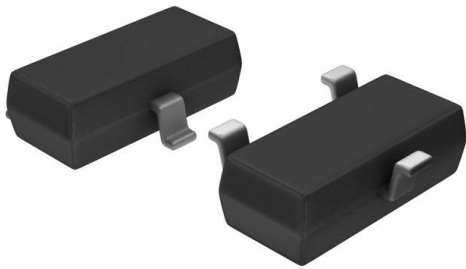


STR1550 Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	STR1550-DG
Manufacturer	STMicroelectronics
Manufacturer Product Number	STR1550
Description	TRANS NPN 500V 0.5A SOT23
Detailed Description	Bipolar (BJT) Transistor NPN 500 V 500 mA 500 mW Surface Mount SOT-23

This model STR1550 is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:

STR1550

Series:

-

Transistor Type:

NPN

Voltage - Collector Emitter Breakdown (Max):

500 V

Current - Collector Cutoff (Max):

10 μ A (ICBO)

Power - Max:

500 mW

Operating Temperature:

150°C (TJ)

Package / Case:

TO-236-3, SC-59, SOT-23-3

Base Product Number:

STR1550

Manufacturer:

STMicroelectronics

Product Status:

Active

Current - Collector (Ic) (Max):

500 mA

Vce Saturation (Max) @ Ib, Ic:

300mV @ 6mA, 50mA

DC Current Gain (hFE) (Min) @ Ic, Vce:

100 @ 50mA, 10V

Frequency - Transition:

-

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-23

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0095

Moisture Sensitivity Level (MSL):

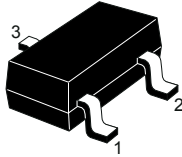
1 (Unlimited)

ECCN:

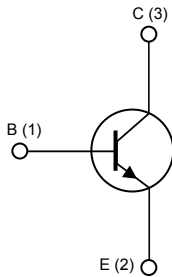
EAR99



High voltage fast-switching NPN power transistor



SOT-23



NPNB1C3E2

Features

- Excellent h_{FE} linearity up to 50 mA
- Miniature SOT-23 plastic package for surface mounting circuits
- Tape and reel packaging
- The PNP complementary type is STR2550

Applications

- Led driving

Description

This device is a high voltage fast-switching NPN power transistor, manufactured using diffused collector planar technology for high switching speeds.

It employs a base island structure with planar edge termination to enhance switching speeds, while maintaining a wide RBSOA.



Product status link

[STR1550](#)

Product summary

Order code	STR1550
Marking	1550
Package	SOT-23
Packing	Tape and reel



1 Electrical ratings

Table 1. Absolute maximum rating

Symbol	Parameter	Value	Unit
V _{EBO}	Emitter-base voltage (I _C = 0 A)	9	V
V _{CB0}	Collector-base voltage (I _E = 0 A)	500	V
V _{CEO}	Collector-emitter voltage (I _B = 0 A)	500	V
I _C	Collector current	0.5	A
I _{CM}	Collector peak current (t _p < 5 ms)	1	A
P _{TOT}	Total power dissipation at T _A = 25 °C	500	mW
T _{stg}	Storage temperature range	-65 to 150	°C
T _J	Maximum operating junction temperature	150	°C

Table 2. Thermal data

Symbol	Parameter	Value	Unit
R _{thJA} ⁽¹⁾	Thermal resistance, junction-to-ambient	250	°C/W

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



2 Electrical characteristics

$T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified.

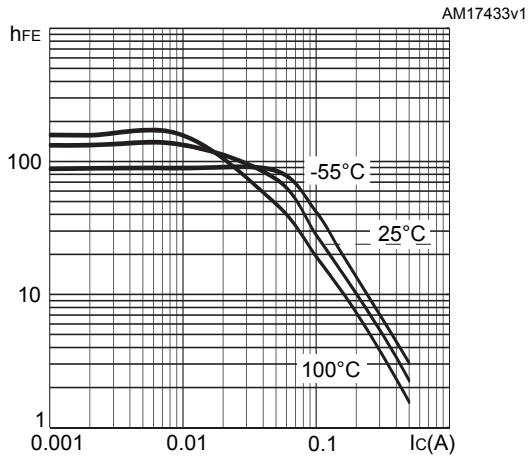
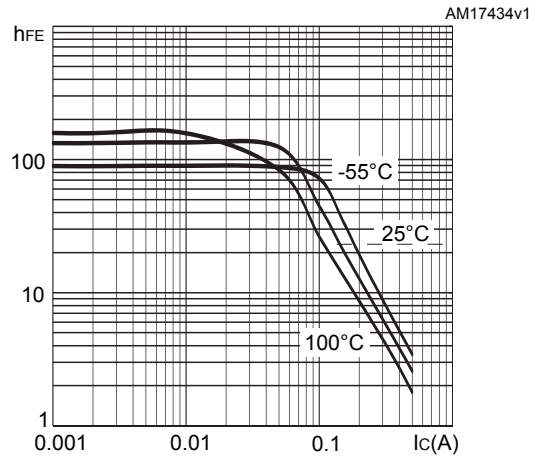
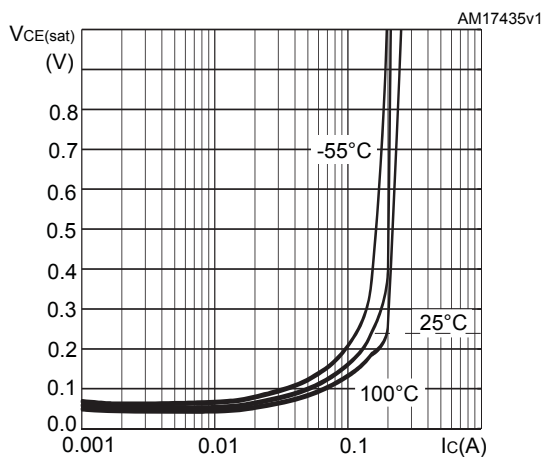
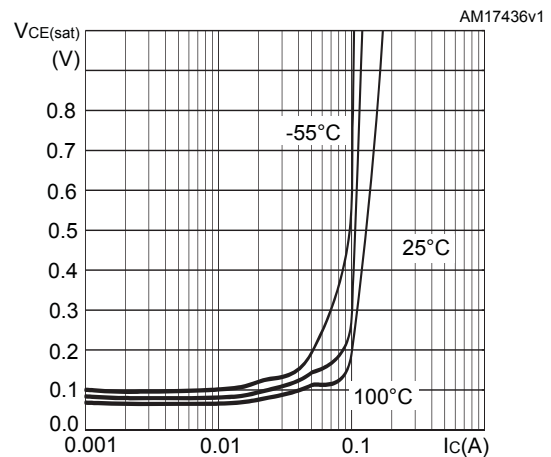
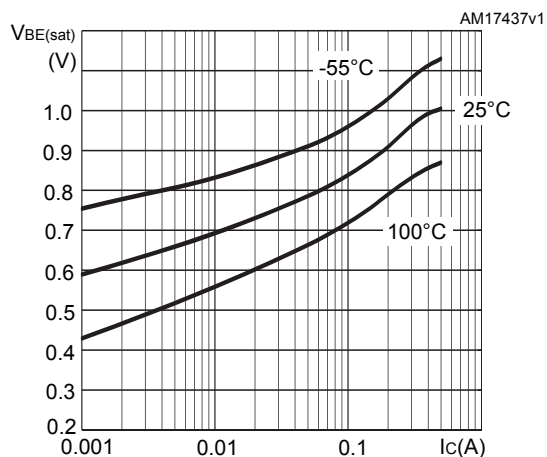
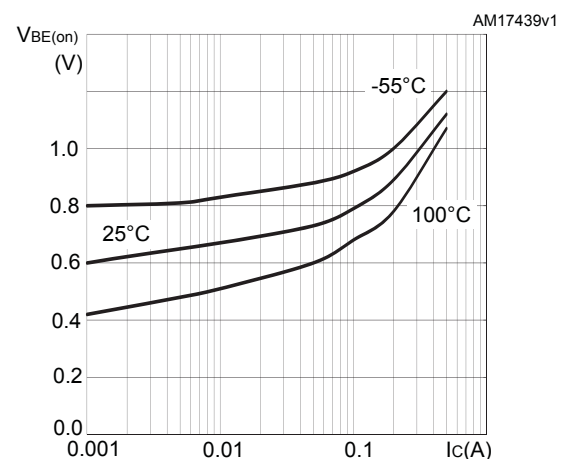
Table 3. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current	$V_{CB} = 500\text{ V}, I_E = 0\text{ A}$			10	μA
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C = 100\text{ }\mu\text{A}, I_E = 0\text{ A}$	500			V
$V_{(BR)CEO}^{(1)}$	Collector-emitter breakdown voltage	$I_B = 0\text{ A}, I_C = 1\text{ mA}$	500			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_C = 0\text{ A}, I_E = 100\text{ }\mu\text{A}$	12			V
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = 20\text{ mA}, I_B = 2\text{ mA}$			0.2	V
		$I_C = 50\text{ mA}, I_B = 6\text{ mA}$			0.3	
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = 50\text{ mA}, I_B = 5\text{ mA}$			0.9	V
$V_{BE(on)}$	Base-emitter on voltage	$I_C = 50\text{ mA}, V_{CE} = 10\text{ V}$			0.9	V
$h_{FE}^{(1)}$	DC current gain	$I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$	100			
		$I_C = 50\text{ mA}, V_{CE} = 10\text{ V}$	100		300	
		$I_C = 100\text{ mA}, V_{CE} = 10\text{ V}$	10			

1. Pulsed: Pulse duration = 300 μs , duty cycle $\leq 2\%$.



2.1 Electrical characteristics (curves)

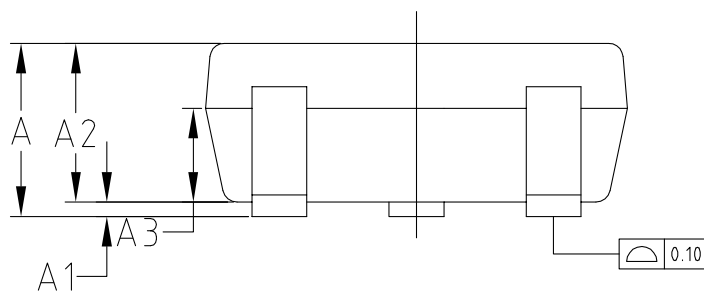
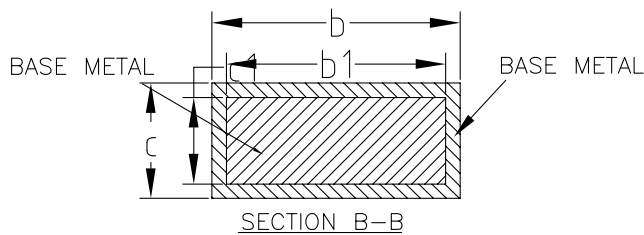
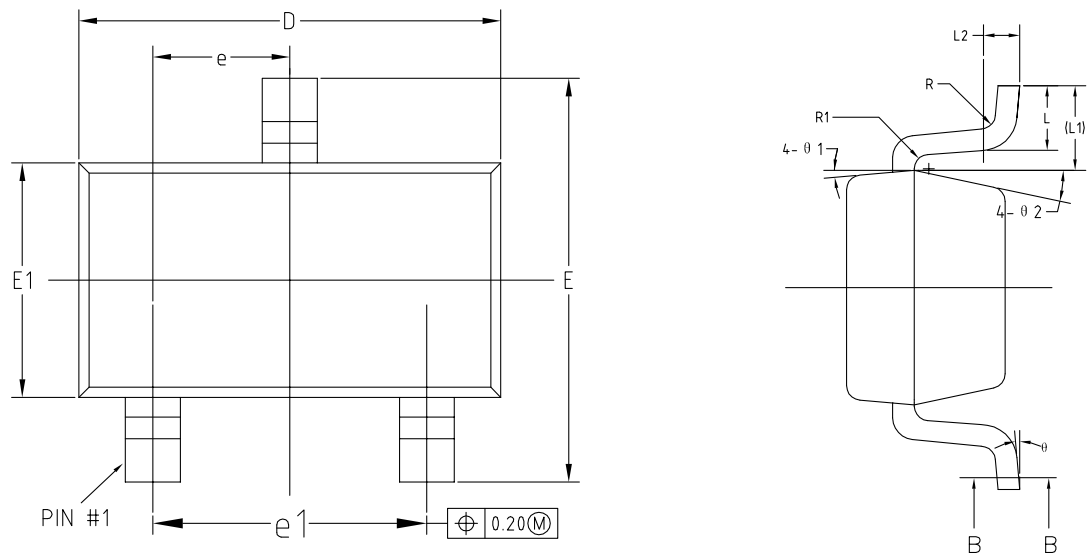
Figure 1. DC current gain at $V_{CE} = 5\text{ V}$

Figure 2. DC current gain at $V_{CE} = 10\text{ V}$

Figure 3. Collector emitter saturation voltage at $h_{FE} = 5$

Figure 4. Collector emitter saturation voltage at $h_{FE} = 10$

Figure 5. Base-emitter saturation voltage at $h_{FE} = 5$

Figure 6. Base-emitter on voltage at $V_{CE} = 10\text{ V}$


3 Package information

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.

3.1 SOT-23 package information

Figure 7. SOT-23 package outline (dimensions are in mm)

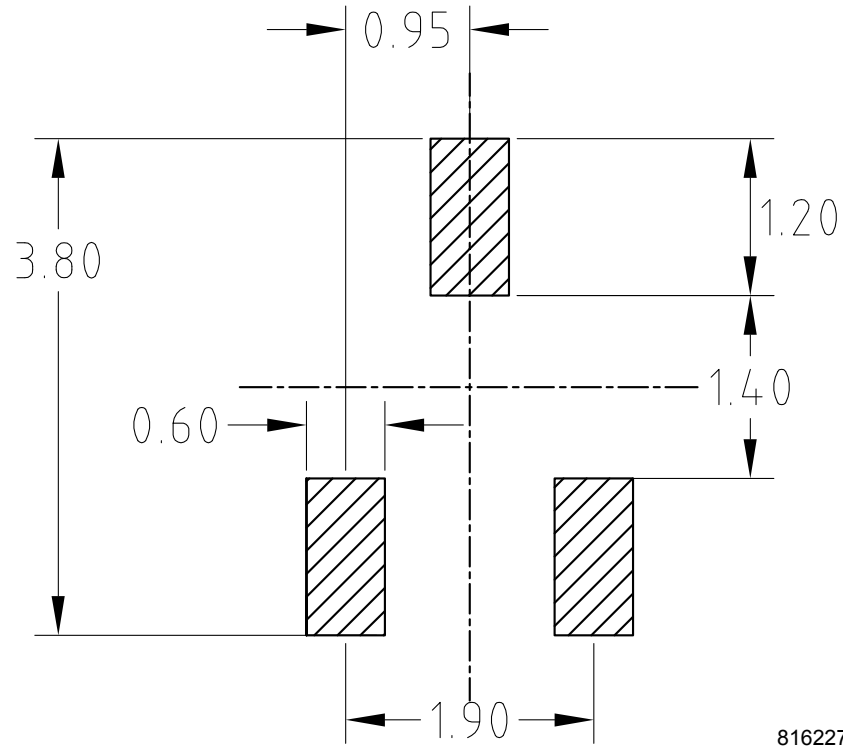


8162275_REV3


Table 4. SOT-23 package mechanical data

Ref.	mm		
	Min.	Typ.	Max.
A			1.25
A1	0		0.15
A2	1	1.10	1.20
A3	0.60	0.65	0.70
b	0.36		0.50
b1	0.36	0.38	0.45
c	0.14		0.20
c1	0.14	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1		0.59 REF	
L2		0.25 BSC	
R	0.05		
R1	0.05		
θ	0°		8°
θ_1	3°	5°	7°
θ_2	6°		14°

Figure 8. SOT-23 recommended footprint (dimensions in mm)



8162275_footprint_REV3



Revision history

Table 5. Document revision history

Date	Revision	Changes
17-Oct-2011	1	Initial release.
05-Jun-2012	2	Modified: features, <i>Table 4</i> ($V_{CE(sat)}$ values, h_{FE} test conditions and values)
21-May-2013	3	<ul style="list-style-type: none"> – Modified: <i>Table 4</i> ($V_{BE(sat)}$ values, h_{FE} max. value and $V_{(BR)EBO}$ min. value) – Inserted: $V_{BE(on)}$ – Modified: <i>Table 4</i> (h_{FE} max. value) – Added new section: <i>Electrical characteristics (curves)</i>
27-May-2013	4	– Document status promoted from preliminary to production data
09-May-2014	5	– Updated <i>Table 1: Device summary</i> and <i>Section 3: Package mechanical data</i>
10-Feb-2025	6	Updated Section 3.1: SOT-23 package information . Minor text changes.



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3	Package information	5
3.1	SOT-23 package information	5
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