

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

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

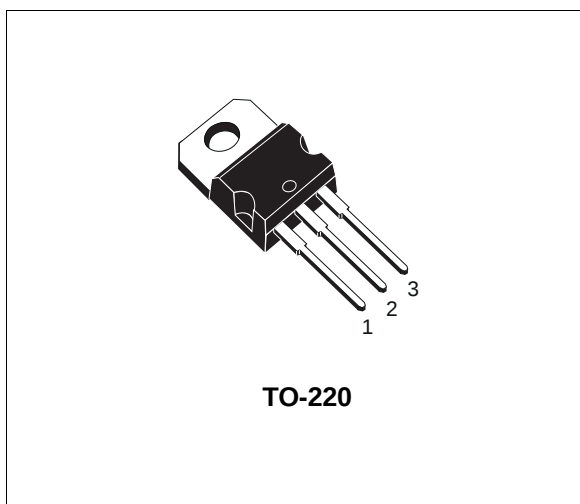
APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

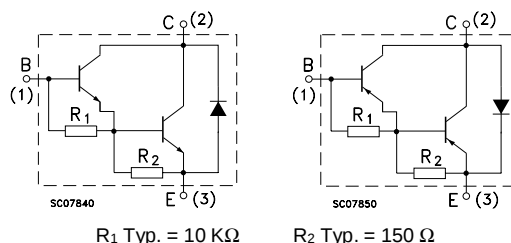
DESCRIPTION

The BDX53F is a silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. It is intended for use in power linear and switching applications.

The complementary PNP types is BDX54F.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	BDX53F	
		PNP	BDX54F	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)		160	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)		160	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)		5	V
I_C	Collector Current		8	A
I_{CM}	Collector Peak Current		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	$^\circ\text{C}$

BDX53F / BDX54F

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

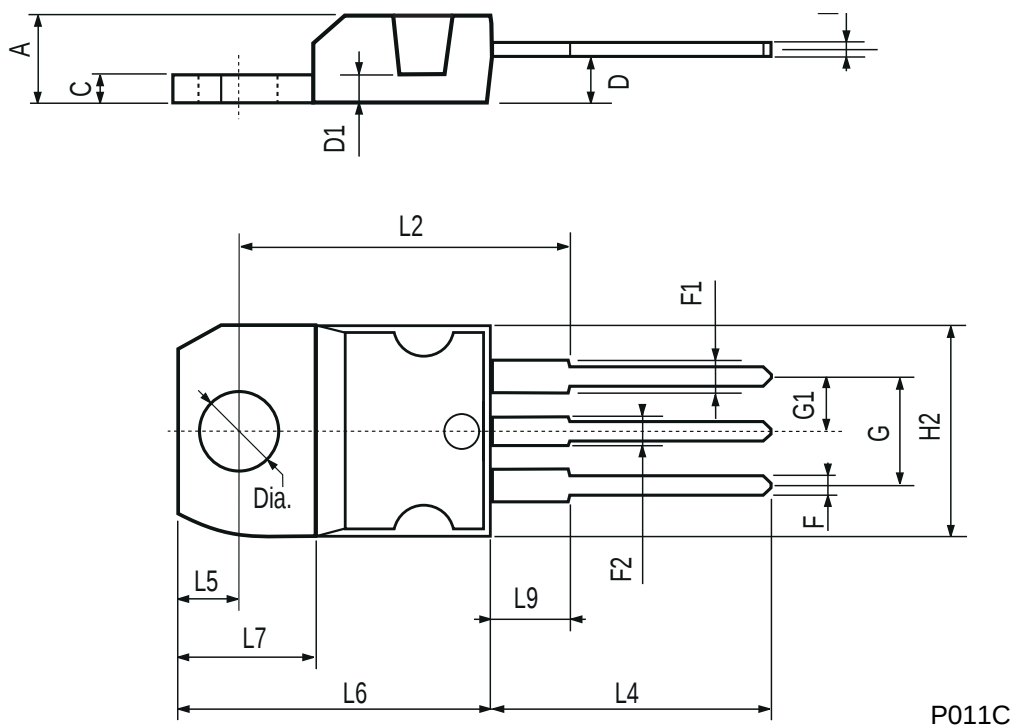
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CEO}	Collector Cut-off Current (I _E = 0)	V _{CB} = 80 V			0.5	mA
I _{CBO}	Collector Cut-off Current (I _B = 0)	V _{CB} = 160 V			0.2	mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V			5	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 50 mA	160			V
V _{CE(sat)*}	Collector-emitter Saturation Voltage	I _C = 2 A I _B = 10 mA			2	V
V _{BE(sat)*}	Base-emitter Saturation Voltage	I _C = 2 A I _B = 10 mA			2.5	V
h _{FE} *	DC Current Gain	I _C = 2 A V _{CE} = 5 V I _C = 3 A V _{CE} = 5 V	500 150			
V _F *	Parallel Diode Forward Voltage	I _F = 2 A			2.5	V
h _{fe} *	Small Signal Current Gain	I _C = 0.5 A V _{CE} = 2 V f = 1MHz		20		

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

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



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