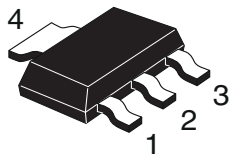
STN951

Low voltage fast-switching PNP power transistor

Features

- Very low collector-emitter saturation voltage
- High current gain characteristic
- Fast switching speed
- Surface mounting device in medium power SOT-223 package



SOT-223

Applications

- Emergency lighting
- Voltage regulators
- Relay drivers
- High efficiency low voltage switching applications

Description

The device is manufactured in PNP planar technology by using a “Base Island” layout. The resulting transistor shows exceptional high gain performances coupled with very low saturation voltage.

Figure 1. Internal schematic diagram

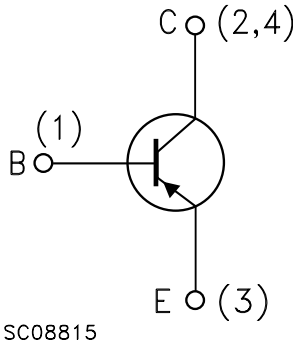


Table 1. Device summary

Order codes	Marking	Package	Packaging
STN951	N951	SOT-223	Tape and reel

Contents

1 Electrical ratings 3

2 Electrical characteristics 4

3 Package mechanical data 5

4 Revision history 7

1 Electrical ratings

Table 2. Absolute maximum rating

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)	-6	V
I_C	Collector current	-5	A
I_{CM}	Collector peak current (t_P < 5 ms)	-10	A
I_B	Base current	-1	A
I_{BM}	Base peak current (t_P < 5 ms)	-2	A
P_{tot}	Total dissipation at T_{amb} = 25 °C	1.6	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
$R_{thj\text{-}amb}$ (1)	Thermal resistance junction-amb	max	78	°C/W

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

2 Electrical characteristics

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

Table 4. Electrical characteristics

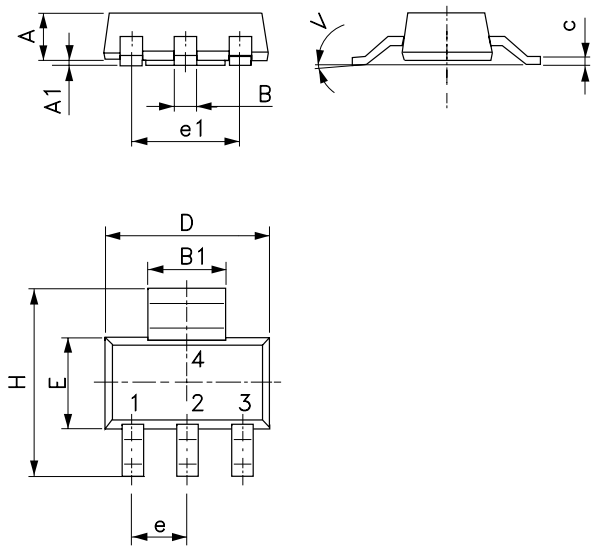
Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E =0)	V_{CB} = -60 V			-0.1	µA
I_{EBO}	Emitter cut-off current (I_C =0)	V_{EB} = -5 V			-0.1	µA
$V_{(BR)CBO}$ (1)	Collector-base Breakdown voltage (I_E =0)	I_C = -100 µA	-60			V
$V_{(BR)CEO}$ (1)	Collector-emitter Breakdown voltage (I_B =0)	I_C = -10 mA	-60			V
$V_{(BR)EBO}$ (1)	Emitter-base Breakdown voltage (I_C =0)	I_E = -100 µA	-6			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = -100 mA I_B = -5 mA I_C = -1 A I_B = -50 mA I_C = -2 A I_B = -50 mA I_C = -5 A I_B = -200 mA		-10 -70 -140 -350	-50 -120 -250 -500	mV mV mV mV
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = -4 A I_B = -200 mA		-1	-1.15	V
$V_{BE(on)}$ (1)	Base-emitter on voltage	I_C = -4 A V_{CE} = -1 V		-0.89	-1	V
h_{FE} (1)	DC current gain	I_C = -10 mA V_{CE} = -1 V I_C = -2 A V_{CE} = -1 V I_C = -5 A V_{CE} = -1 V I_C = -10 A V_{CE} = -1 V	150 150 65 10	300 270 90 25	350	
f_T	Transition frequency	V_{CE} = -10 V I_C = -100 mA		130		MHz
C_{CBO}	Collector-base capacitance (I_E =0)	V_{CB} = -10 V f = 1 MHz		60		pF
t_{on} t_s t_f	Resistive load Turn-on time Storage time Fall time	I_C = -1 A V_{CC} = -30 V I_{B1} = - I_{B2} = -0.1 A		80 600 70		ns ns ns

1. Pulse duration = 300 µs, duty cycle ≤ 2 %

3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

SOT-223 mechanical data			
DIM.	**mm.**		
	min.	**typ**	**max.**
A			1.80
A1	0.02		0.1
B	0.60	0.70	0.85
B1	2.90	3.00	3.15
c	0.24	0.26	0.35
D	6.30	6.50	6.70
e		2.30	
e1		4.60	
E	3.30	3.50	3.70
H	6.70	7.00	7.30
V			10 °



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
03-Oct-2006	1	Initial release.
30-Nov-2006	2	The emitter base voltage value has been modified
13-Oct-2008	3	Document status promoted from preliminary data to datasheet

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