BDW83C

NPN power Darlington transistor

Features

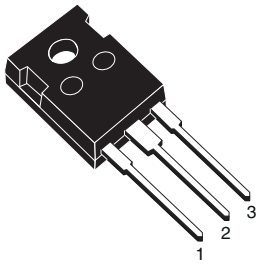
- High current capability
- Fast switching speed
- High DC current gain

Applications

- Linear and switching industrial equipment

Description

The BDW83C is an epitaxial-base NPN power monolithic Darlington transistor mounted in TO-247 plastic package. It is intended for use in power linear and switching applications.



TO-247

Figure 1. Internal schematic diagram

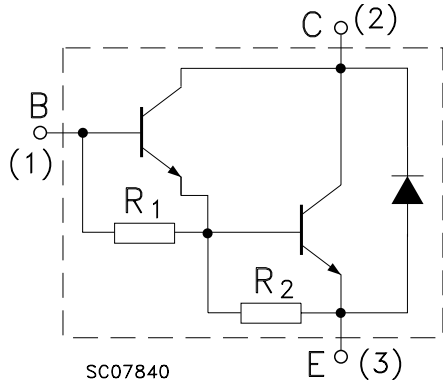


Table 1. Device summary

Order code	Marking	Package	Packaging
BDW83C	BDW83C	TO-247	Tube

1 Absolute maximum 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	15	A
I_{CM}	Collector peak current (t_p < 5ms)	40	A
I_B	Base current	0.5	A
P_{TOT}	Total dissipation at $T_c \leq 25$ °C	130	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
$R_{thj\text{-}case}$	Thermal resistance junction-case	max	0.96	°C/W

2 Electrical characteristics

(T_{case} = 25°C; unless otherwise specified)

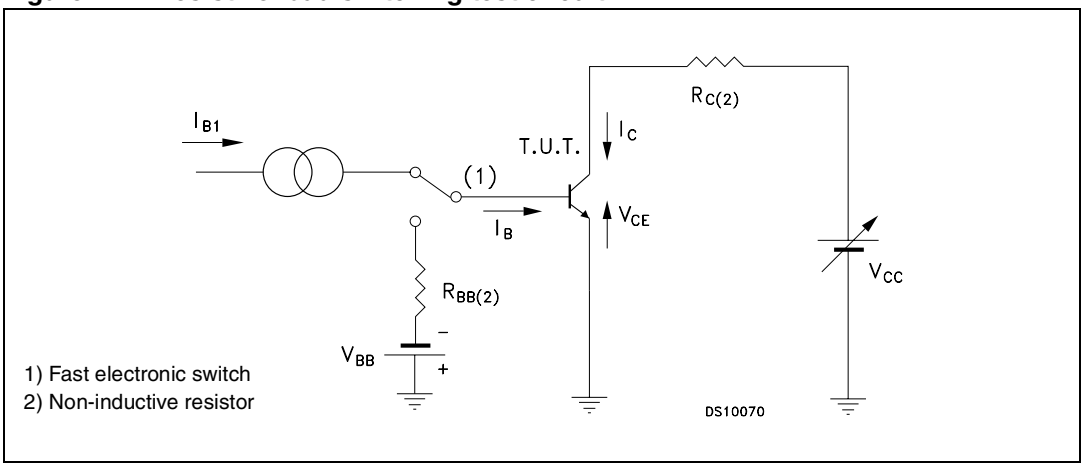
Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = 100 V V_{CB} = 100 V T_C = 150°C			500 5	µA mA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = 40 V			1	mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 5 V			2	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 30 mA	100			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 6 A I_B = 12 mA I_C = 15 A I_B = 150 mA			2.5 4	V V
$V_{BE(on)}$ (1)	Base-emitter on voltage	I_C = 6 A V_{CE} = 3 V			2.5	V
h_{FE} (1)	DC current gain	I_C = 6 A V_{CE} = 3 V I_C = 15 A V_{CE} = 3 V	750 100		20000	
V_F	Diode forward voltage	I_F = 10 A			4	V
t_{on} t_{off}	Resistive load Turn-on time Turn-off time	V_{CC} = 30 V I_C = 10 A I_{B1} = -I_{B2} = 40 mA		0.9 6		µs µs

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

2.1 Test circuit

Figure 2. Resistive load switching test circuit

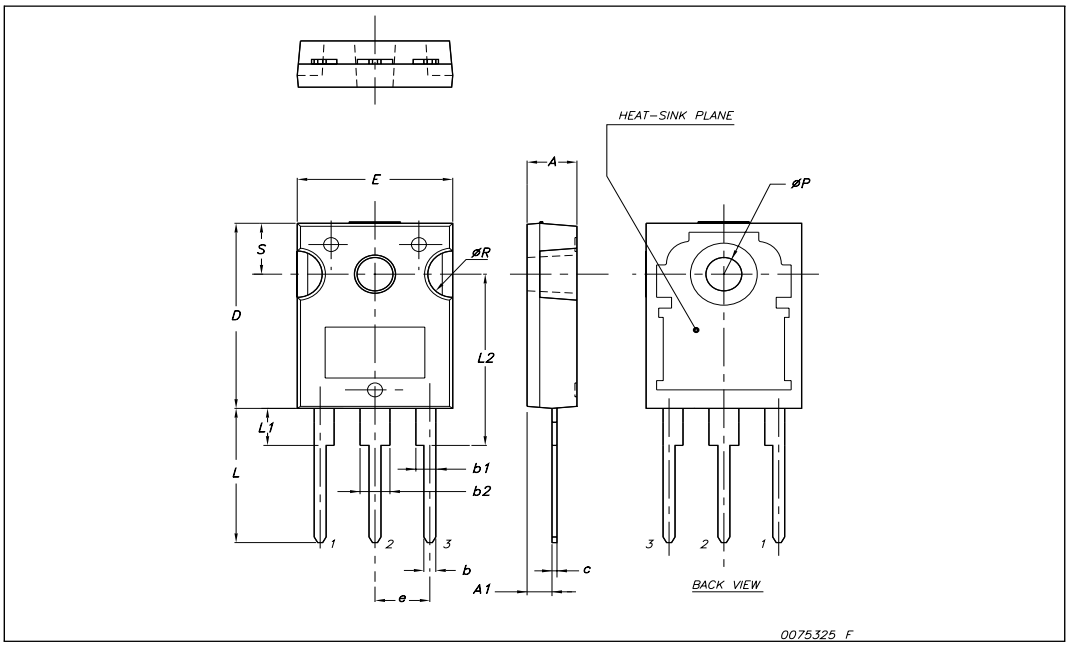


3 Package mechanical data

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

TO-247 Mechanical data

Dim.	mm.		
	Min.	Typ	Max.
A	4.85		5.15
A1	2.20		2.60
b	1.0		1.40
b1	2.0		2.40
b2	3.0		3.40
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e		5.45	
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
øP	3.55		3.65
øR	4.50		5.50
S		5.50	



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
02-Jan-2000	4	
16-Nov-2007	5	Package change from TO-218 to TO-247.

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