SGS-THOMSON MICROELECTRONICS

BDW93B/BDW93C
BDW94B/BDW94C

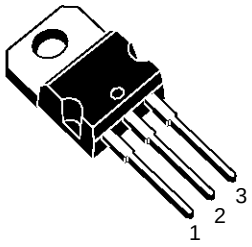
COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPE

DESCRIPTION

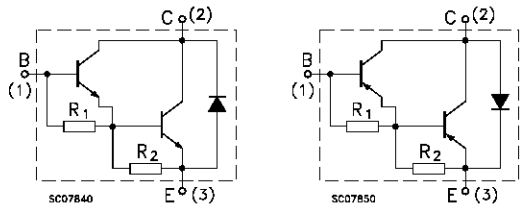
The BDW93B, and BDW93C are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. They are intented for use in power linear and switching applications.

The complementary PNP types are the BDW94B and BDW94C respectively.



TO-220

INTERNAL SCHEMATIC DIAGRAM



R_1 Typ. = 10 KΩ R_2 Typ. = 150 Ω

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 $T_c \leq 25\ ^oC$		80		W
T_{stg}	Storage Temperature		-65 to 150		^oC
T_j	Max. Operating Junction Temperature		150		^oC

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	1.56	$^oC/W$

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)	for **BDW93B/94B** for **BDW93C/94C** T_{case} = 150 ^oC for **BDW93B/94B** for **BDW93C/94C**	V_{CB} = 80 V V_{CB} = 100 V V_{CB} = 80 V V_{CB} = 100 V			100 100 5 5	µA µA mA mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	for **BDW93B/94B** for **BDW93C/94C**	V_{CB} = 80 V V_{CB} = 100 V			1 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 **BDW93B/94B** for **BDW93C/94C**	80 100			V V
$V_{CE(sat)}$*	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	IC = 1 A f = 1 MHz	V_{CE} = 10 V	 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