

Low voltage high performance PNP power transistor

Preliminary data

Features

- Low collector-emitter saturation voltage
- High current gain characteristic
- Fast switching speed

Applications

- DC-DC converter, voltage regulation
- General purpose switching equipment

Description

The device is a PNP transistor manufactured using new "PB-HCD" (power bipolar high current density) technology. The resulting transistor shows exceptional high gain performances coupled with very low saturation voltage.

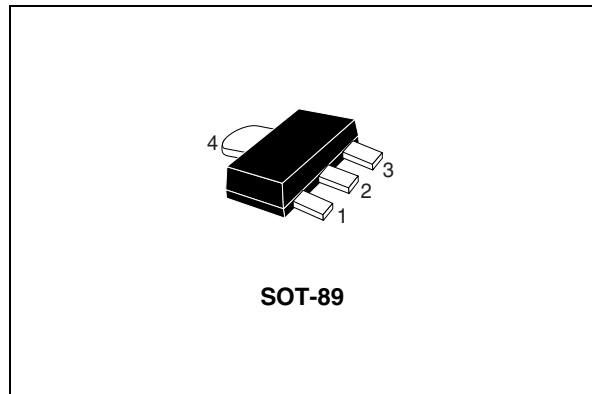


Figure 1. Internal schematic diagram

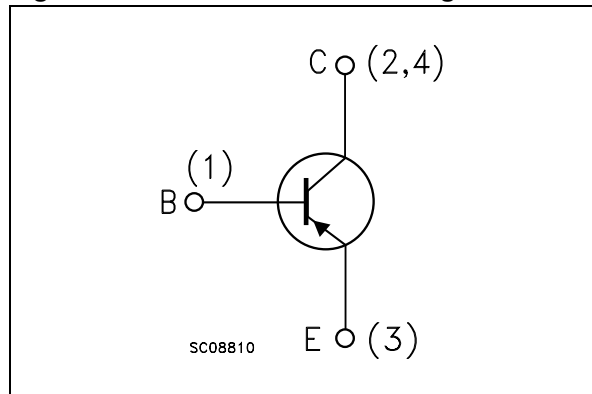


Table 1. Device summary

Order code	Marking	Package	Packaging
2STF2280	2280	SOT-89	Tape and reel

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage ($I_E = 0$)	-80	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	-80	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	-5	V
I_C	Collector current	2	A
I_{CM}	Collector peak current ($t_p < 5$ ms)	4	A
I_B	Base current	0.5	A
I_{BM}	Base peak current ($t_p < 5$ ms)	1	A
P_{TOT}	Total dissipation at $T_{amb} = 25^\circ\text{C}$	1.4	W
T_J	Operating junction temperature	-65 to 150	$^\circ\text{C}$
T_{STG}	Storage temperature		

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{thJA}^{(1)}$	Thermal resistance junction-ambient max	89	$^\circ\text{C/W}$

1. Device mounted on a PCB area of 1 cm².

2 Electrical characteristics

$T_{CASE} = 25\text{ °C}$ unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cut-off current ($V_{BE} = 0$)	$V_{CE} = -80\text{ V}$			-500	μA
I_{CEO}	Collector cut-off current ($I_B = 0$)	$V_{CE} = -80\text{ V}$			-1	mA
I_{EBO}	Emitter cut-off current ($I_C = 0$)	$V_{EB} = -5\text{ V}$			-100	μA
$V_{CEO(sus)}^{(1)}$	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = -10\text{ mA}$	-80			V
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = -100\text{ mA}, I_B = -10\text{ mA}$ $I_C = -1\text{ A}, I_B = -100\text{ mA}$	-15		-100 -250	mV mV
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = -100\text{ mA}, I_B = -10\text{ mA}$ $I_C = -1\text{ A}, I_B = -100\text{ mA}$			-1 -1.1	V V
$h_{FE}^{(1)}$	DC current gain	$I_C = -100\text{ mA}, V_{CE} = -2\text{ V}$ $I_C = -500\text{ mA}, V_{CE} = -2\text{ V}$ $I_C = -1\text{ A}, V_{CE} = -2\text{ V}$	140 100 80	190	300	
f_T	Transition frequency	$I_C = -0.1\text{ A}, V_{CE} = -10\text{ V}$		50		MHz

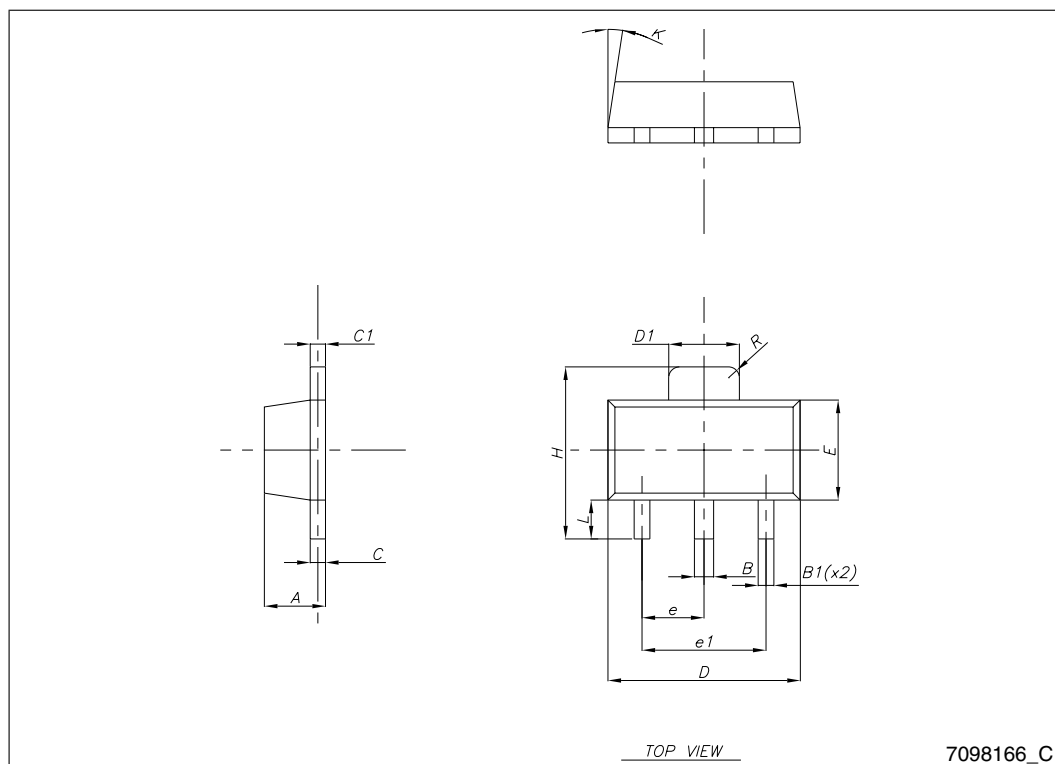
1. Pulse test: pulse duration $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

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.

SOT-89 mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	1.40		1.60
B	0.44		0.56
B1	0.36		0.48
C	0.35		0.44
C1	0.35		0.44
D	4.40		4.60
D1	1.62		1.83
E	2.29		2.60
e	1.42		1.57
e1	2.92		3.07
H	3.94		4.25
K	1°		8°
L	0.89		1.20
R		0.25	



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
14-Jan-2010	1	Initial release.

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