

High gain low voltage PNP power transistor

Features

- Very low collector to emitter saturation voltage
- DC current gain > 100 (h_{FE})
- 3 A continuous collector current (I_C)

Applications

- Power management in portable equipments
- Switching regulator in battery charger applications



The device is manufactured in low voltage PNP Planar Technology with "Base Island" layout. The resulting Transistor shows exceptional high gain performance coupled with very low saturation voltage.

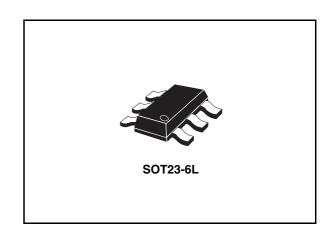


Figure 1. Internal schematic diagram

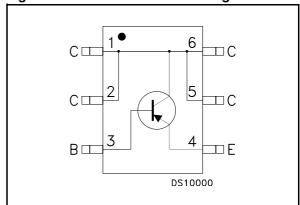


Table 1. Device summary

	Order code	Marking	Package	Packaging
Ī	STT818B	818B	SOT23-6L	Tape & reel

Contents STT818B

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STT818B Electrical ratings

1 Electrical ratings

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-base voltage (I _E = 0)	-30	V
V _{CEO}	Collector-emitter voltage (I _B = 0)	-30	V
V _{EBO}	Emitter-base voltage (I _C = 0)	-5	V
I _C	Collector current	-3	Α
I _{CM}	Collector peak current (t _P < 5ms)	-6	Α
I _B	Base current	-0.2	Α
I _{BM}	Base peak current (t _P < 5ms)	-0.5	Α
P _{tot}	Total dissipation at T _{amb} = 25°C	1.2	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-amb}	Thermal resistance junction-ambient max	104.2	°C/W

^{1.} Package mounted on FR4 pcb 25mm x 25mm.

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Electrical characteristics STT818B

2 Electrical characteristics

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

Table 4. Electrical characteristics

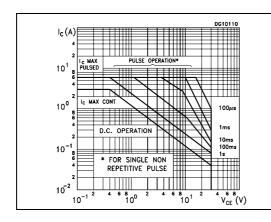
Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
I _{CBO}	Collector cut-off current (I _E =0)	$V_{CB} = -30 \text{ V}$ $V_{CB} = -30 \text{ V}$	T _C = 125°C			-0.1 -20	μ Α μ Α
I _{EBO}	Collector-cut-off current (I _C = 0)	V _{EB} = -5 V				-0.1	μА
V _{(BR)CEO} ⁽¹⁾	Collector-emitter breakdown voltage (I _B = 0)	I _C = -10 mA		-30			٧
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	$I_C = -0.5 A$ $I_C = -1.2 A$ $I_C = -2 A$	$I_{B} = -12 \text{ mA}$		-0.075 -0.21	-0.15 -0.3 -0.5	< < <
V _{BE(sat)} ⁽¹⁾	Base-emitter saturation voltage	$I_{C} = -0.5 \text{ A}$ $I_{C} = -1.2 \text{A}$ $I_{C} = -2 \text{A}$	$I_B = -12 \text{ mA}$		-0.74	-1.1 -1.1 -1.2	< < <
h _{FE} ⁽¹⁾	DC current gain	$I_C = -0.5 \text{ A}$ $I_C = -2.5 \text{ A}$		100 100			
V _{BE(ON)} ⁽¹⁾	Base-emitter voltage	I _C = -0.5 A	V _{CE} = -2 V		-0.71	-1.1	V

^{1.} Pulse duration = 300 μ s, duty cycle 1.5 %.

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

Figure 3. Derating curve



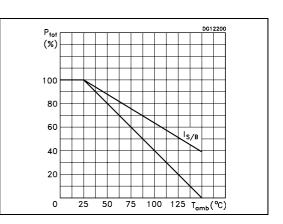
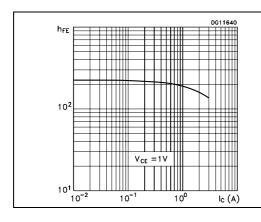


Figure 4. DC Current Gain

Figure 5. DC Current Gain



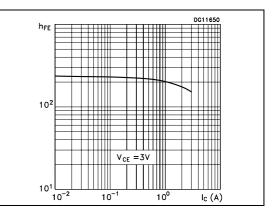
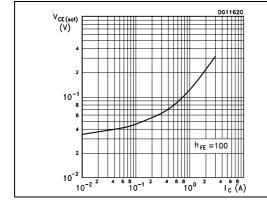
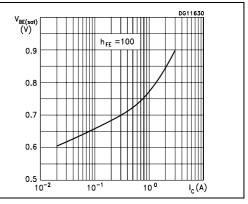


Figure 6. Collector-emitter saturation voltage

Figure 7. Base-emitter saturation voltage



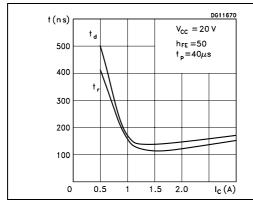


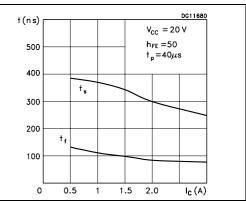
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Electrical characteristics STT818B

Figure 8. Switching times resistive load

Figure 9. Switching times resistive load





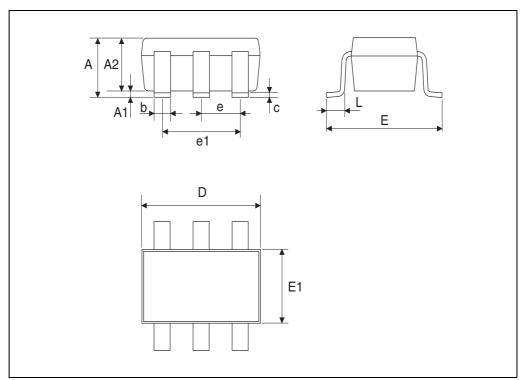
3 Package mechanical data

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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SOT23-6L MECHANICAL DATA

DIM.	mm			mils			
2	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α	0.90		1.45	0.035		0.057	
A1	0.00		0.15	0.000		0.006	
A2	0.90		1.30	0.035		0.051	
b	0.25		0.50	0.010		0.020	
С	0.09		0.20	0.004		0.008	
D	2.80		3.10	0.110		0.122	
Е	2.60		3.00	0.102		0.118	
E1	1.50		1.75	0.059		0.069	
L	0.35		0.55	0.014		0.022	
е		0.95			0.037		
e1		1.90			0.075	_	



STT818B Revision history

4 Revision history

Table 5. Document revision history

Date	Revision	Changes	
12-Jul-2002	4	No content change; the document has been reformatted	
08-Aug-2007	5	Updated Figure 3	

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