BDX53F
BDX54F

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

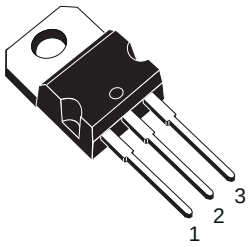
- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES
- MONOLITHIC DARLINGTON CONFIGURATION
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE

APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

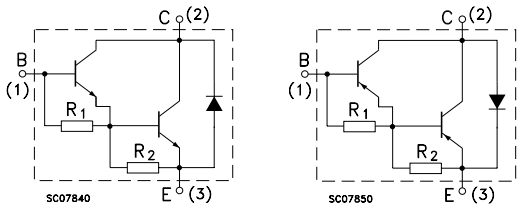
DESCRIPTION

The BDX53F is a silicon Epitaxial-Base NPN power transistor in monolithic Darlington configuration, mounted in Jedec TO-220 plastic package. It is intented for use in power linear and switching applications. The complementary PNP type is BDX54F.



TO-220

INTERNAL SCHEMATIC DIAGRAM



R_1 Typ. = 10 KΩ R_2 Typ. = 150 Ω

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 $T_c \leq 25\ ^oC$	60	W
T_{stg}	Storage Temperature	-65 to 150	^oC
T_j	Max. Operating Junction Temperature	150	^oC

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	2.08	$^oC/W$
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	70	$^oC/W$

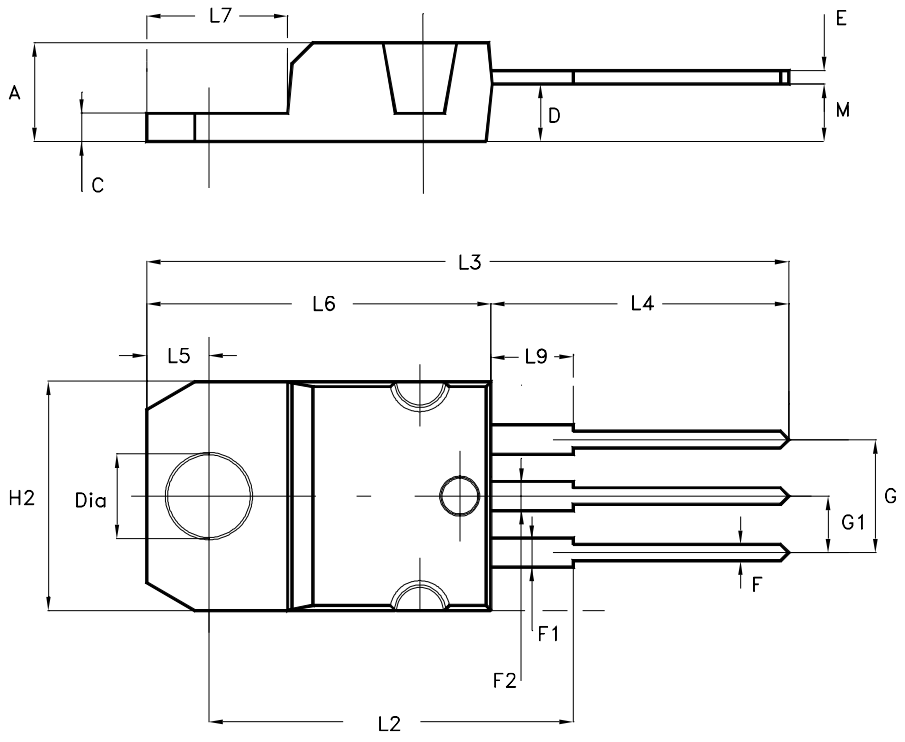
ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CEO}	Collector Cut-off Current (I_E = 0)	V_{CE} = 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 I_C = 3 A	V_{CE} = 5 V 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 f = 1MHz	V_{CE} = 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		0.052
D	2.40		2.72	0.094		0.107
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		0.202
G1	2.40		2.70	0.094		0.106
H2	10.00		10.40	0.394		0.409
L2		16.40			0.645	
L4	13.00		14.00	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.20		6.60	0.244		0.260
L9	3.50		3.93	0.137		0.154
M		2.60			0.102	
DIA.	3.75		3.85	0.147		0.151



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