

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- BDW83C IS A SGS-THOMSON PREFERRED SALESTYPE
- COMPLEMENTARY PNP - NPN DEVICES
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- HIGH DC CURRENT GAIN

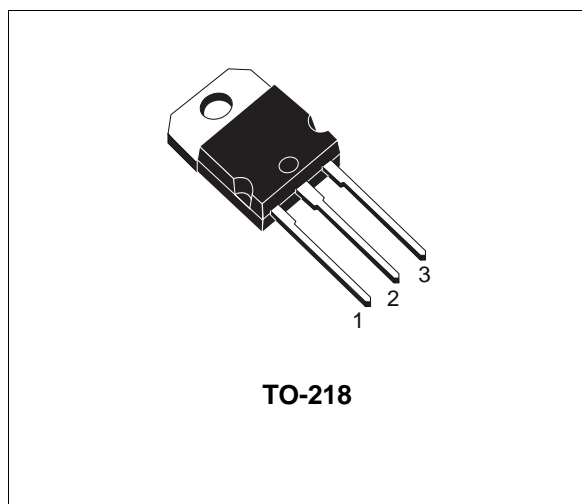
### APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

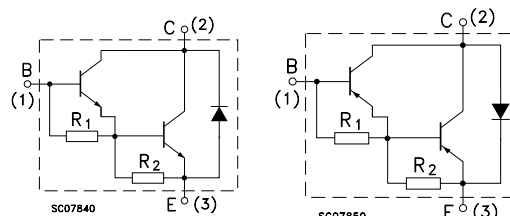
### DESCRIPTION

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

The complementary type is BDW84C.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	BDW83C	
		PNP	BDW84C	
$V_{CBO}$	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 $T_c \leq 25^\circ C$		130	W
$T_{stg}$	Storage Temperature		-65 to 150	$^\circ C$
$T_j$	Max. Operating Junction Temperature		150	$^\circ C$

## BDW83C / BDW84C

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	0.96	°C/W
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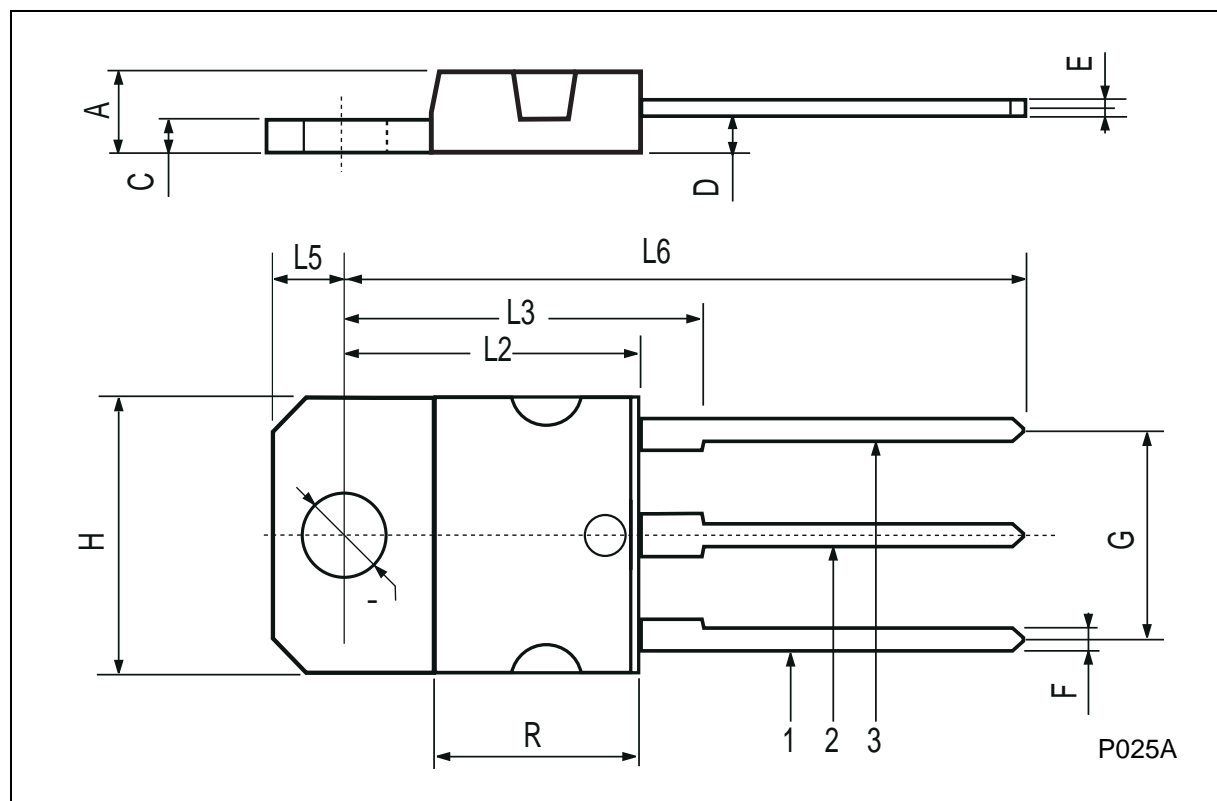
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 100 V V <sub>CB</sub> = 100 V      T <sub>case</sub> = 150 °C			500 5	μA mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 40 V			1	mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			2	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 30 mA	100			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 6 A      I <sub>B</sub> = 12 mA I <sub>C</sub> = 15 A      I <sub>B</sub> = 150 mA			2.5 4	V
V <sub>BE(on)*</sub>	Base-Emitter Voltage	I <sub>C</sub> = 6 A      V <sub>CE</sub> = 3 A			2.5	V
h <sub>FE</sub> *	DC Current Gain	I <sub>C</sub> = 6 A      V <sub>CE</sub> = 3 V I <sub>C</sub> = 15 A      V <sub>CE</sub> = 3 V	750 100		20000	
V <sub>f</sub> *	Diode Forward Voltage	I <sub>F</sub> = 10 A			4	V
t <sub>on</sub> t <sub>off</sub>	Turn-on Time Turn-off Time	V <sub>CC</sub> = 30 V      I <sub>C</sub> = 10 A R <sub>B1</sub> = 300 Ω      R <sub>B2</sub> = 150 Ω I <sub>B1</sub> = - I <sub>B2</sub> = 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



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