

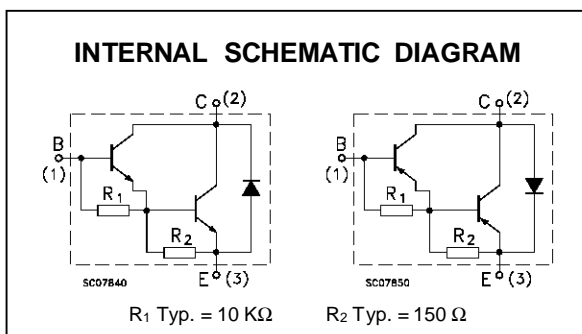
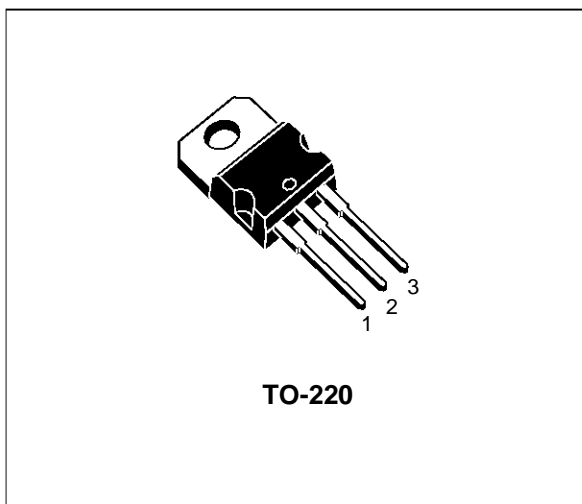
**COMPLEMENTARY SILICON POWER  
DARLINGTON TRANSISTORS**

- BDX53F AND BDX54F ARE SGS-THOMSON PREFERRED SALESTYPES

**DESCRIPTION**

The BDX53E, BDX53F are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. They are intended for use in power linear and switching applications.

The complementary PNP types are the BDX54E, BDX54FB respectively.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value			Unit
		NPN	BDX53E	BDX53F	
		PNP	BDX54E	BDX54F	
V <sub>CBO</sub>	Collector-Base Voltage (I <sub>E</sub> = 0)		140	160	V
V <sub>CEO</sub>	Collector-Emitter Voltage (I <sub>B</sub> = 0)		140	160	V
V <sub>EBO</sub>	Emitter-base Voltage (I <sub>C</sub> = 0)			5	V
I <sub>C</sub>	Collector Current			8	A
I <sub>CM</sub>	Collector Peak Current			12	A
I <sub>B</sub>	Base Current			0.2	A
P <sub>tot</sub>	Total Dissipation at T <sub>c</sub> ≤ 25 °C			60	W
T <sub>stg</sub>	Storage Temperature			-65 to 150	°C
T <sub>j</sub>	Max. Operating Junction Temperature			150	°C

## BDX53E/53F-BDX54E/54F

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	2.08	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	70	°C/W

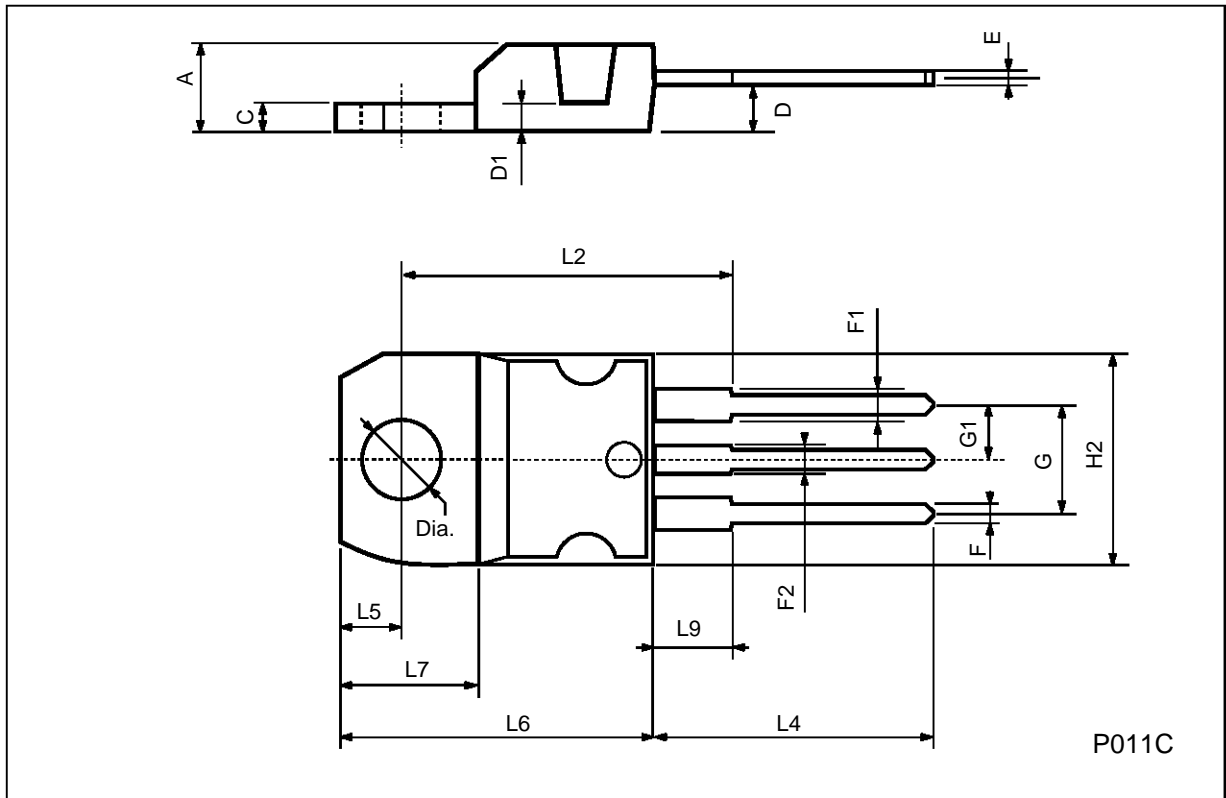
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>BDX53E/54E</b> V <sub>CB</sub> = 70 V for <b>BDX53F/54F</b> V <sub>CB</sub> = 80 V			0.5 0.5	mA mA
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	for <b>BDX53E/54E</b> V <sub>CB</sub> = 140 V for <b>BDX53E/54E</b> V <sub>CB</sub> = 160 V			0.2 0.2	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			5	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 50 mA for <b>BDX53E/54E</b> for <b>BDX53F/53F</b>	140 160			V V
V <sub>CE(sat)*</sub>	Collector-emitter Saturation Voltage	I <sub>C</sub> = 2 A I <sub>B</sub> = 10 mA			2	V
V <sub>BE(sat)*</sub>	Base-emitter Saturation Voltage	I <sub>C</sub> = 2 A I <sub>B</sub> = 10 mA			2.5	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 2 A V <sub>CE</sub> = 5 V I <sub>C</sub> = 3 A V <sub>CE</sub> = 5 V	500 150			
V <sub>F*</sub>	Parallel Diode Forward Voltage	I <sub>F</sub> = 2 A			2.5	V
h <sub>fe*</sub>	Small Signal Current Gain	I <sub>C</sub> = 0.5 A f = 1MHz V <sub>CE</sub> = 2 V		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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