



# BDX87C

## SILICON NPN POWER DARLINGTON TRANSISTOR

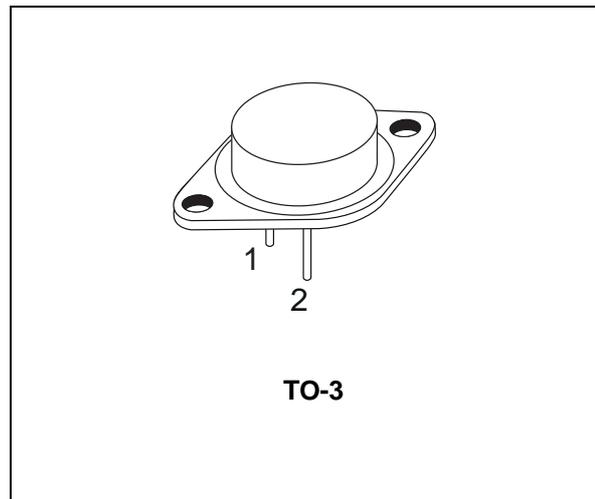
- MONOLITHIC DARLINGTON CONFIGURATION
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE

### APPLICATION

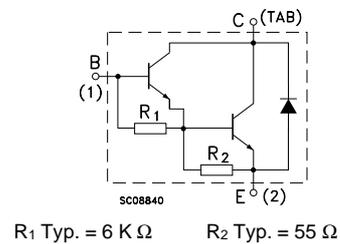
- GENERAL PURPOSE SWITCHING
- GENERAL PURPOSE AMPLIFIERS

### DESCRIPTION

The BDX87C is a silicon Epitaxial-Base NPN power transistor in monolithic Darlington configuration mounted in Jedec TO-3 metal case. It is intended for use in power linear and switching applications.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-base Voltage (I <sub>E</sub> = 0)	100	V
V <sub>CEO</sub>	Collector-emitter Voltage (I <sub>B</sub> = 0)	100	V
V <sub>EBO</sub>	Emitter-base Voltage (I <sub>C</sub> = 0)	5	V
I <sub>C</sub>	Collector Current	12	A
I <sub>CM</sub>	Collector Peak Current (repetitive)	18	A
I <sub>B</sub>	Base Current	0.2	A
P <sub>tot</sub>	Total Dissipation at T <sub>c</sub> ≤ 25 °C	120	W
T <sub>stg</sub>	Storage Temperature	-65 to 200	°C
T <sub>j</sub>	Max. Operating Junction Temperature	200	°C

## BDX87C

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.45	°C/W
-----------------------	----------------------------------	-----	------	------

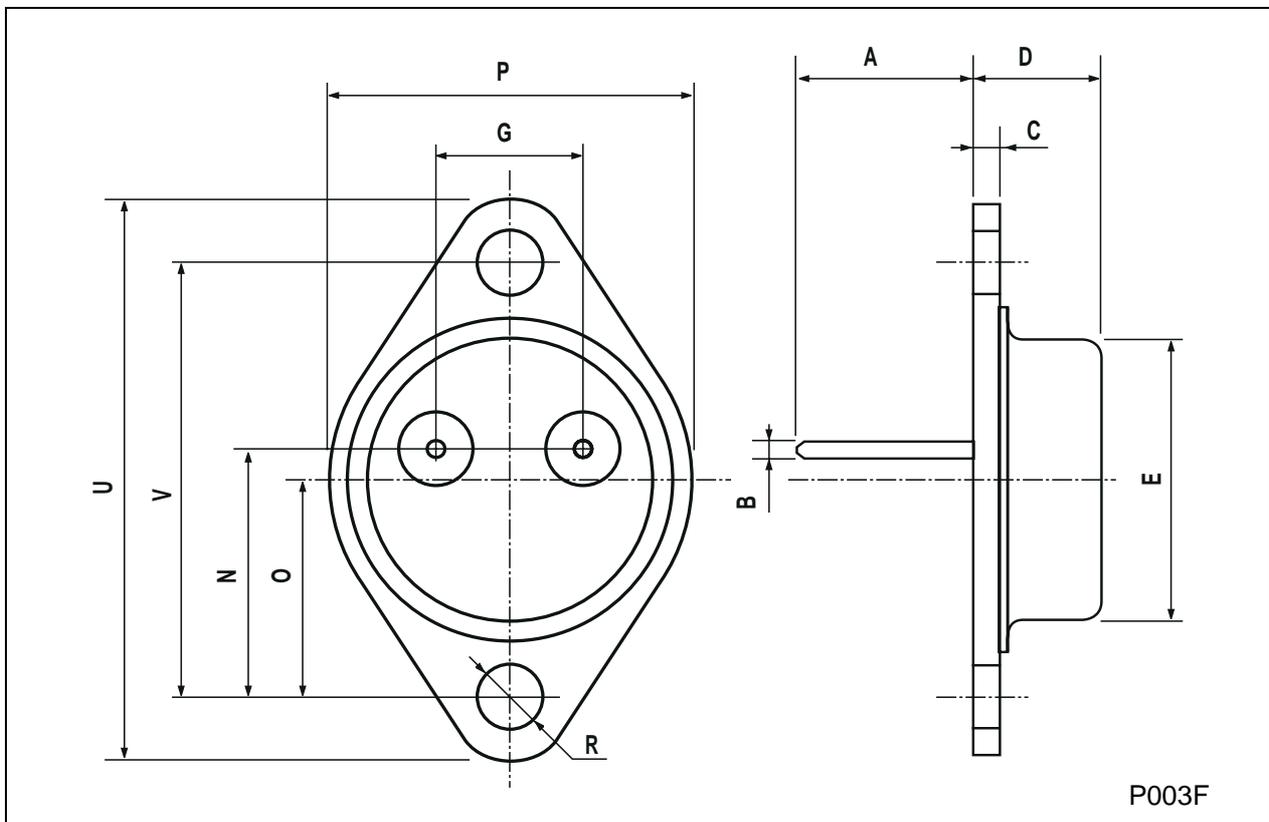
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 100 V V <sub>CB</sub> = 100 V      T <sub>case</sub> = 150 °C			0.5 5	mA mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 50 V			1	mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)</sub> *	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA	100			V
V <sub>CE(sat)</sub> *	Collector-emitter Saturation Voltage	I <sub>C</sub> = 6 A      I <sub>B</sub> = 24 mA I <sub>C</sub> = 12 A      I <sub>B</sub> = 120 mA			2 3	V V
V <sub>BE(sat)</sub> *	Base-emitter Saturation Voltage	I <sub>C</sub> = 12 A      I <sub>B</sub> = 120 mA			4	V
V <sub>BE</sub> *	Base-emitter Voltage	I <sub>C</sub> = 6 A      V <sub>CE</sub> = 3 V			2.8	V
h <sub>FE</sub> *	DC Current Gain	I <sub>C</sub> = 5 A      V <sub>CE</sub> = 3 V I <sub>C</sub> = 6 A      V <sub>CE</sub> = 3 V I <sub>C</sub> = 12 A      V <sub>CE</sub> = 3 V	1000 750 100		18000	
V <sub>F</sub>	Parallel-diode Forward Voltage	I <sub>F</sub> = 3 A I <sub>F</sub> = 8 A		2.5	1.8	V V
h <sub>fe</sub>	Small Signal Current Gain	I <sub>C</sub> = 5 A      V <sub>CE</sub> = 3 V f = 1MHz		25		

\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

**TO-3 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50		39.30	1.515		1.547
V	30.00		30.30	1.187		1.193



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>