2STF1525

Low voltage high performance NPN power transistor

Features

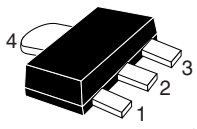
- Very low collector-emitter saturation voltage
- High current gain characteristic
- Fast switching speed

Applications

- Emergency lighting
- LED drive
- Motherboard and hard disk drive
- Mobile equipment
- DC-DC converter, voltage regulation

Description

The device is a NPN 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.



SOT-89

Figure 1. Internal schematic diagram

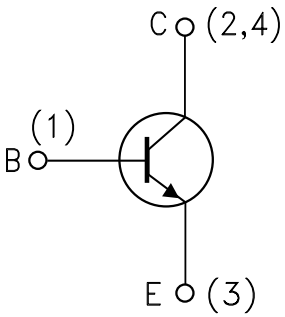


Table 1. Device summary

Order codes	Marking	Package	Packaging
2STF1525	1525	SOT-89	Tape and reel

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CEX}	Collector-emitter voltage (V_{BE} = - 1.5 V)	95	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	25	V
V_{EBO}	Emitter-base voltage (I_C = 0)	5	V
I_C	Collector current	5	A
I_{CM}	Collector peak current (t_P < 5 ms)	10	A
I_B	Base current	1	A
P_{TOT}	Total dissipation at T_{amb} = 25 °C	1.4	W
T_{STG}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJA} (1)	Thermal resistance junction-ambient max	89	°C/W

1. Device mounted on PCB area of 1 cm^2

2 Electrical characteristics

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

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = 50 V			0.1	µA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 4 V			0.1	µA
$V_{(BR)CEX}$	Collector-emitter breakdown voltage (V_{BE} = -1.5 V)	I_C = 1 mA	95			V
$V_{(BR)CEO}$ (1)	Collector-emitter breakdown voltage (I_B = 0)	I_C = 10 mA	25			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage (I_C = 0)	I_E = 100 µA	5			V
h_{FE} (1)	DC current gain	I_C = 0.5 A V_{CE} = 2 V I_C = 3 A V_{CE} = 2 V I_C = 5 A V_{CE} = 5 V	150 100	 150	500	
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 3 A I_B = 300 mA I_C = 3.5 A I_B = 40 mA		220	 500	mV mV
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 3 A I_B = 300 mA			1.2	V
C_{CBO}	Collector-base capacitance (I_E = 0)	V_{CB} = 10 V, f = 1 MHz		20		pF
f_T	Transition frequency	V_{CE} = 10 V I_C = 50 mA		120		MHz
 t_{on} t_{off}	Resistive load Turn-on time Turn-off time	 I_C = 1.5 A V_{CC} = 10 V I_{B1} = -I_{B2} = 150 mA		 60 450		 ns ns

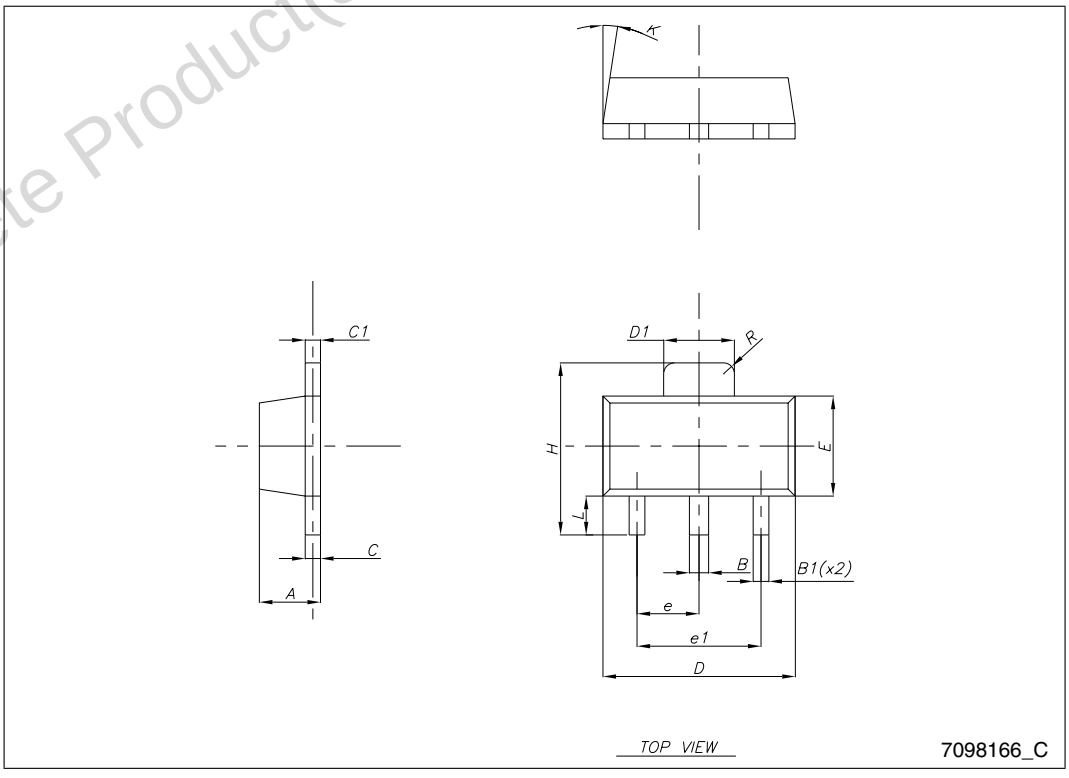
1. Pulse test: pulse duration ≤ 300 µs, duty cycle ≤ 2 %

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
04-Jun-2009	1	Initial release.
12-Nov-2009	2	Document status promoted from preliminary data to datasheet.