



# BDW83C BDW84C

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

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

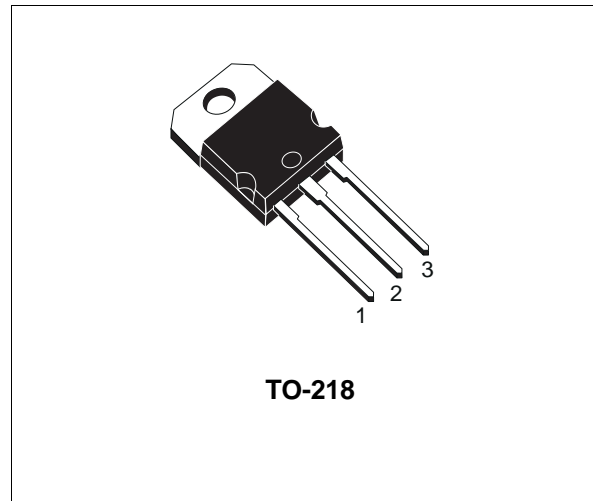
### APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

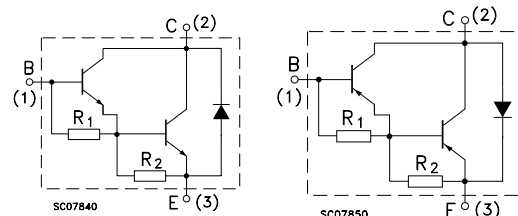
### DESCRIPTION

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 $T_c \leq 25^\circ\text{C}$		130	W
$T_{stg}$	Storage Temperature		-65 to 150	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature		150	$^\circ\text{C}$

## BDW83C / BDW84C

### THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	0.96	$^{\circ}C/W$
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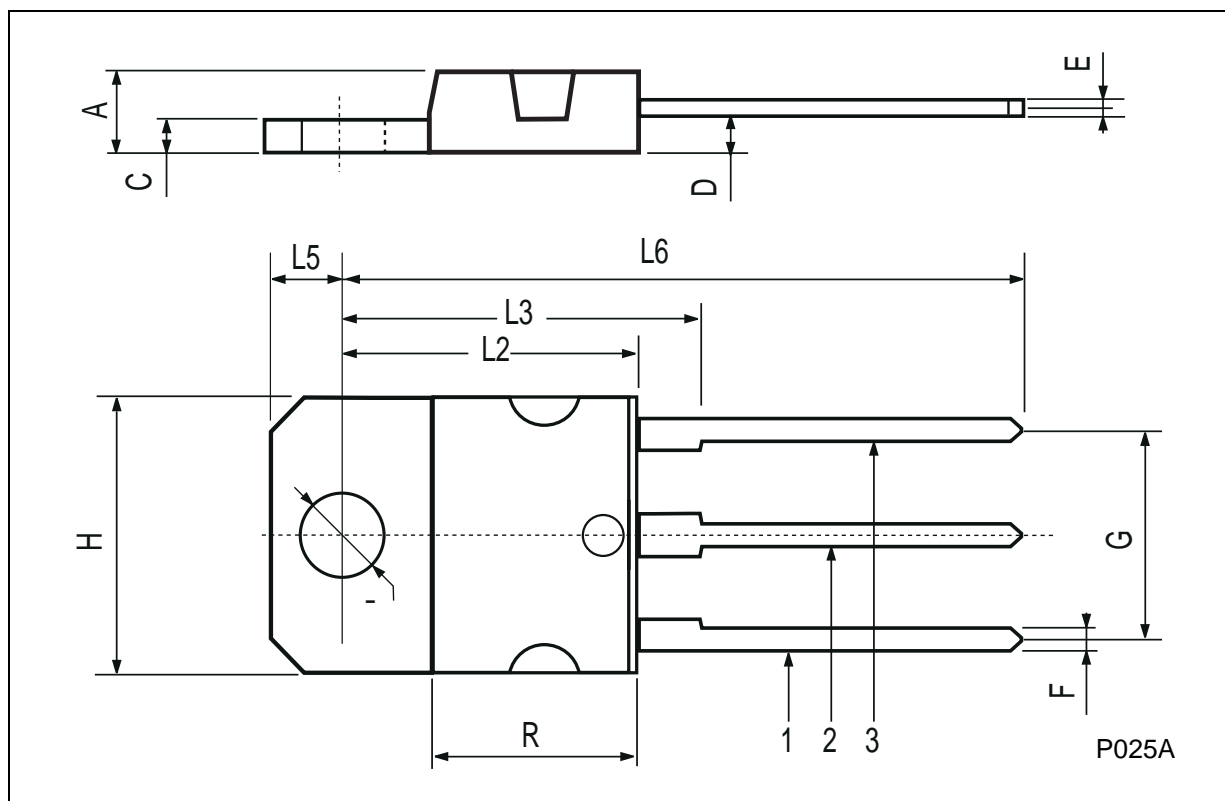
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	$V_{CB} = 100 V$ $V_{CB} = 100 V$ $T_C = 150^{\circ}C$			500 5	$\mu A$ 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 ( $I_B = 0$ )	$I_C = 30 mA$	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	$I_C = 6 A$ $V_{CE} = 3 V$			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		20000	
$V_f$	Diode Forward Voltage	$I_F = 10 A$			4	V
$t_{on}$ $t_{off}$	RESISTIVE LOAD Turn-on Time Turn-off Time	$V_{CC} = 30 V$ $I_C = 10 A$ $R_{B1} = 300 \Omega$ $R_{B2} = 150 \Omega$ $I_{B1} = - I_{B2} = 40 mA$		0.9 6		$\mu s$ $\mu s$

\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle 1.5 %  
For PNP type 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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