

High power NPN epitaxial planar bipolar transistor

Features

- High breakdown voltage V_{CEO} = 100 V
- Complementary to 2STA2510
- Typical f_t = 20 MHz
- Fully characterized at 125 °C

Application

■ Audio power amplifier

Description

The device is a NPN transistor manufactured using new BiT-LA (Bipolar transistor for linear amplifier) technology. The resulting transistor shows good gain linearity behaviour.

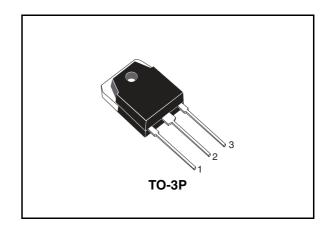


Figure 1. Internal schematic diagram

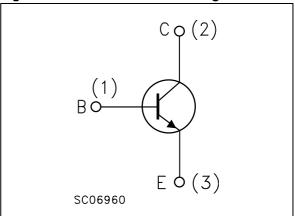


Table 1. Device summary

Order code	Marking	Package	Packaging
2STC2510	2STC2510	TO-3P	Tube

Electrical ratings 2STC2510

1 Electrical ratings

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-base voltage (I _E = 0)	100	V
V _{CEO}	Collector-emitter voltage (I _B = 0)	100	V
V _{EBO}	Emitter-base voltage ($I_C = 0$)	6	V
I _C	Collector current	25	Α
I _{CM}	Collector peak current (t _P < 5ms)	50	Α
P _{TOT}	Total dissipation at T _c = 25 °C	125	W
T _{stg}	Storage temperature	-65 to 150	°C
TJ	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter		Value	Unit
R _{thj-case}	Thermal resistance junction-case	max	1	°C/W

2 Electrical characteristics

 $(T_{case} = 25 \, ^{\circ}C; \text{ unless otherwise specified})$

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
I _{CBO}	Collector cut-off current (I _E = 0)	V _{CB} = 100 V				10	μΑ
I _{EBO}	Emitter cut-off current (I _C = 0)	V _{EB} = 6 V				10	μΑ
V _{(BR)CEO} ⁽¹⁾	Collector-emitter breakdown voltage (I _B = 0)	I _C = 50 mA		100			V
V _{(BR)CBO}	Collector-base breakdown voltage (I _E = 0)	I _C = 100 μA		100			٧
V _{(BR)EBO} ⁽¹⁾	Emitter-base breakdown voltage ($I_C = 0$)	I _E = 1 mA		6			٧
V _{CE(sat)} (1)	Collector-emitter saturation voltage	I _C = 12 A I	_B = 1.2 A			1.5	V
V _{BE} ⁽¹⁾	Base-emitter voltage	V _{CE} = 4 V	_C = 12 A			1.8	V
h _{FE}	DC current gain	I _C = 12 A	/ _{CE} = 4 V	40		80	
f _T	Transition frequency	$I_C = 0.5 \text{ A}$ V	_{CE} = 12 V		20		MHz

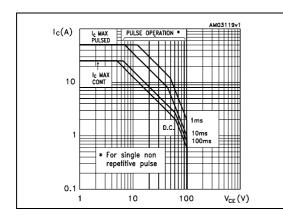
^{1.} Pulsed duration = 300 μ s, duty cycle \leq 1.5 %

Electrical characteristics 2STC2510

2.1 Electrical characteristic (curves)

Figure 2. Safe operating area

Figure 3. Derating curve



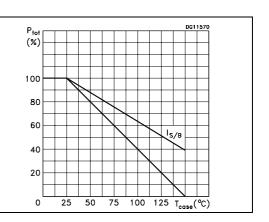
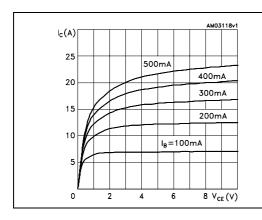


Figure 4. Output characteristics

Figure 5. DC current gain



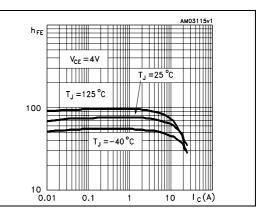
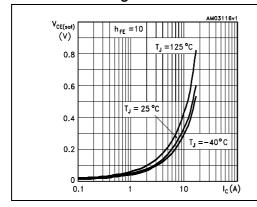
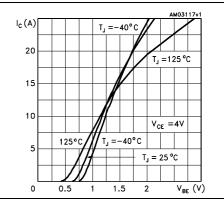


Figure 6. Collector-emitter saturation voltage

Figure 7. Collector current vs baseemitter voltage





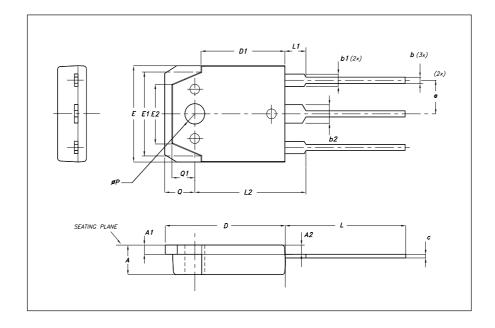
3 Package mechanical data

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

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エロースロ	Mechar	nical /	data
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DIM.	mm.				
	MIN.	TYP	MAX.		
Α	4.6		5		
A1	1.45	1.50	1.65		
A2	1.20	1.40	1.60		
b	0.80	1	1.20		
b1	1.80		2.20		
b2	2.80		3.20		
С	0.55	0.60	0.75		
D	19.70	19.90	20.10		
D1		13.90			
E	15.40		15.80		
E1		13.60			
E2		9.60			
е	5.15	5.45	5.75		
L	19.50	20	20.50		
L1		3.50			
L2	18.20	18.40	18.60		
Р	3.10		3.30		
Q		5			
Q1		3.80			



2STC2510 Revision history

4 Revision history

Table 5. Document revision history

Date	Revision	Changes
27-Nov-2007	1	Initial release
16-May-2008	2	Document status promoted from preliminary data to datasheet.
14-Nov-2008	3	Added paragraph: Electrical characteristic (curves) on page 4

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