

**Darlington transistors**

<b>Order code</b>	<b>Manufacturer code</b>	<b>Description</b>
81-0110	BDW93C	BDW93C TOP66 100V NPN POWER DARLINGTON
81-0112	BDW94C	BDW94C TOP66 100V PNP POWER DARLINGTON

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The enclosed information is believed to be correct, Information may change 'without notice' due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E.	Revision A 04/07/2003

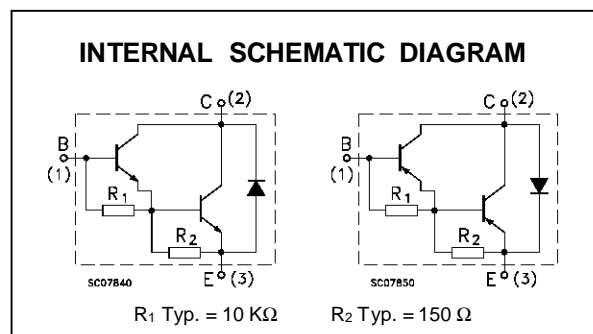
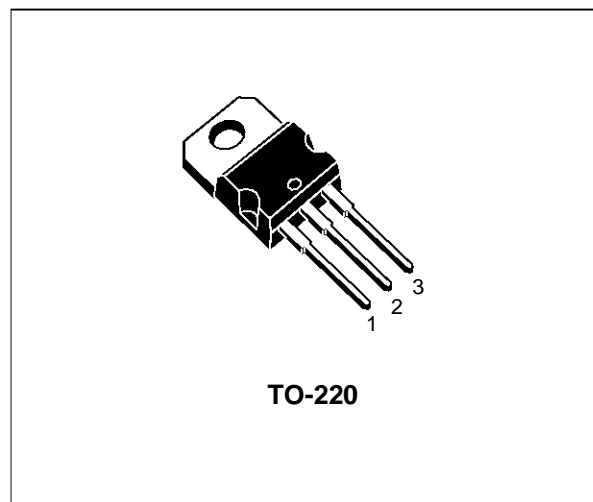
**COMPLEMENTARY SILICON POWER  
DARLINGTON TRANSISTORS**

■ SGS-THOMSON PREFERRED SALESTYPE

**DESCRIPTION**

The BDW93B, and BDW93C are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. They are intended for use in power linear and switching applications.

The complementary PNP types are the BDW94B and BDW94C respectively.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value		Unit	
		NPN	BDW93B		BDW93C
		PNP	BDW94B	BDW94C	
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )		80	100	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )		80	100	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 $T_c \leq 25^\circ C$		80		W
$T_{stg}$	Storage Temperature		-65 to 150		$^\circ C$
$T_j$	Max. Operating Junction Temperature		150		$^\circ C$

For PNP types voltage and current values are negative.

## BDW93B/BDW93C/BDW94B/BDW94C

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	1.56	°C/W
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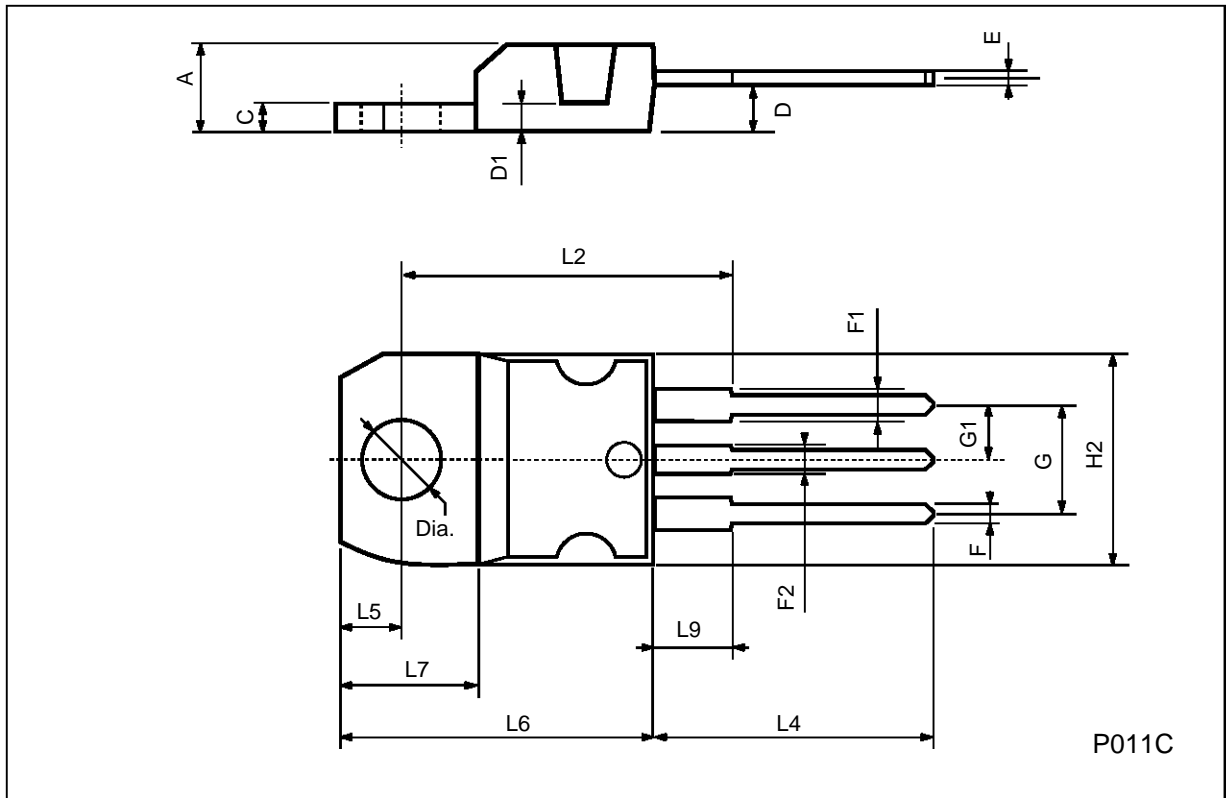
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>BDW93B/94B</b> V <sub>CB</sub> = 80 V for <b>BDW93C/94C</b> V <sub>CB</sub> = 100 V T <sub>case</sub> = 150 °C for <b>BDW93B/94B</b> V <sub>CB</sub> = 80 V for <b>BDW93C/94C</b> V <sub>CB</sub> = 100 V			100 100 5 5	μA μA mA mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	for <b>BDW93B/94B</b> V <sub>CB</sub> = 80 V for <b>BDW93C/94C</b> V <sub>CB</sub> = 100 V			1 1	mA 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>B</sub> = 0)	I <sub>C</sub> = 100 mA for <b>BDW93B/94B</b> for <b>BDW93C/94C</b>	80 100			V V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 5 A I <sub>B</sub> = 20 mA I <sub>C</sub> = 10 A I <sub>B</sub> = 100 mA			2 3	V V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 5 A I <sub>B</sub> = 20 mA I <sub>C</sub> = 10 A I <sub>B</sub> = 100 mA			2.5 4	V V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 3 A V <sub>CE</sub> = 3 V I <sub>C</sub> = 5 A V <sub>CE</sub> = 3 V I <sub>C</sub> = 10 A V <sub>CE</sub> = 3 V	1000 750 100		20K	
V <sub>F*</sub>	Parallel-diode Forward Voltage	I <sub>F</sub> = 5 A I <sub>F</sub> = 10 A		1.3 1.8	2 4	V V
h <sub>fe</sub> :	Small Signal Current Gain	I <sub>C</sub> = 1 A V <sub>CE</sub> = 10 V f = 1 MHz	20			

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

**TO-220 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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