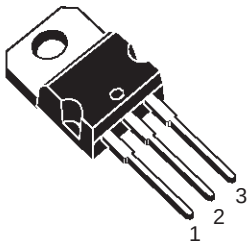
BDX33B BDX33C
BDX34B BDX34C

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

DESCRIPTION

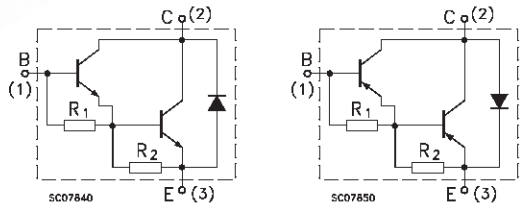
The BDX33B and BDX33C are silicon Epitaxial-Base NPN power transistors in monolithic Darlington configuration mounted in Jedec TO-220 plastic package. They are intented for use in power linear and switching applications.

The complementary PNP types are BDX34B and BDX34C respectively.



TO-220

INTERNAL SCHEMATIC DIAGRAM



R_1 Typ. = 10 KΩ R_2 Typ. = 150 Ω

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter				Unit
		NPN	BDX33B	BDX33C	
		PNP	BDX34B	BDX34C	
V_{CBO}	Collector-Base Voltage (I_E = 0)		80	100	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		80	100	V
I_C	Collector Current		10		A
I_{CM}	Collector Peak Current		15		A
I_B	Base Current		0.25		A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$		70		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

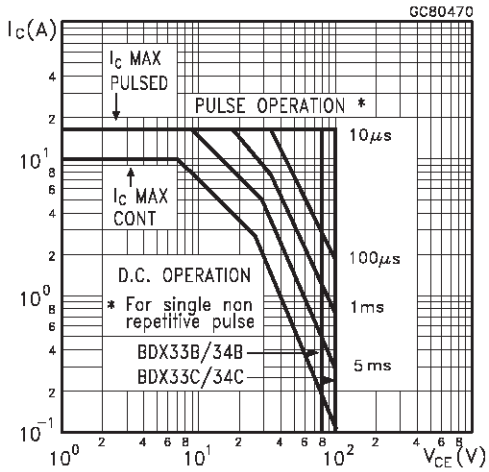
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	1.78	°C/W

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 **BDX33B/34B** V_{CB} = 80 V for **BDX33C/34C** V_{CB} = 100V T_{case} = 100 °C for **BDX33B/34B** V_{CB} = 80 V for **BDX33C/34C** V_{CB} = 100 V			0.2 0.2 5 5	mA mA mA mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	for **BDX33B/34B** V_{CE} = 40 V for **BDX33C/34C** V_{CE} = 50V T_{case} = 100 °C for **BDX33B/34B** V_{CE} = 40 V for **BDX33C/34C** V_{CE} = 50 V			0.5 0.5 10 10	mA mA mA 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 =100 mA for **BDX33B/34B** for **BDX33C/34C**	80 100			V V
$V_{CER(sus)}$*	Collector-emitter Sustaining Voltage (R_{BE} =100 Ω)	I_C = 100 mA for **BDX33B/34B** for **BDX33C/34C**	80 100			V V
$V_{CEV(sus)}$*	Collector-emitter Sustaining Voltage (V_{BE} =-1.5 V)	I_C = 100 mA for **BDX33B/34B** for **BDX33C/34C**	80 100			V V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 3 A I_B = 6 mA			2.5	V
V_{BE}*	Base-emitter Voltage	I_C = 3 A V_{CE} = 3 V			2.5	V
h_{FE}*	DC Current Gain	I_C = 3 A V_{CE} = 3 V	750			V
V_F*	Parallel-Diode Forward Voltage	I_F = 8 A			4	V
h_{fe}	Small Signal Current Gain	I_C = 1 A V_{CE} = 5 V f = 1MHz	100			

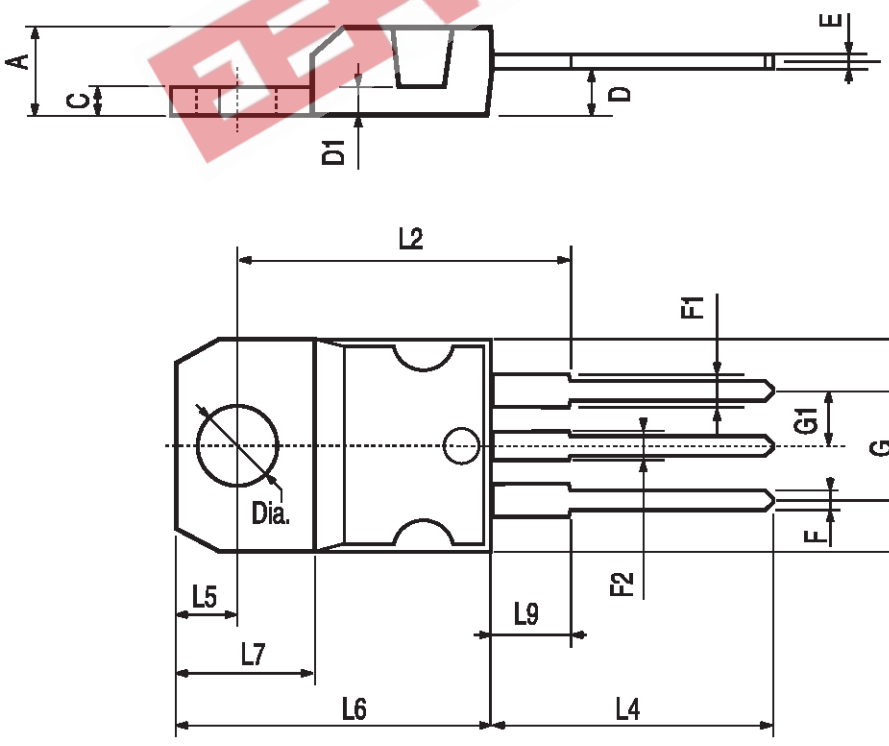
* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

Safe Operating Area



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