



## Low voltage NPN power transistor

Datasheet - production data

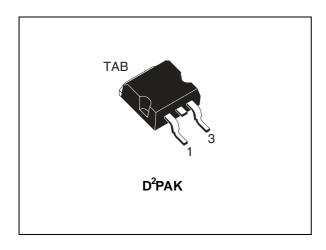
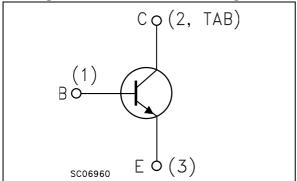


Figure 1. Internal schematic diagram



#### **Features**

- · Low collector-emitter saturation voltage
- · Fast switching speed

### **Applications**

- Power amplifier
- Switching circuits

#### **Description**

This device is an NPN transistor manufactured using new low voltage planar technology with double metal process. The result is a transistor which boasts exceptionally high gain performance coupled with very low saturation voltage.

Table 1. Device summary

Order codes	Marking	Package	Packaging
MJB44H11T4	MJB44H11	D <sup>2</sup> PAK	Tape and reel

# 1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V <sub>CEO</sub>	Collector-emitter voltage (I <sub>B</sub> = 0)	80	V
V <sub>EBO</sub>	Emitter-base voltage (I <sub>C</sub> = 0)	5	V
I <sub>C</sub>	Collector current	10	Α
I <sub>CM</sub>	Collector peak current	20	Α
P <sub>TOT</sub>	Total dissipation at T <sub>case</sub> = 25 °C	50	W
TSTG	Storage temperature	-55 to 150	°C
TJ	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R <sub>thJC</sub>	Thermal resistance junction-case max	2.5	°C/W
R <sub>thJA</sub>	Thermal resistance junction-ambient max	62.5	°C/W

## 2 Electrical characteristics

T<sub>case</sub> = 25 °C; unless otherwise specified.

**Table 4. Electrical characteristics** 

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
V <sub>CEO(sus)</sub> <sup>(1)</sup>	Collector-emitter sustaining voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 30 mA		80	-		V
I <sub>CES</sub>	Collector cut-off current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 80 V			-	10	μΑ
I <sub>EBO</sub>	Emitter cut-off current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			-	50	μΑ
V <sub>CE(sat)</sub> <sup>(1)</sup>	Collector-emitter saturation voltage	I <sub>C</sub> = 8 A	I <sub>B</sub> = 0.4 A		1	1	V
V <sub>BE(sat)</sub> <sup>(1)</sup>	Base-emitter saturation voltage	I <sub>C</sub> = 8 A	$I_B = 0.8 A$		1	1.5	V
h <sub>FE</sub> <sup>(1)</sup>	DC current gain	I <sub>C</sub> = 2 A	$V_{CE} = 1 V$	60	-		
	DO current gain	I <sub>C</sub> = 4 A	$V_{CE} = 1 V$	40	-		

<sup>1.</sup> Pulse test: pulse duration  $\leq$  300  $\mu$ s, duty cycle  $\leq$  2 %.

Electrical characteristics MJB44H11T4

### 2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

Figure 3. Derating curve

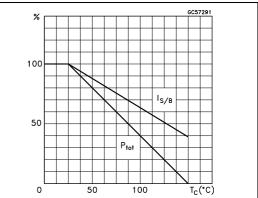
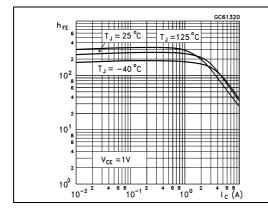
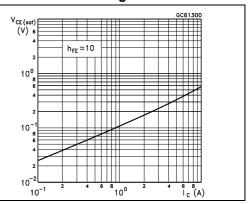


Figure 4. DC current gain

Figure 5. Collector-emitter saturation voltage





## 3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK<sup>®</sup> packages, depending on their level of environmental compliance. ECOPACK<sup>®</sup> specifications, grade definitions and product status are available at: <a href="https://www.st.com">www.st.com</a>. ECOPACK<sup>®</sup> is an ST trademark.

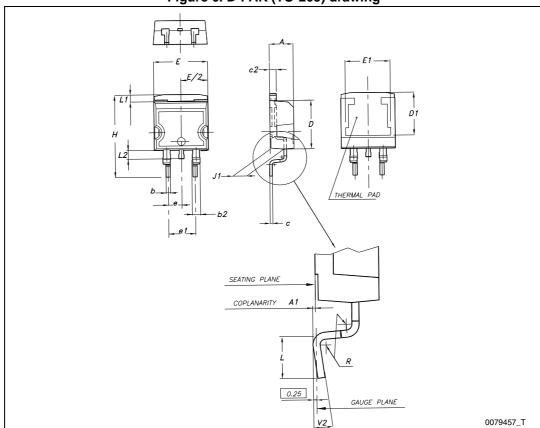


Figure 6. D<sup>2</sup>PAK (TO-263) drawing

Table 5. D<sup>2</sup>PAK (TO-263) mechanical data

Dim		mm				
Dim.	Min.	Тур.	Max.			
А	4.40		4.60			
A1	0.03		0.23			
b	0.70		0.93			
b2	1.14		1.70			
С	0.45		0.60			
c2	1.23		1.36			
D	8.95		9.35			
D1	7.50					
Е	10		10.40			
E1	8.50					
е		2.54				
e1	4.88		5.28			
Н	15		15.85			
J1	2.49		2.69			
L	2.29		2.79			
L1	1.27		1.40			
L2	1.30		1.75			
R		0.4				
V2	0°		8°			

16.90

12.20

16.90

5.08

9.75

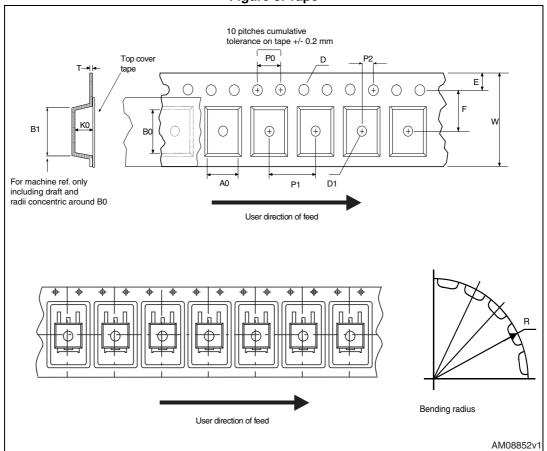
Figure 7. D<sup>2</sup>PAK footprint<sup>(a)</sup>

a. All dimension are in millimeters



# 4 Packaging mechanical data

Figure 8. Tape



577

REEL DIMENSIONS 40mm min. Access hole At slot location В D С Tape slot in core for tape start 25 mm min. width G measured at hub Full radius AM08851v2

Figure 9. Reel

Table 6. D<sup>2</sup>PAK (TO-263) tape and reel mechanical data

Tape			Reel			
Dim	mm		Dim.	mm		
Dim.	Min.	Max.	- Diin.	Min.	Max.	
A0	10.5	10.7	Α		330	
В0	15.7	15.9	В	1.5		
D	1.5	1.6	С	12.8	13.2	
D1	1.59	1.61	D	20.2		
Е	1.65	1.85	G	24.4	26.4	
F	11.4	11.6	N	100		
K0	4.8	5.0	Т		30.4	
P0	3.9	4.1				
P1	11.9	12.1		Base qty	1000	
P2	1.9	2.1		Bulk qty	1000	
R	50					
Т	0.25	0.35				
W	23.7	24.3				

Revision history MJB44H11T4

# 5 Revision history

Table 7. Document revision history

Date	Revision	Changes
23-Jan-2012	1	Initial release.
12-May-2014	2	Updated Section 3: Package mechanical data. Added Section 4: Packaging mechanical data.

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