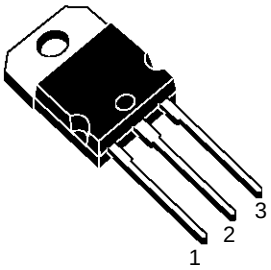
SGS-THOMSON MICROELECTRONICS

BDW83C

HIGH CURRENT SILICON POWER DARLINGTON TRANSISTOR

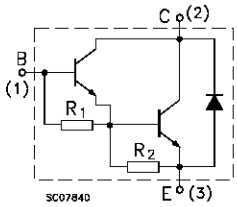
DESCRIPTION

The BDW83C is a silicon epitaxial-base NPN power monolithic Darlington mounted in Jedec TO-218 plastic package. It is intended for use in power linear and switching applications.



TO-218

INTERNAL SCHEMATIC DIAGRAM



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	40	A
I_B	Base Current	0.5	A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$	130	W
T_{stg}	Storage Temperature	-65 to 150	^oC
T_j	Max. Operating Junction Temperature	150	^oC

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	0.96	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

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_{case} = 150 ^oC			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
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 30 mA	100			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 6 A I_B = 12 mA I_C = 15 A I_B = 150 mA			2.5 4	V
$V_{BE(on)}$*	Base-Emitter Voltage	I_C = 6 A V_{CE} = 3 A			2.5	V
h_{FE}*	DC Current Gain	I_C = 6 A V_{CE} =3 V I_C = 15 A V_{CE} =3 V	750 100		20K	
V_f*	Diode Forward Voltage	I_F = 10 A			4	V
f_T	Turn-on Time Turn-off Time	V_{CC} = 30 V I_C = 10 A R_{B1} = 300 Ω R_{B2} = 150 Ω I_{B1} = - I_{B2} = 40 mA		0.9 6		µs µs

* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

TO-218 (SOT-93) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	–		16.2	–		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	–		12.2	–		0.480
Ø	4		4.1	0.157		0.161