

## Low voltage complementary power transistors

Preliminary data

### Features

- Those devices are qualified for automotive application
- Low collector emitter saturation voltage
- Surface-mounting TO-252 power package in tape and reel

### Applications

- General purpose switching and amplifier transistor

### Description

The devices are manufactured in planar technology with “base Island” layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage.

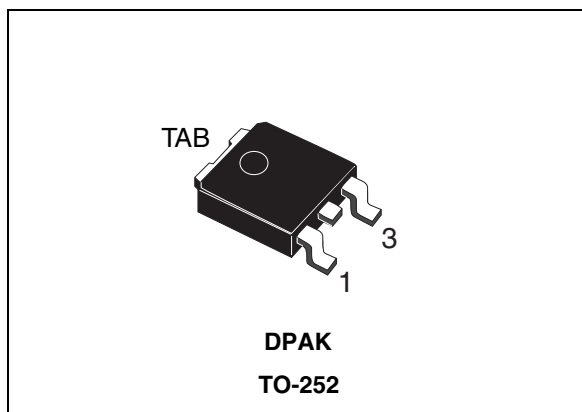


Figure 1. Internal schematic diagrams

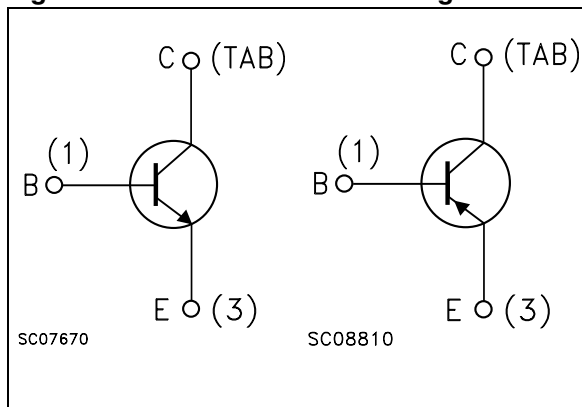


Table 1. Device summary

Order code	Marking	Polarity	Package	Packaging
MJD360T4-A	MJD360	NPN	DPAK	Tape and reel
MJD361T4-A	MJD361	PNP		

# 1 Electrical ratings

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base voltage ( $I_E = 0$ )	60	V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ )	60	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 $T_C = 25\text{ °C}$	15	W
$T_{stg}$	Storage temperature	-65 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
$R_{thj-case}$	Thermal resistance junction-case max.	8.3	°C/W

## 2 Electrical characteristics

( $T_{\text{case}} = 25\text{ °C}$  unless otherwise specified)

**Table 4. Electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{\text{CBO}}$	Collector cut-off current ( $I_{\text{E}} = 0$ )	$V_{\text{CE}} = 60\text{ V}$			20	$\mu\text{A}$
$I_{\text{EBO}}$	Emitter cut-off current ( $I_{\text{C}} = 0$ )	$V_{\text{EB}} = 4\text{ V}$			100	$\mu\text{A}$
$V_{(\text{BR})\text{CEO}}$	Collector-emitter breakdown voltage ( $I_{\text{B}} = 0$ )	$I_{\text{C}} = 10\text{ mA}$	60			V
$V_{(\text{BR})\text{CBO}}$	Collector-base breakdown voltage ( $I_{\text{E}} = 0$ )	$I_{\text{C}} = 1\text{ mA}$	60			V
$V_{(\text{BR})\text{EBO}}$	Emitter-base breakdown voltage ( $I_{\text{C}} = 0$ )	$I_{\text{C}} = 100\text{ }\mu\text{A}$	5			V
$V_{\text{CE}(\text{sat})}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = 200\text{ mA}$ $I_{\text{B}} = 10\text{ mA}$ $I_{\text{C}} = 1\text{ A}$ $I_{\text{B}} = 50\text{ mA}$ $I_{\text{C}} = 3\text{ A}$ $I_{\text{B}} = 150\text{ mA}$			0.1 0.3 0.9	V V V
$h_{\text{FE}}^{(1)}$	DC current gain	$I_{\text{C}} = 200\text{ mA}$ $V_{\text{CE}} = 1\text{ V}$ $I_{\text{C}} = 1\text{ A}$ $V_{\text{CE}} = 4\text{ V}$ $I_{\text{C}} = 3\text{ A}$ $V_{\text{CE}} = 4\text{ V}$	90 60 30	130 100 60		

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

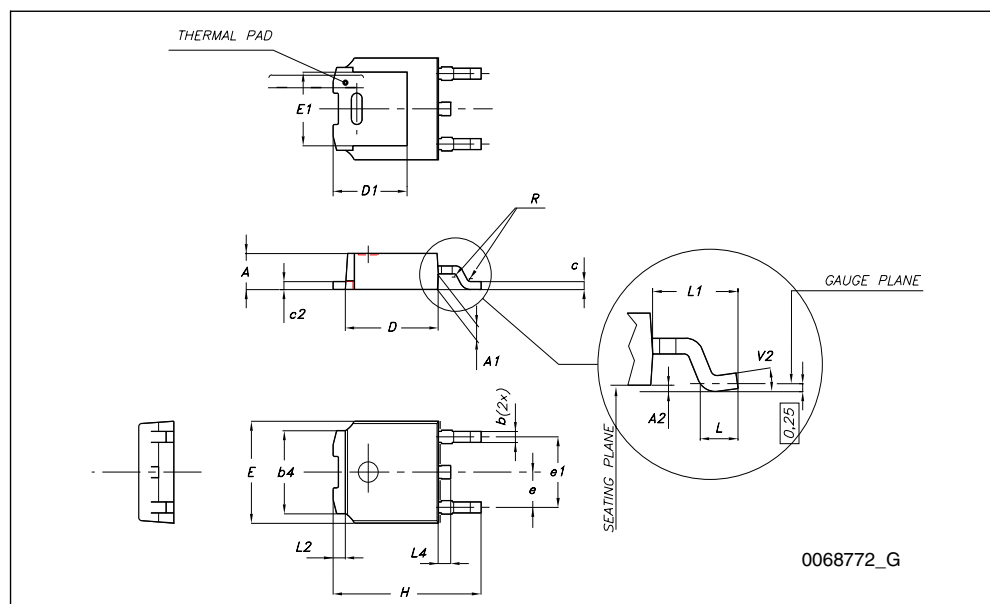
*Note:* For PNP types voltage and current values are negative.

### 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](http://www.st.com). ECOPACK is an ST trademark.

**TO-252 (DPAK) 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		
L1		2.80	
L2		0.80	
L4	0.60		1
R		0.20	
V2	0°		8°



## 4 Revision history

Table 5. Document revision history

Date	Revision	Changes
14-Aug-2009	1	Initial release.

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