2STBN15D100

Low voltage NPN power Darlington transistor

Features

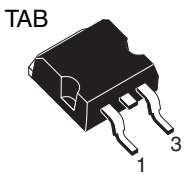
- Good h_{FE} linearity
- High f_T frequency
- Monolithic Darlington configuration with integrated antiparallel collector-emitter diode

Application

- Linear and switching industrial equipment

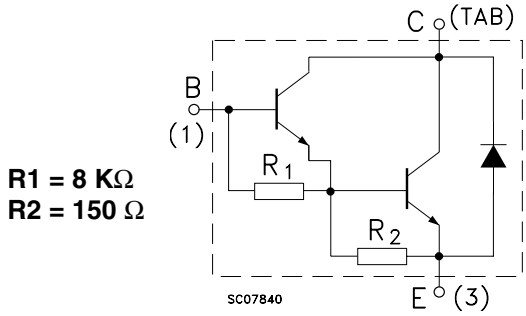
Description

The device is manufactured in planar technology with “base island” layout and monolithic Darlington configuration.



D²PAK

Figure 1. Internal schematic diagrams



R1 = 8 KΩ
R2 = 150 Ω

Table 1. Device summary

Order code	Marking	Package	Packaging
2STBN15D100	BN15D100	D²PAK	Tube

1 Electrical ratings

Table 2. Absolute maximum ratings

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)	5	V
I_C	Collector current	12	A
I_{CM}	Collector peak current	15	A
I_B	Base current	0.2	A
P_{TOT}	Total dissipation at T_{case} = 25 °C	70	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_{thJC}	Thermal resistance junction-case max.	1.8	°C/W

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} = 100 V		-	100	µA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = 50 V		-	100	µA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 5 V	0.12	-	2	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 100 mA	100	-		V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 0.5 A I_B = 1 mA I_C = 4 A I_B = 4 mA		-	1.5 1.3	V V
$V_{BE(on)}$ (1)	Base-emitter on voltage	I_C = 3 A V_{CE} = 3 V		-	2.5	V
h_{FE} (1)	DC current gain	I_C = 3 A V_{CE} = 3 V	750	-		
V_F	Diode forward voltage	I_F = 3 A		-	2.5	V

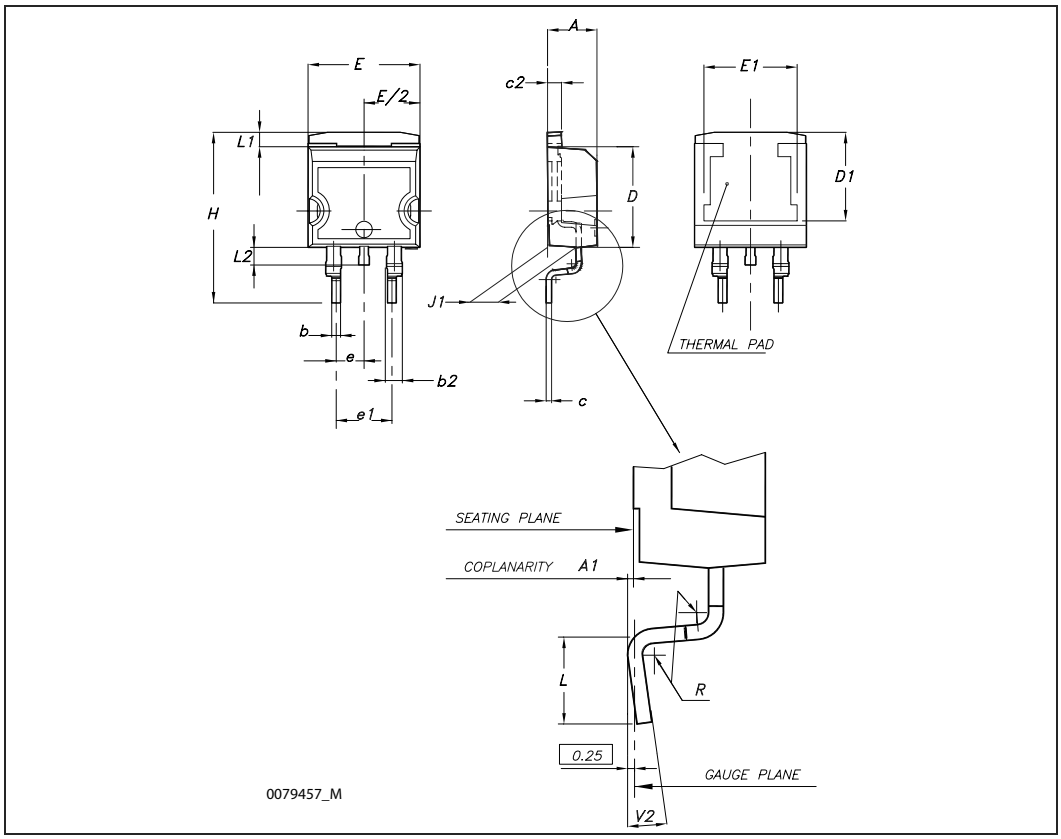
1. Pulse test: pulse duration ≤300 µs, duty cycle ≤2 %.

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.

D²PAK (TO-263) mechanical data

Dim	mm			inch		
	Min	Typ	Max	Min	Typ	Max
A	4.40		4.60	0.173		0.181
A1	0.03		0.23	0.001		0.009
b	0.70		0.93	0.027		0.037
b2	1.14		1.70	0.045		0.067
c	0.45		0.60	0.017		0.024
c2	1.23		1.36	0.048		0.053
D	8.95		9.35	0.352		0.368
D1	7.50			0.295		
E	10		10.40	0.394		0.409
E1	8.50			0.334		
e		2.54			0.1	
e1	4.88		5.28	0.192		0.208
H	15		15.85	0.590		0.624
J1	2.49		2.69	0.099		0.106
L	2.29		2.79	0.090		0.110
L1	1.27		1.40	0.05		0.055
L2	1.30		1.75	0.051		0.069
R		0.4			0.016	
V2	0°		8°	0°		8°



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
01-Sep-2009	1	First release.

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