SGS-THOMSON MICROELECTRONICS

BDW93CFI
BDW94CFI

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- MONOLITHIC DARLINGTON CONFIGURATION
- COMPLEMENTARY PNP - NPN DEVICES
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE

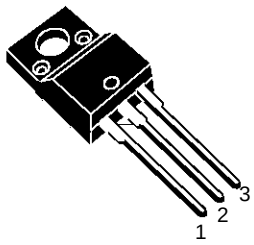
APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

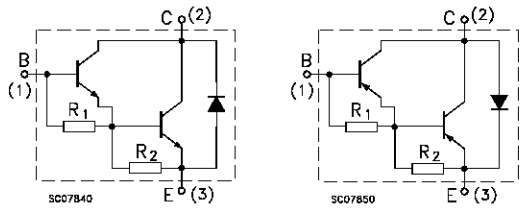
The BDW93CFI, is a silicon epitaxial-base NPN transistor in monolithic Darlington configuration and is mounted in ISOWATT220 plastic package. It is intented for use in power linear and switching applications.

The complementary PNP type is the BDW94CFI.



ISOWATT220

INTERNAL SCHEMATIC DIAGRAM



R_1 Typ. = 10 KΩ R_2 Typ. = 150 Ω

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
		NPN	BDW93CFI	
		PNP	BDW94CFI	
V_{CBO}	Collector-Base Voltage (I_E = 0)		100	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		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 $T_c \leq 25\ ^oC$		40	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

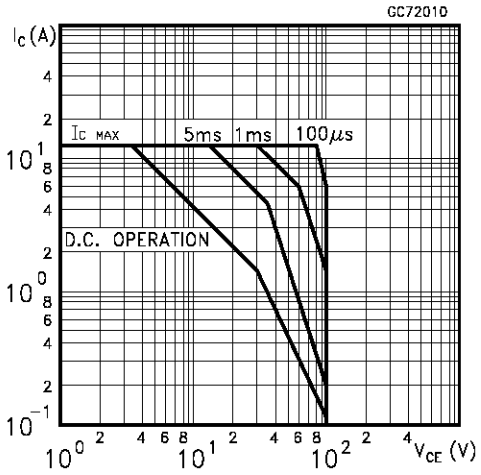
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	3.1	$^oC/W$

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)	V_{CB} = 100 V V_{CB} = 100 V T_{case} = 150 ^oC			100 5	µA mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = 80 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 = 100 mA	100			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 5 A I_B = 20 mA I_C = 10 A I_B = 100 mA			2 3	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 5 A I_B = 20 mA I_C = 10 A I_B = 100 mA			2.5 4	V V
h_{FE}*	DC Current Gain	I_C = 3 A V_{CE} = 3 V I_C = 5 A V_{CE} = 3 V I_C = 10 A V_{CE} = 3 V	1000 750 100		 20000	
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 V_{CE} = 10 V f = 1 MHz	 20			

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

Safe Operating Area



ISOWATT220 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
B	2.5		2.7	0.098		0.106
D	2.5		2.75	0.098		0.108
E	0.4		0.7	0.015		0.027
F	0.75		1	0.030		0.039
F1	1.15		1.7	0.045		0.067
F2	1.15		1.7	0.045		0.067
G	4.95		5.2	0.195		0.204
G1	2.4		2.7	0.094		0.106
H	10		10.4	0.393		0.409
L2		16			0.630	
L3	28.6		30.6	1.126		1.204
L4	9.8		10.6	0.385		0.417
L6	15.9		16.4	0.626		0.645
L7	9		9.3	0.354		0.366
Ø	3		3.2	0.118		0.126