

BDW93C BDW94B/BDW94C

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP NPN DEVICES
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE

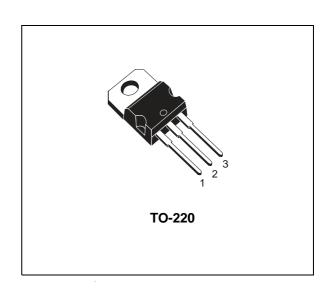
APPLICATIONS

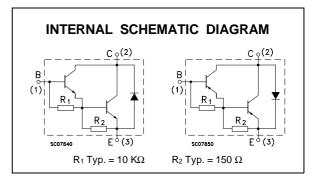
 LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The BDW93C is a silicon Epitaxial-Base NPN power transistor in monolithic Darlington configuration mounted in Jedec TO-220 plastic package. It is intented for use in power linear and switching applications.

The complementary PNP type is BDW94C. Also BDW94B is a PNP type.





ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Va	Unit		
		NPN		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
Ic	Collector Current		1	2	Α
I _{CM}	Collector Peak Current		1	Α	
I_{B}	Base Current		0	Α	
P _{tot}	Total Dissipation at T _c ≤ 25 °C		8	0	W
T_{stg}	Storage Temperature	·	-65 to	o 150	°C
Tj	Max. Operating Junction Temperature	·	15	50	°C

For PNP types voltage and current values are negative.

October 1999 1/6

BDW93C/BDW94B/BDW94C

THERMAL DATA

R _{thj-case} Thermal Resistance Junction-case	1.56	°C/W	Ì
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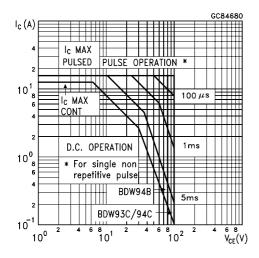
ELECTRICAL CHARACTERISTICS ($T_{case} = 25$ $^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Con	ditions	Min.	Тур.	Max.	Unit
Ісво	Collector Cut-off Current (I _E = 0)	for BDW94B for BDW93C/94C T _{case} = 150 °C for BDW94B for BDW93C/94C	$V_{CB} = 80 \text{ V}$ $V_{CB} = 100 \text{ V}$ $V_{CB} = 80 \text{ V}$ $V_{CB} = 100 \text{ V}$			100 100 5 5	μΑ μΑ mA mA
I _{CEO}	Collector Cut-off Current (I _B = 0)	for BDW94B for BDW93C/94C	V _{CE} = 80 V V _{CE} = 100 V			1	mA 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 = 100 mA for BDW94B for BDW93C/94C		80 100			> >
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	I _C = 5 A I _C = 10 A	I _B = 20 mA I _B = 100 mA			2 3	V V
V _{BE(sat)} *	Base-Emitter Saturation Voltage	I _C = 5 A I _C = 10 A	I _B = 20 mA I _B = 100 mA			2.5 4	V V
h _{FE} *	DC Current Gain	I _C = 3 A I _C = 5 A I _C = 10 A	V _{CE} = 3 V V _{CE} = 3 V V _{CE} = 3 V	1000 750 100		20K	
V _F *	Parallel-diode Forward Voltage	I _F = 5 A I _F = 10 A			1.3 1.8	2 4	V V
h _{fe}	Small Signal Current Gain	I _C = 1 A f = 1 MHz	V _{CE} = 10 V	20			

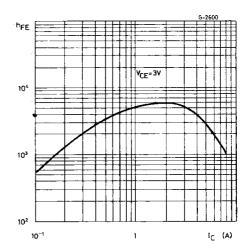
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^{*} Pulsed: Pulse duration = 300 μs, duty cycle 1.5 % For PNP types voltage and current values are negative.

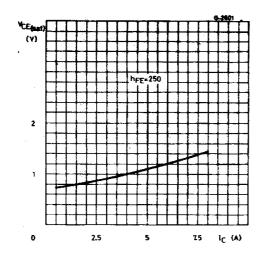
Safe Operating Area



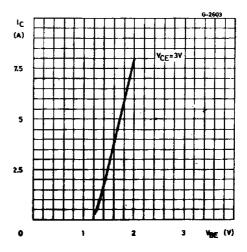
DC Current Gain (NPN types)



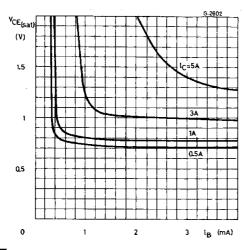
Collector Emitter Saturation Voltage (NPN types)



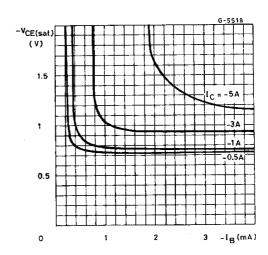
DC Transconductance (NPN types)



Collector Emitter Saturation Voltage (NPN types)

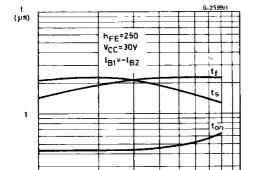


Collector Emitter Saturation Voltage (PNP types)

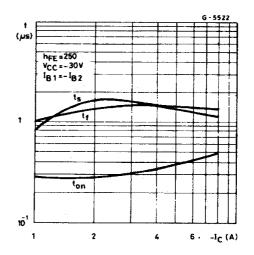


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Saturated Switching Characteristics (NPN types)



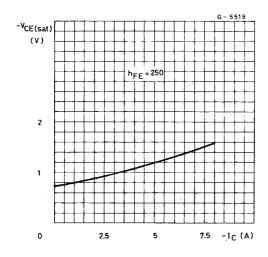
Saturated Switching Characteristics (PNP types)



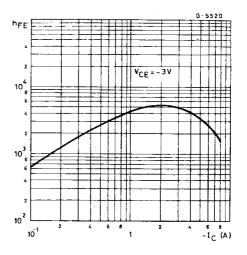
Collector Emitter Saturation Voltage (PNP types)

I_C (A)

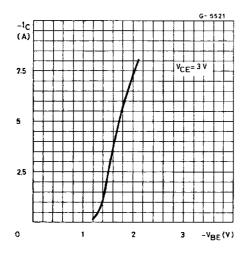
10~1



DC Current Gain (PNP types)



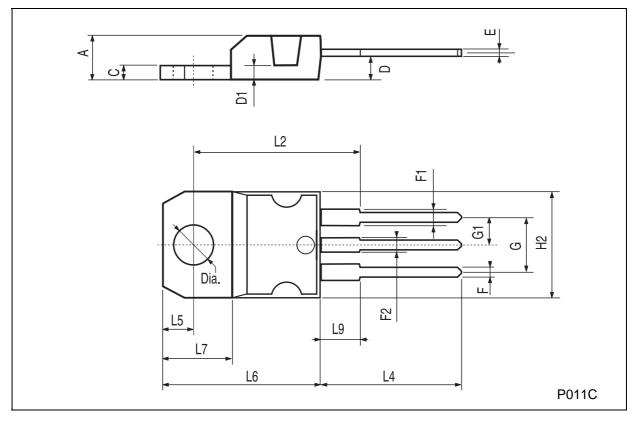
DC Transconductance (PNP types)



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TO-220 MECHANICAL DATA

DIM.	mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α	4.40		4.60	0.173		0.181	
С	1.23		1.32	0.048		0.051	
D	2.40		2.72	0.094		0.107	
D1		1.27			0.050		
Е	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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