



BDX53B / BDX53C BDX54B / BDX54C

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES

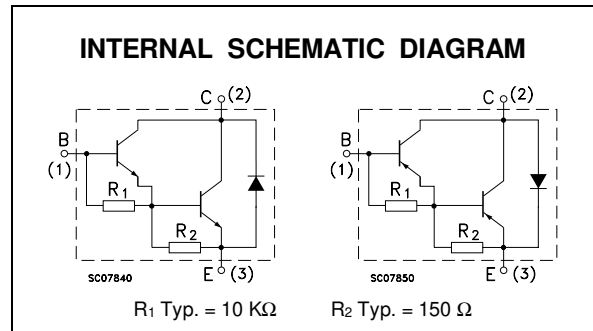
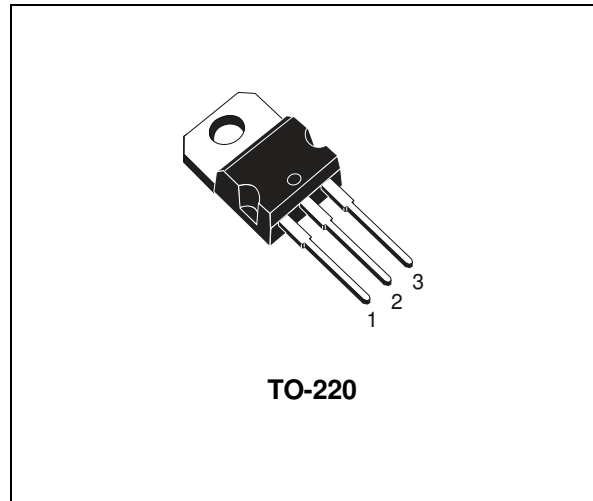
APPLICATIONS

- AUDIO AMPLIFIERS
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The BDX53B and BDX53C are silicon Epitaxial-Base NPN power transistors in monolithic Darlington configuration mounted in Jedec TO-220 plastic package. They are intended for use in hammer drivers, audio amplifiers and other medium power linear and switching applications.

The complementary PNP types are BDX54B and BDX54C respectively.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | Unit | |
|-----------|--|------------|--------|------------------|--------|
| | | NPN | BDX53B | | BDX53C |
| | | PNP | BDX54B | | BDX54C |
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 80 | 100 | V | |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 80 | 100 | V | |
| V_{EBO} | Emitter-base Voltage ($I_C = 0$) | 5 | | V | |
| I_C | Collector Current | 8 | | A | |
| I_{CM} | Collector Peak Current (repetitive) | 12 | | A | |
| I_B | Base Current | 0.2 | | A | |
| P_{tot} | Total Dissipation at $T_c \leq 25^\circ\text{C}$ | 60 | | W | |
| T_{stg} | Storage Temperature | -65 to 150 | | $^\circ\text{C}$ | |
| T_j | Max. Operating Junction Temperature | 150 | | $^\circ\text{C}$ | |

For PNP types voltage and current values are negative.

BDX53B - BDX53C - BDX54B - BDX54C

THERMAL DATA

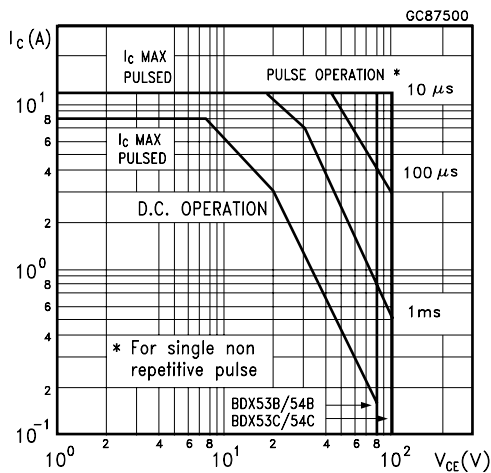
| | | | | |
|-----------------------|-------------------------------------|-----|------|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 2.08 | °C/W |
| R _{thj-amb} | Thermal Resistance Junction-ambient | Max | 70 | °C/W |

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

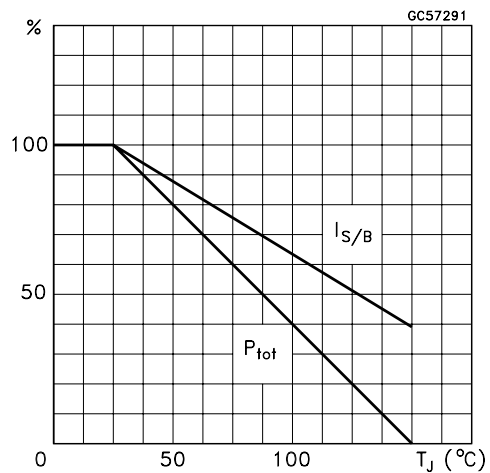
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------------|---|--|-----------|------------|------------|----------|
| I _{CBO} | Collector Cut-off Current (I _E = 0) | for BDX53B/54B V _{CB} = 80 V for BDX53C/54C V _{CB} = 100V | | | 0.2 0.2 | mA mA |
| I _{CEO} | Collector Cut-off Current (I _B = 0) | for BDX53B/54B V _{CE} = 40 V for BDX53C/54C V _{CE} = 50V | | | 0.5 0.5 | 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 BDX53B/54B for BDX53C/54C | 80 100 | | | V V |
| V _{CE(sat)*} | Collector-emitter Saturation Voltage | I _C = 3 A I _B = 12 mA | | | 2 | V |
| V _{BE(sat)*} | Base-emitter Saturation Voltage | I _C = 3 A I _B = 12 mA | | | 2.5 | V |
| h _{FE*} | DC Current Gain | I _C = 3 A V _{CE} = 3 V | 750 | | | |
| V _{F*} | Parallel-diode Forward Voltage | I _F = 3 A I _F = 8 A | | 1.8 2.5 | 2.5 | V V |

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

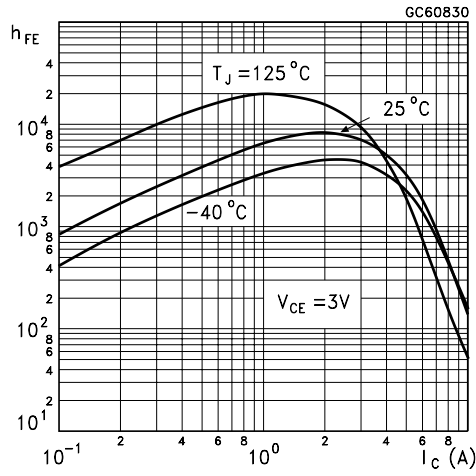
Safe Operating Area



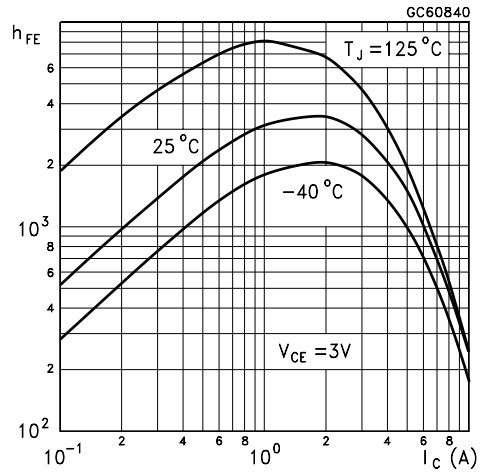
Derating Curve



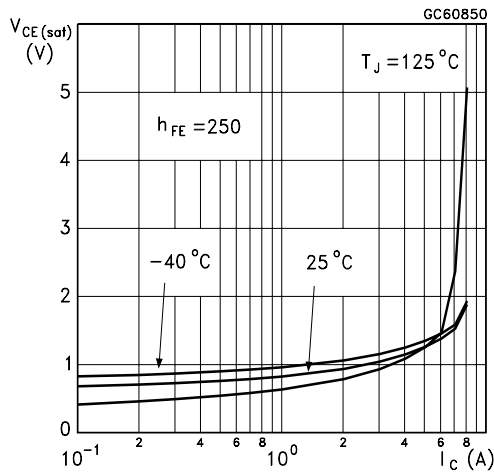
DC Current Gain (NPN type)



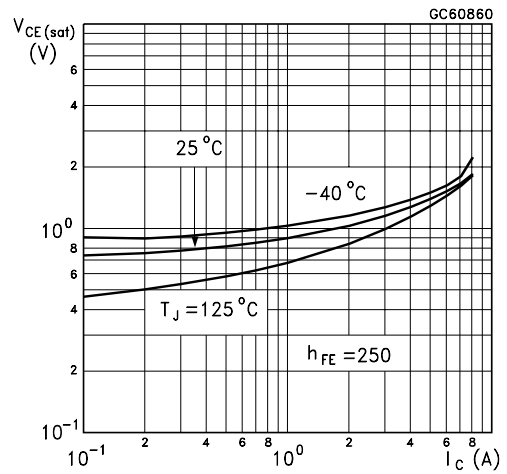
DC Current Gain (PNP type)



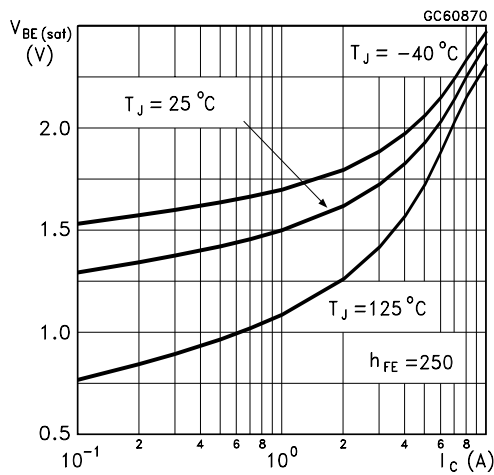
Collector Emitter Saturation Voltage (NPN type)



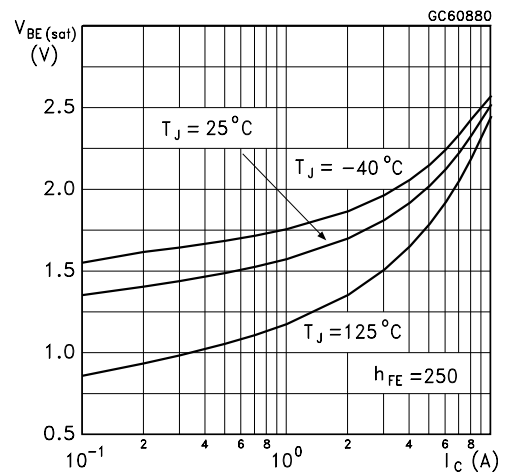
Collector Emitter Saturation Voltage (PNP type)



Base Emitter Saturation Voltage (NPN type)

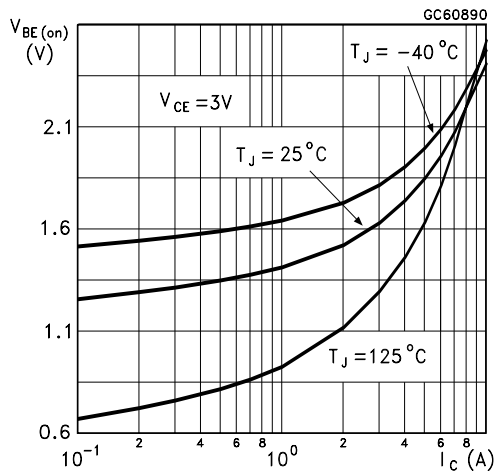


Base Emitter Saturation Voltage (PNP type)

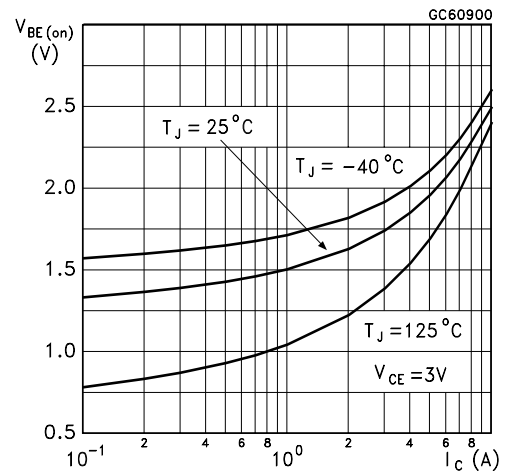


BDX53B - BDX53C - BDX54B - BDX54C

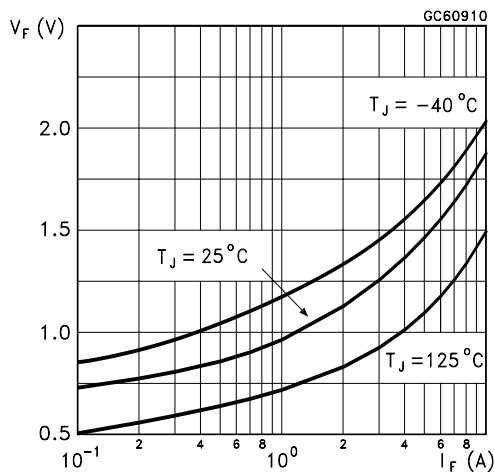
Base Emitter On Voltage (NPN type)



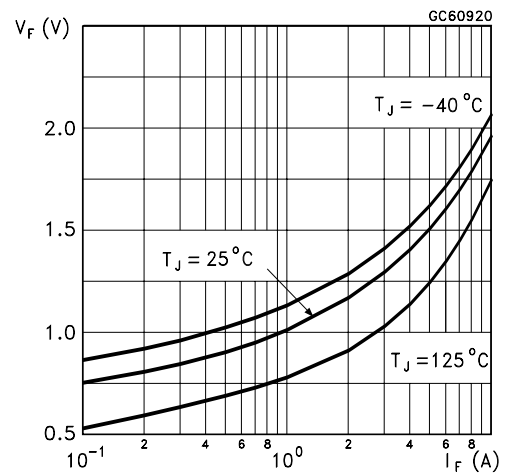
Base Emitter On Voltage (PNP type)



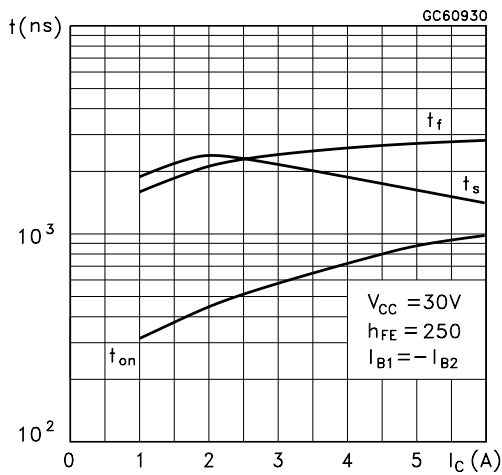
Freewheel Diode Forward Voltage (NPN type)



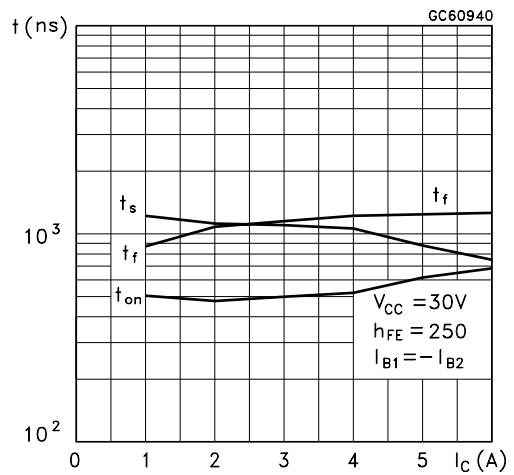
Freewheel Diode Forward Voltage (PNP type)



Switching Time Resistive Load (NPN type)

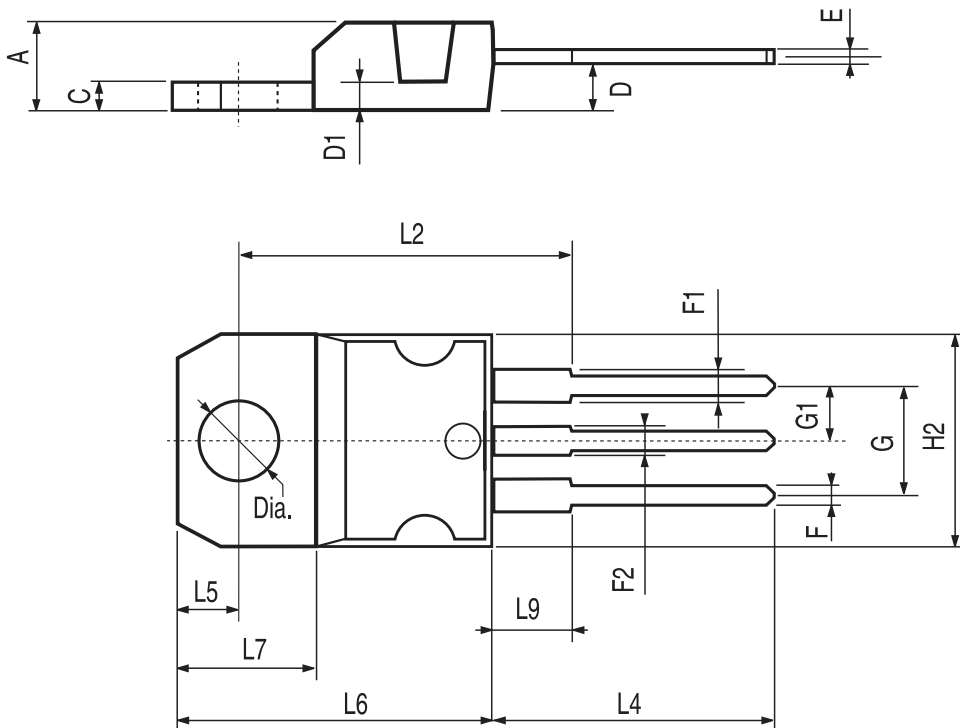


Switching Time resistive Load (PNP type)



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 |



P011C

Information furnished is believed to be accurate and reliable. However, STMicroelectronics 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 STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 1999 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco -
Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.