

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- MONOLITHIC DARLINGTON CONFIGURATION
- COMPLEMENTARY PNP - NPN DEVICES
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE
- FULLY MOLDED ISOLATED PACKAGE
- 2000 V DC ISOLATION (U.L. COMPLIANT)

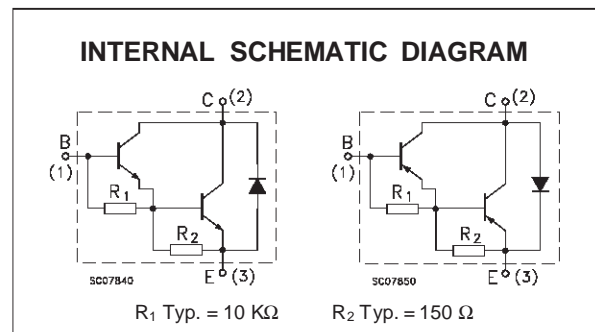
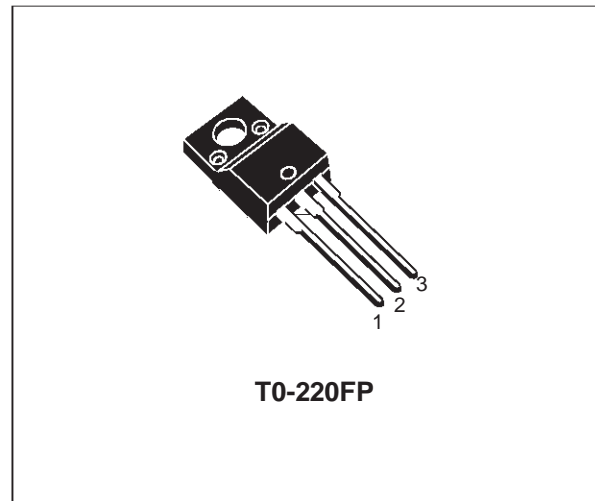
APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The BDW93CFP, is a silicon epitaxial-base NPN transistor in monolithic Darlington configuration and is mounted in TO-220FP fully molded isolated 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 | PNP | |
| 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 $T_c \leq 25^\circ C$ | 33 | | 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.

BDW93CFP / BDW94CFP

THERMAL DATA

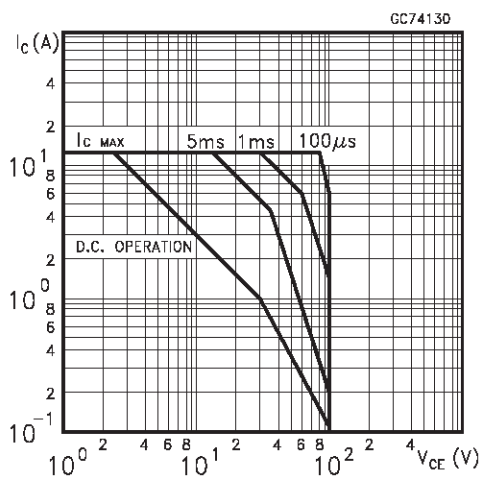
| | | | |
|-----------------------|----------------------------------|-----|------|
| R _{thj-case} | Thermal Resistance Junction-case | 3.8 | °C/W |
|-----------------------|----------------------------------|-----|------|

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C 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 °C | | | 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 _C = 10 A | | | 2 3 | V V |
| V _{BE(sat)*} | Base-Emitter Saturation Voltage | I _C = 5 A I _C = 10 A | | | 2.5 4 | V V |
| h _{FE*} | DC Current Gain | I _C = 3 A I _C = 5 A I _C = 10 A | | | 1000 750 100 | |
| 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 | 20 | | | |

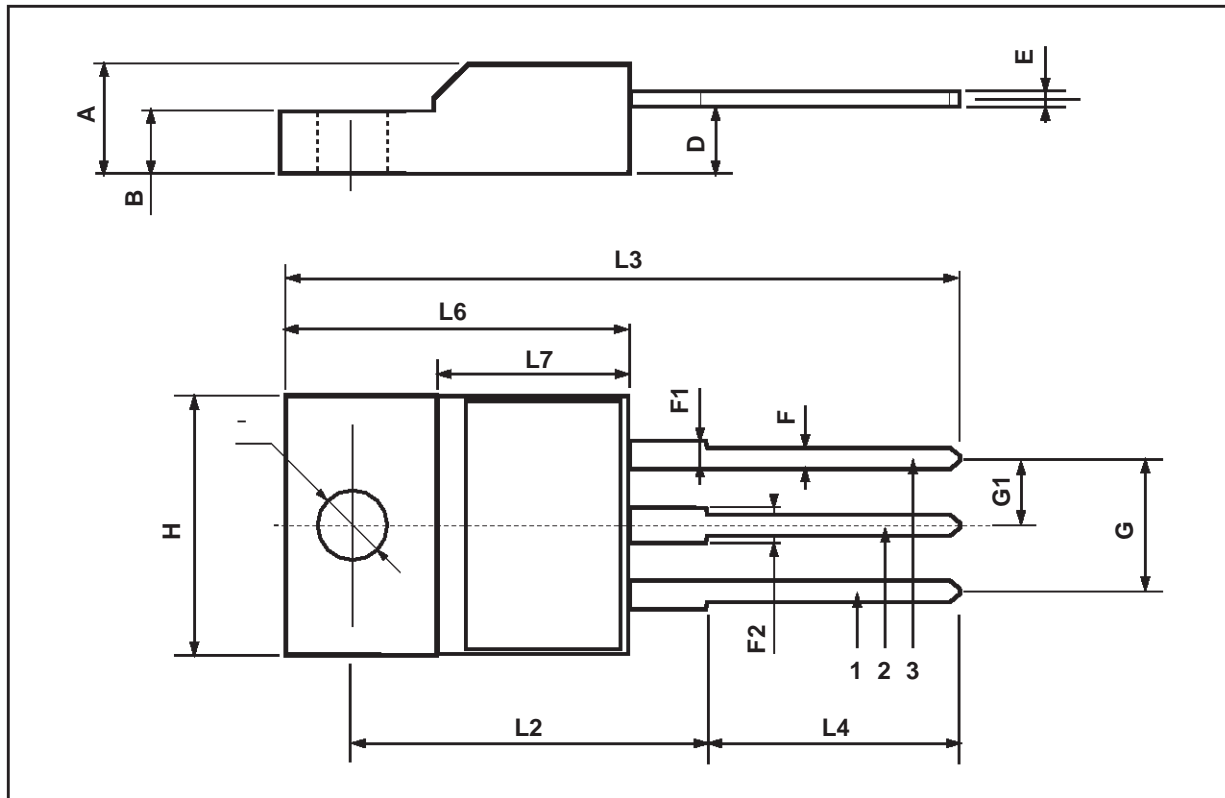
* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

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 |
| Ø | 3 | | 3.2 | 0.118 | | 0.126 |



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1998 SGS-THOMSON Microelectronics - Printed in Italy - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES
Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A