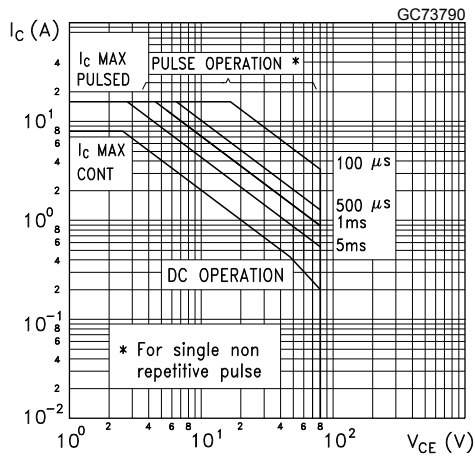


Figure 2. Derating curves

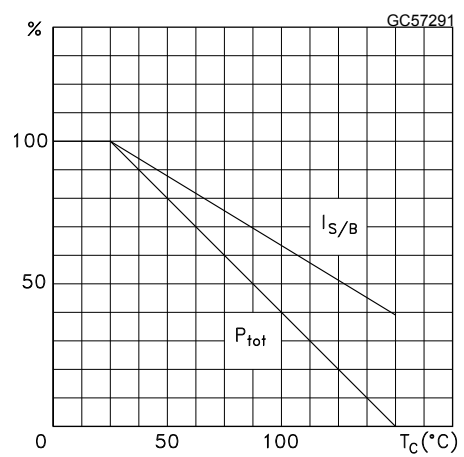


Figure 3. DC current gain (NPN)

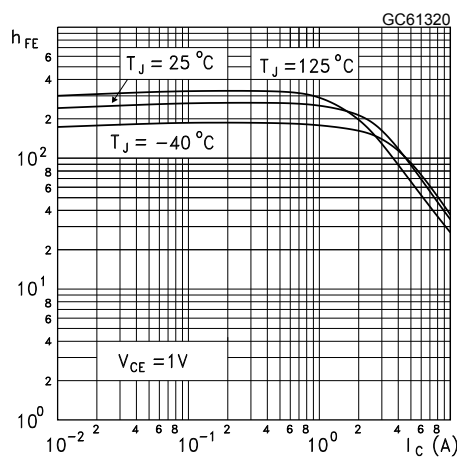


Figure 4. DC current gain (PNP)

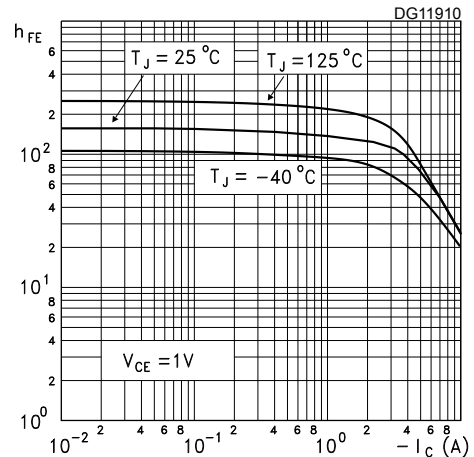


Figure 5. Collector-emitter saturation voltage (NPN)

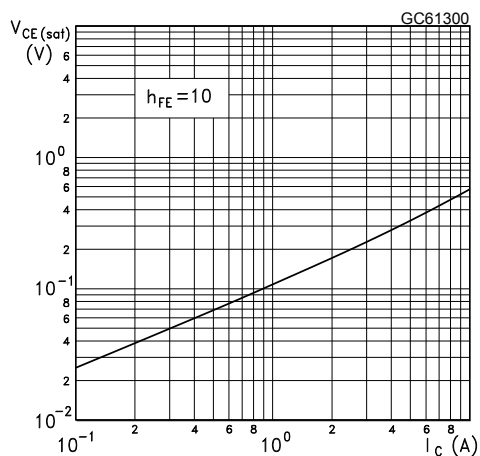
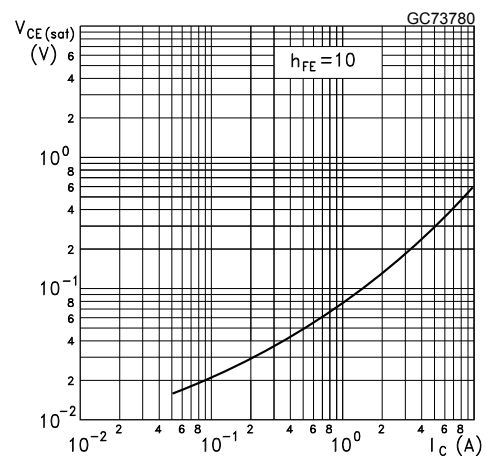


Figure 6. Collector-emitter saturation voltage (PNP)

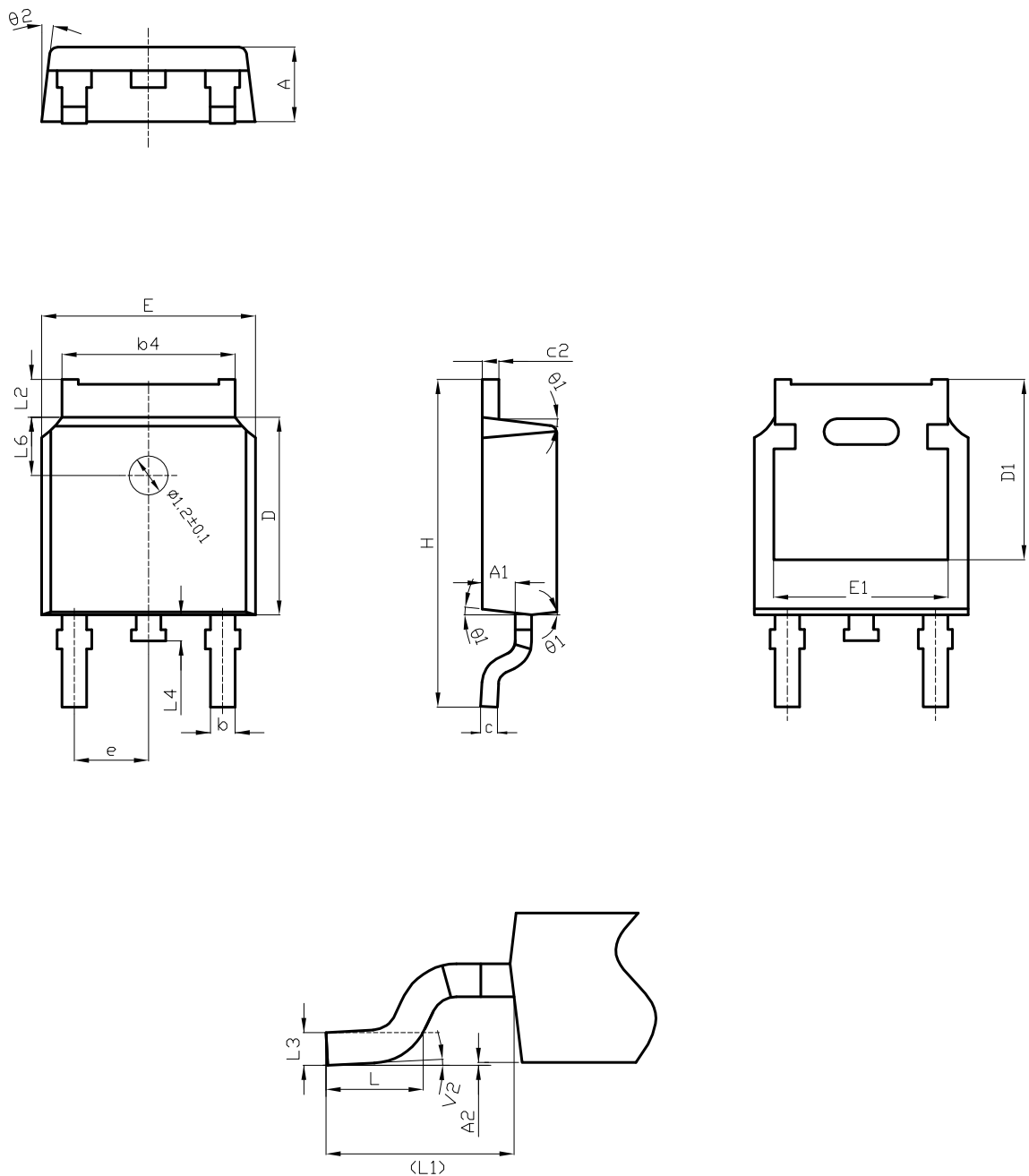


### 3 Package information

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 7. DPAK (TO-252) type C2 package outline

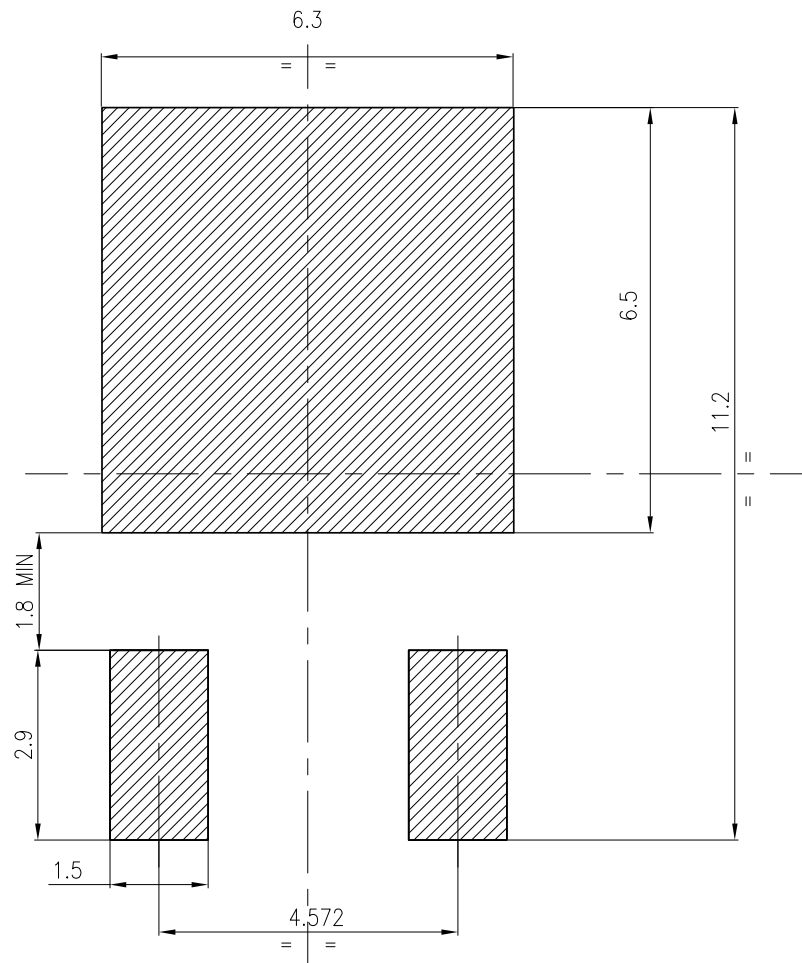


0068772\_type-C2\_rev30

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°

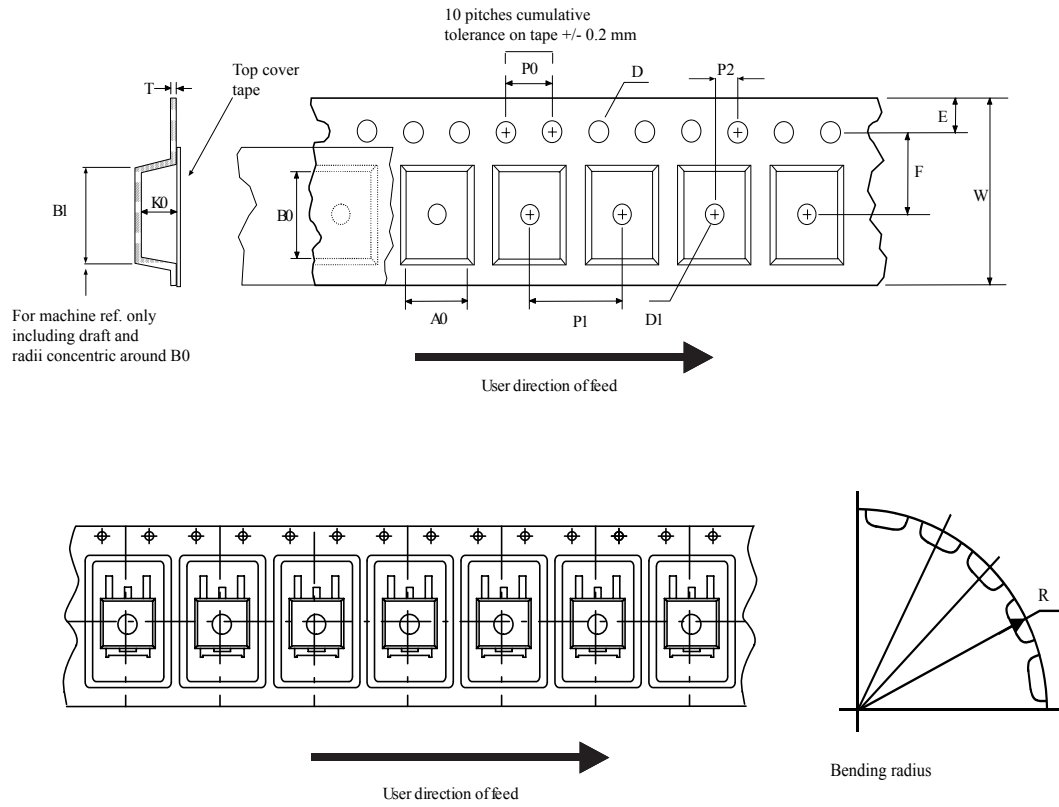
Figure 8. DPAK (TO-252) recommended footprint (dimensions are in mm)



FP\_0068772\_30

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

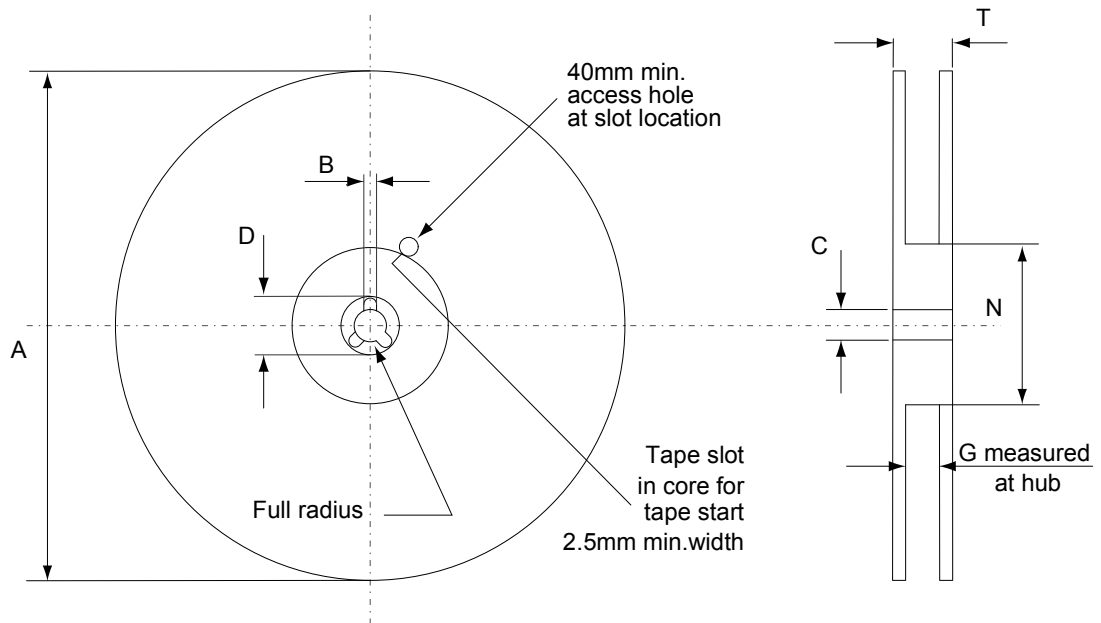
Figure 9. DPAK (TO-252) tape outline



AM08852v1



Figure 10. DPAK (TO-252) reel outline



AM06038v1

Table 5. DPAK (TO-252) tape and reel mechanical data

Dim.	Tape		Dim.	Reel	
	mm			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
21-Jun-2004	2	Document migration, no content change.
06-Aug-2009	3	Updated mechanical data.
18-May-2012	4	Updated: mechanical data Inserted: packaging mechanical data
05-May-2021	5	Updated title, <a href="#">Features</a> and added <a href="#">STPOWER LOGO</a> in cover page. Updated <a href="#">Table 2. Thermal data.</a> Updated <a href="#">Section 3 Package information.</a> Minor text changes.

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