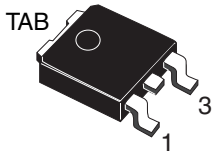
MJD44H11, MJD45H11

Complementary power transistors

Datasheet — production data

Features

- Low collector-emitter saturation voltage
- Fast switching speed
- Surface-mounting TO-252 (DPAK) power package in tape and reel (suffix "T4")



DPAK
TO-252

Applications

- Power amplifier
- Switching circuits

Description

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

Figure 1. Internal schematic diagram

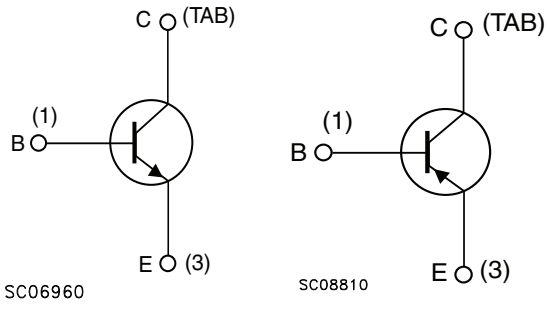


Table 1. Device summary

Order codes	Marking	Polarity	Package	Packaging
MJD44H11T4	MJD44H11	NPN	DPAK	Tape and reel
MJD45H11T4	MJD45H11	PNP	DPAK	Tape and reel

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-emitter voltage (I_B = 0)	80	V
V_{EBO}	Emitter-base voltage (I_C = 0)	5	V
I_C	Collector current	8	A
I_{CM}	Collector peak current	16	A
P_{TOT}	Total dissipation at T_{case} = 25°C	20	W
T_{STG}	Storage temperature	-55 to 150	°C
T_J	Max. operating junction temperature	150	°C

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

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance junction-case max	6.25	°C/W

2 Electrical characteristics

T_{case} = 25 °C; unless otherwise specified.

Table 4. Electrical characteristics

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

1. Pulse test: pulse duration ≤300 µs, duty cycle ≤2 %.

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

2.1 Typical characteristic (curves)

Figure 2. Safe operating area

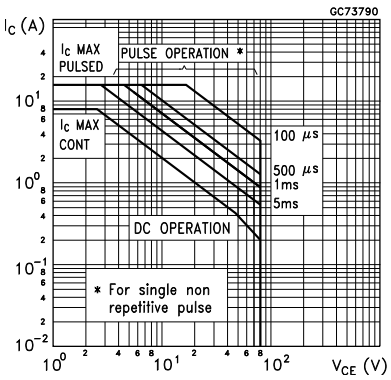


Figure 3. Derating curves

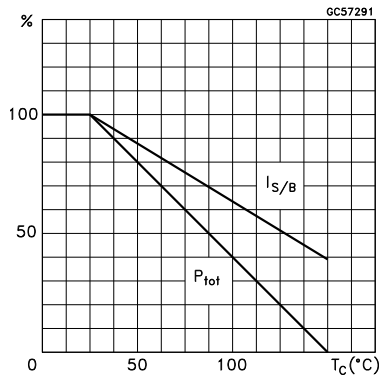


Figure 4. DC current gain (NPN)

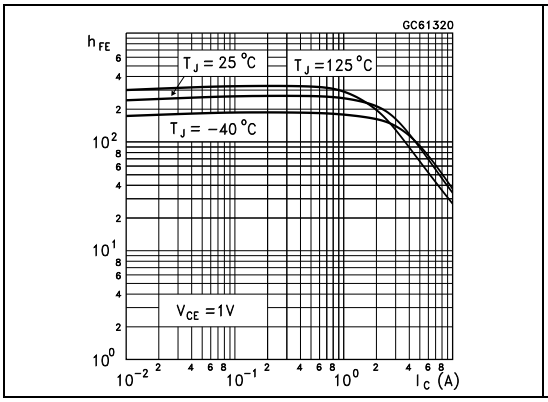


Figure 5. DC current gain (PNP)

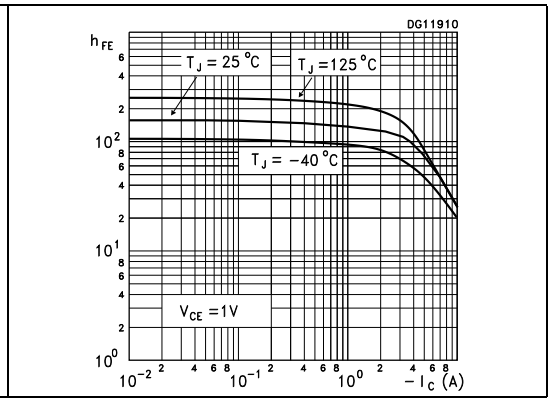


Figure 6. Collector-emitter saturation voltage (NPN)

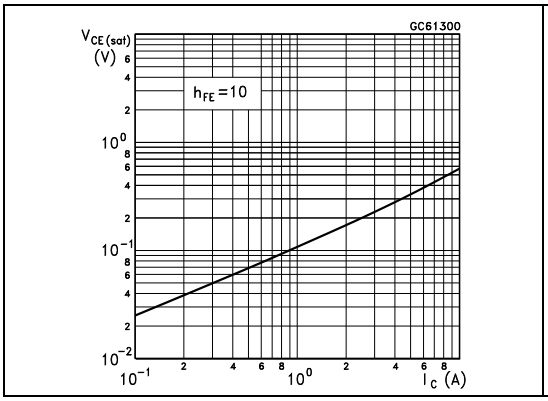
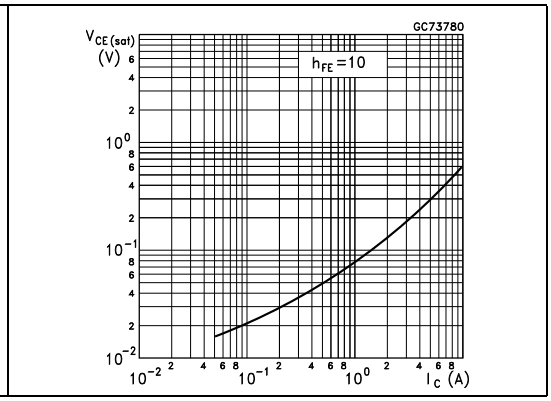


Figure 7. Collector-emitter saturation voltage (PNP)



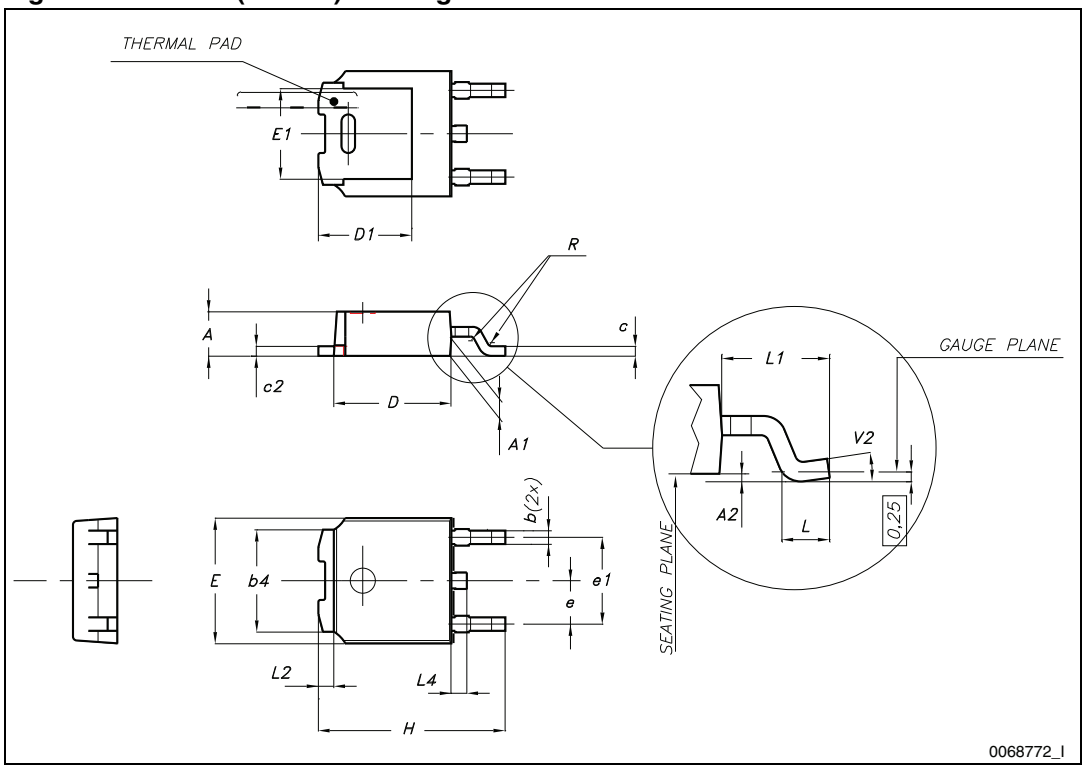
3 Package mechanical data

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.

Table 5. DPAK (TO-252) 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		5.10	
E	6.40		6.60
E1		4.70	
e		2.28	
e1	4.40		4.60
H	9.35		10.10
L	1		1.50
L1		2.80	
L2		0.80	
L4	0.60		1
R		0.20	
V2	0°		8°

Figure 8. DPAK (TO-252) drawing

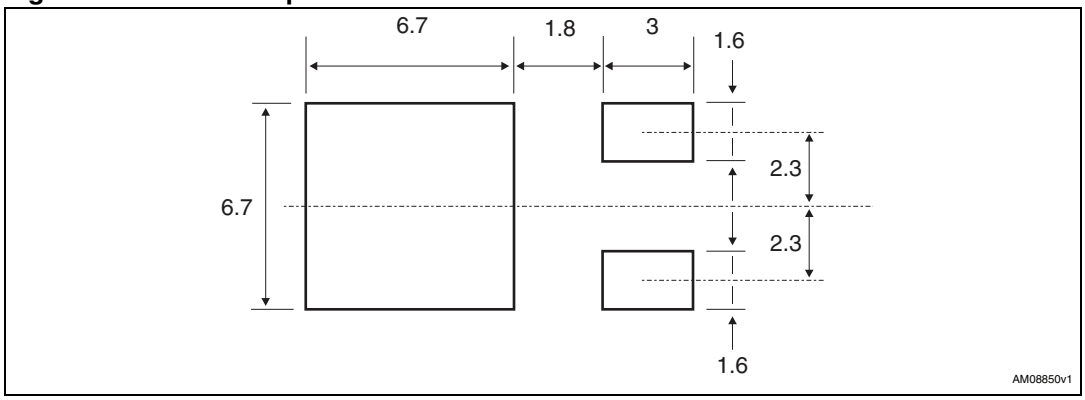


4 Packaging mechanical data

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			

Figure 9. DPAK footprint[a]



a. All dimensions are in millimeters

Figure 10. Tape for DPAK (TO-252)

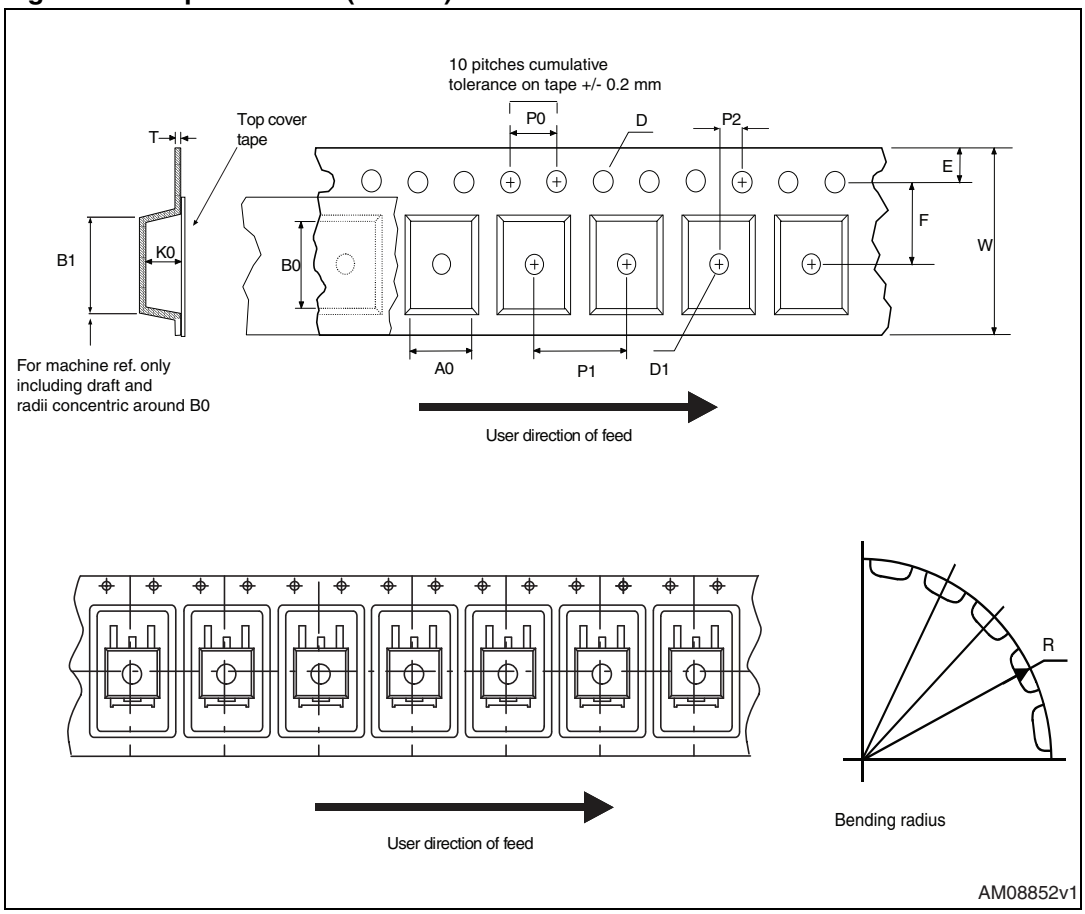
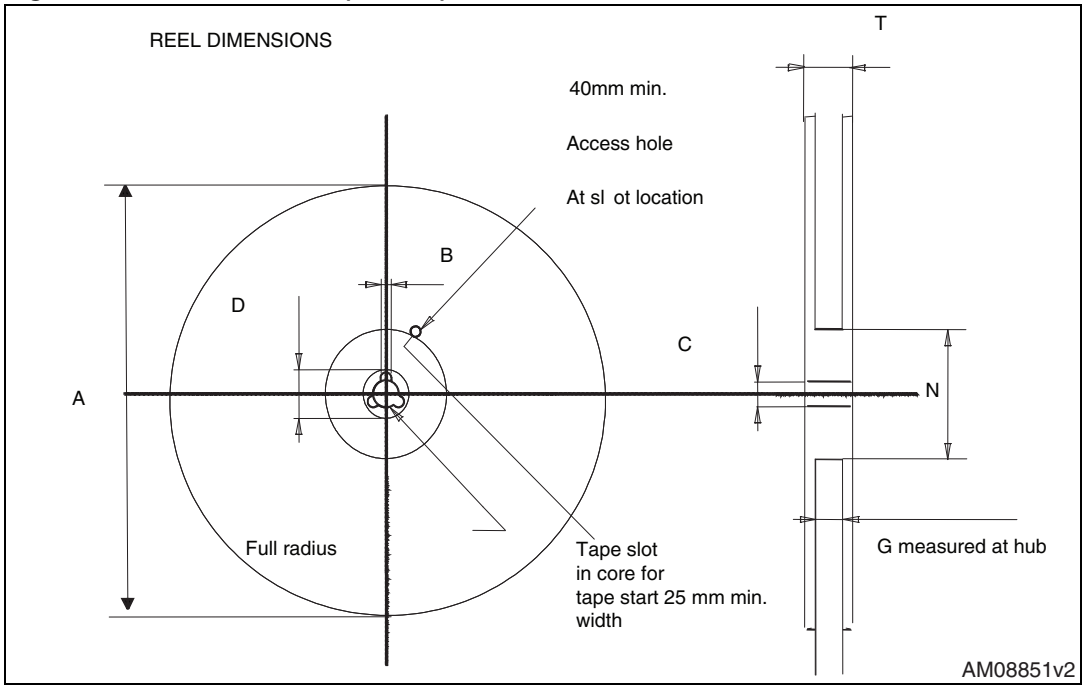


Figure 11. Reel for DPAK (TO-252)



5 Revision history

Table 7. Document revision history

Date	Revision	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

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