



BDW93CFP BDW94CFP

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- MONOLITHIC DARLINGTON CONFIGURATION
- COMPLEMENTARY PNP - NPN DEVICES
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE
- FULLY MOLDED INSULATED PACKAGE
- 2000 V DC INSULATION (U.L. COMPLIANT)

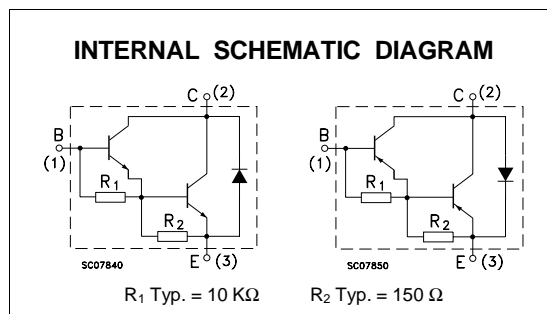
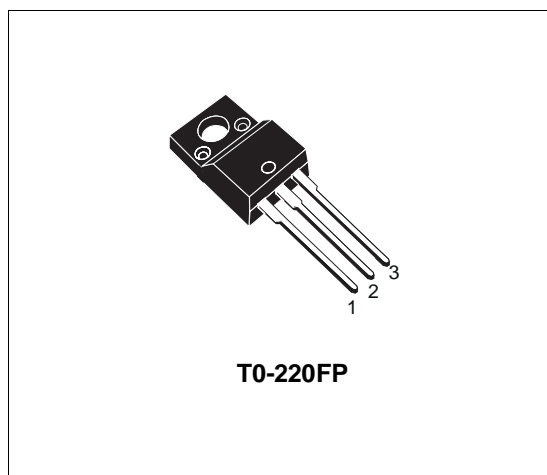
APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The BDW93CFP is a silicon Epitaxial-Base NPN transistor in monolithic Darlington configuration mounted in TO-220FP fully molded insulated package. It is intended for use in power linear and switching applications.

The complementary PNP type is the BDW94CFP.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	BDW93CFP	
		PNP	BDW94CFP	
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 $T_c \leq 25$ °C		33	W
T_{stg}	Storage Temperature		-65 to 150	°C
T_j	Max. Operating Junction Temperature		150	°C

For PNP types voltage and current values are negative.

BDW93CFP / BDW94CFP

THERMAL DATA

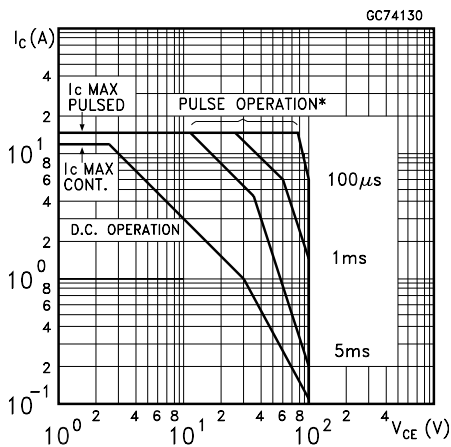
$R_{thj-case}$	Thermal Resistance Junction-case	Max	3.8	$^{\circ}\text{C}/\text{W}$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 100\text{ V}$ $V_{CB} = 100\text{ V}$ $T_{case} = 150^{\circ}\text{C}$			100 5	μA mA
I_{CEO}	Collector Cut-off Current ($I_B = 0$)	$V_{CE} = 80\text{ V}$			1	mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			2	mA
$V_{CE(sus)*}$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100\text{ mA}$	100			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 5\text{ A}$ $I_B = 20\text{ mA}$ $I_C = 10\text{ A}$ $I_B = 100\text{ mA}$			2 3	V V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 5\text{ A}$ $I_B = 20\text{ mA}$ $I_C = 10\text{ A}$ $I_B = 100\text{ mA}$			2.5 4	V V
h_{FE*}	DC Current Gain	$I_C = 3\text{ A}$ $V_{CE} = 3\text{ V}$ $I_C = 5\text{ A}$ $V_{CE} = 3\text{ V}$ $I_C = 10\text{ A}$ $V_{CE} = 3\text{ V}$	1000 750 100		20000	
V_F*	Parallel-diode Forward Voltage	$I_F = 5\text{ A}$ $I_F = 10\text{ A}$		1.3 1.8	2 4	V V
h_{fe}	Small Signal Current Gain	$I_C = 1\text{ A}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ MHz}$	20			

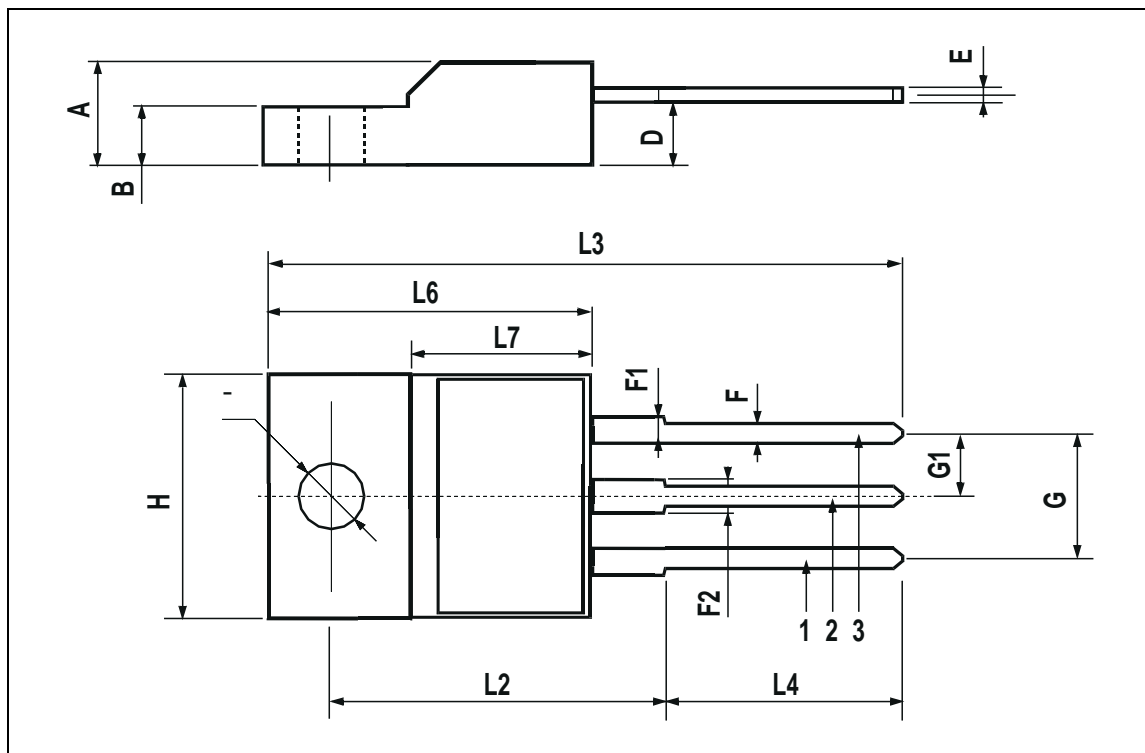
* Pulsed: Pulse duration = 300 μs , duty cycle 1.5 %
For PNP types voltage and current values are negative.

Safe Operating Area



TO-220FP 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	0.45		0.7	0.017		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
∅	3		3.2	0.118		0.126



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