STF715
STN715

NPN low voltage transistors

Features

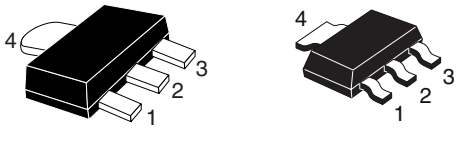
- Low voltage small devices for surface mounting
- High ruggedness

Applications

- Voltage regulation
- Relay driver
- Generic switch

Description

Both STF715 and STN715 are NPN transistors manufactured using planar technology. They are housed in surface mounting power packages.



SOT-89 SOT-223

Figure 1. Internal schematic diagram

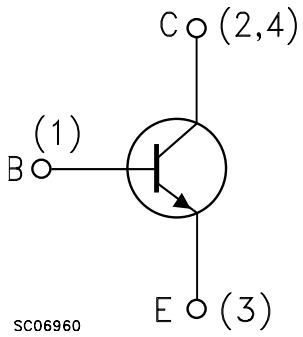


Table 1. Device summary

Order codes	Marking	Packages	Packaging
STF715	715	SOT-89	Tape and reel
STN715	N715	SOT-223	Tape and reel

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0)	140	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	1.5	A
I_{CM}	Collector peak current (t_P < 5 ms)	2	A
I_B	Base current	0.3	A
I_{BM}	Base peak current (t_P < 5 ms)	0.6	A
P_{TOT}	Total dissipation at T_{amb} = 25 °C for STF715	1.4	W
	Total dissipation at T_{amb} = 25 °C for STN715	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		SOT-89	SOT-223	Unit
R_{thJA} (1)	Thermal resistance junction-ambient	max	89	78	°C/W

1. Device mounted on PCB area of 1 cm²

2 Electrical characteristics

T_{case} = 25 °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} = 140 V			500	µA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = 80 V			1	mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 5 V			100	µA
$V_{CEO(sus)}$	Collector-emitter sustaining voltage (I_B = 0)	I_C = 10 mA	80			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 100 mA I_B = 10 mA I_C = 1 A I_B = 100 mA			0.25 0.5	V V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 100 mA I_B = 10 mA I_C = 1 A I_B = 100 mA			1 1.1	V V
h_{FE} (1)	DC current gain	I_C = 100 µA V_{CE} = 2 V I_C = 500 mA V_{CE} = 2 V I_C = 1 A V_{CE} = 2 V	140 80 40			
f_T	Transition frequency	I_C = 100 mA V_{CE} = 10 V		50		MHz

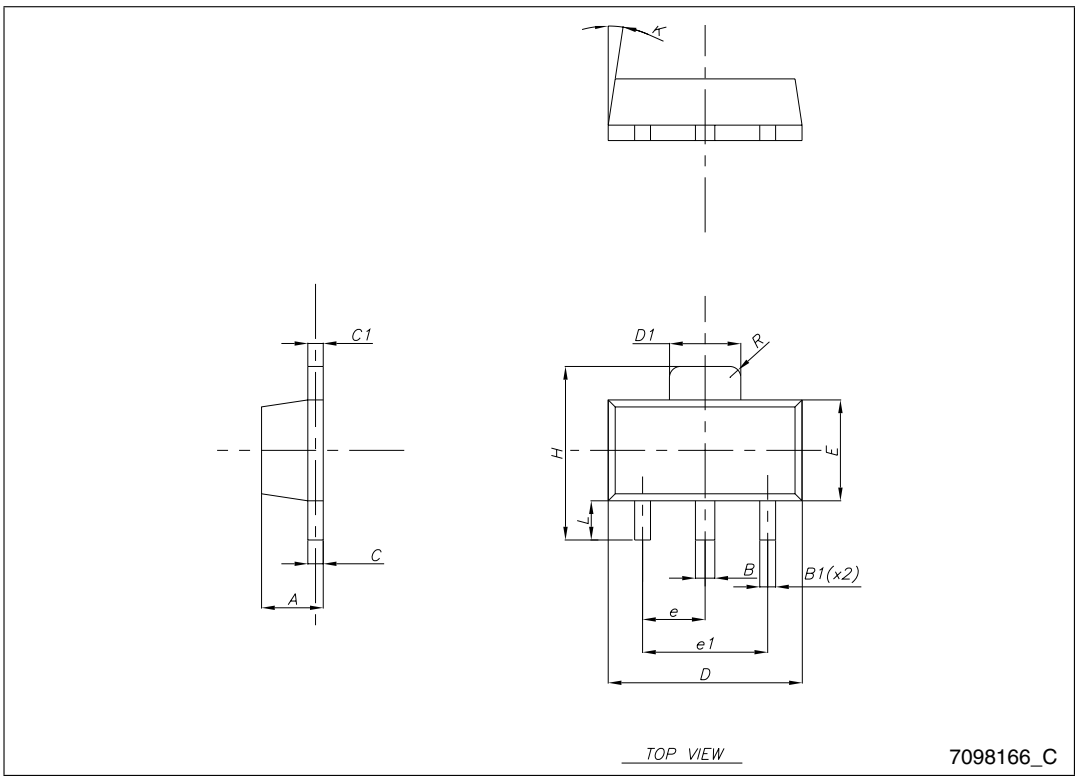
1. Pulse test: pulse duration ≤ 300 µs, duty cycle ≤ 2 %

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.

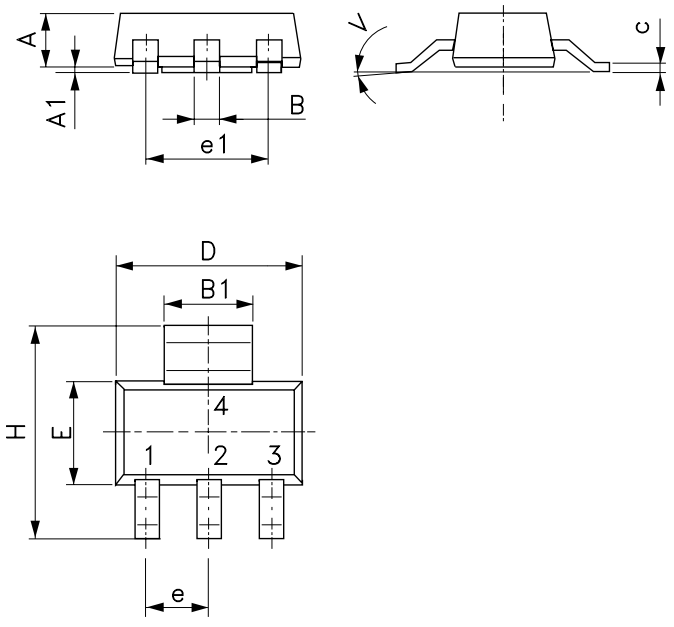
SOT-89 mechanical data

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	



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 ^{o}



4 Document revision history

Table 5. Document revision history

Date	Revision	Changes
21-Jun-2004	1	Initial release
08-Feb-2010	2	Updated package mechanical data

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