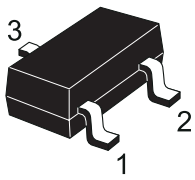
2STR2160

Low voltage fast-switching PNP power transistor

Preliminary Data

Features

- Very low collector-emitter saturation voltage
- High current gain characteristic
- Fast switching speed
- Miniature SOT-23 plastic package for surface mounting circuits



SOT-23

Applications

- LED
- Battery charger
- Motor and relay driver
- Voltage regulation

Description

The device in 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.

The complementary NPN is the 2STR1160.

Figure 1. Internal schematic diagram

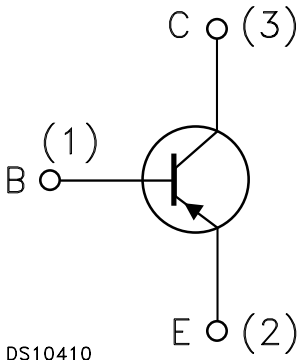


Table 1. Device summary

Order code	Marking	Package	Packing
2STR2160	260	SOT-23	Tape and reel

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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)	-5	V
I_C	Collector current	-1	A
I_{CM}	Collector peak current (t_P < 5ms)	-2	A
P_{tot}	Total dissipation at T_{amb} = 25°C	0.5	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	250	°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} = -60 V			-0.1	µA
I_{EBO}	Emitter cut-off current (I_C =0)	V_{EB} = -5 V			-0.1	µA
$V_{(BR)CBO}$	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
$V_{(BR)EBO}$	Emitter-base breakdown voltage (I_C = 0)	I_E = -100 µA	-5			V
$V_{CE(sat)}$(1)	Collector-emitter saturation voltage	I_C = -0.5 A I_B = -50 mA I_C = -1 A I_B = -100 mA			260 480	mV mV
$V_{BE(sat)}$(1)	Base-emitter saturation voltage	I_C = -1 A I_B = -100 mA			1.3	V
h_{FE}(1)	DC current gain	I_C = -0.5 A V_{CE} = -2V I_C = -1 A V_{CE} = -2 V I_C = -2 A V_{CE} = -2 V	180 45	 30	560	
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 $V_{BB(off)}$= 5 V		 220 500		 ns ns

1. Pulsed duration = 300 µs, duty cycle ≤1.5%

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-23 mechanical data

DIM.	mm.		
	min.	typ	max.
A	0.89		1.4
A1	0		0.1
B	0.3		0.51
C	0.085		0.18
D	2.75		3.04
e	0.85		1.05
e1	1.7		2.1
E	1.2		1.6
H	2.1		2.75
L		0.6	
S	0.35		0.65

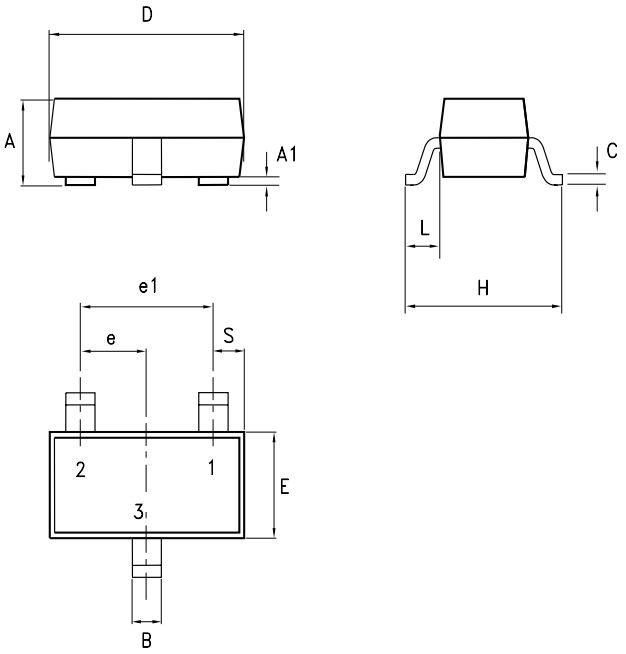
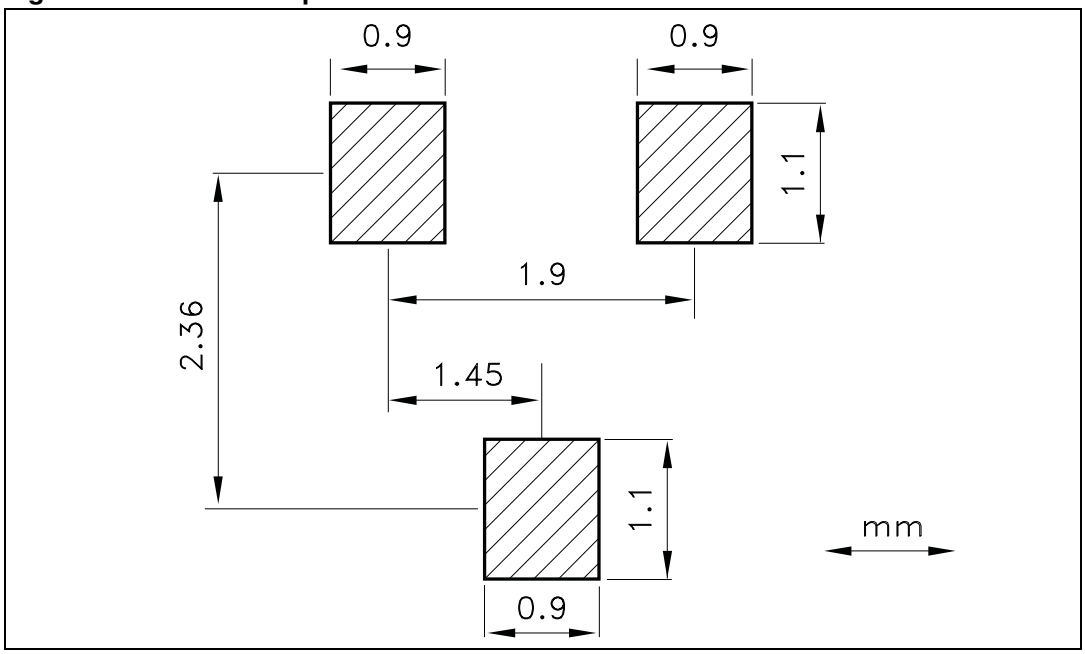


Figure 2. SOT-23 footprint



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
18-Jun-2008	1	Initial release

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