

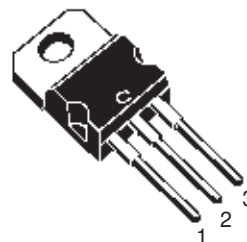


BDX33B BDX33C BDX34B BDX34C

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

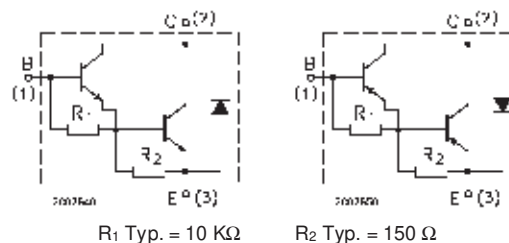
DESCRIPTION

The BDX33B and BDX33C are silicon Epitaxial-Base NPN power transistors in monolithic Darlington configuration mounted in Jedec TO-220 plastic package. They are intended for use in power linear and switching applications. The complementary PNP types are BDX34B and BDX34C respectively.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN	BDX33B	BDX33C	Unit
		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 $T_c \leq 25^\circ\text{C}$		70		W
T_{stg}	Storage Temperature		-65 to 150		$^\circ\text{C}$
T_j	Max. Operating Junction Temperature		150		$^\circ\text{C}$

For PNP types voltage and current values are negative.

BDX33B BDX33C BDX34B BDX34C

THERMAL DATA

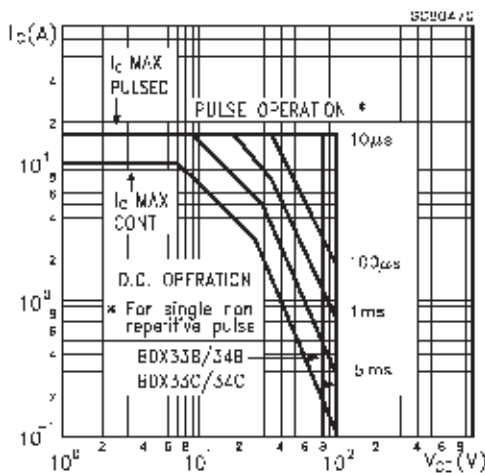
$R_{thj-case}$	Thermal Resistance Junction-case	1.78	$^{\circ}\text{C/W}$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	for BDX33B/34B $V_{CB} = 80\text{ V}$ for BDX33C/34C $V_{CB} = 100\text{ V}$ $T_{case} = 100^{\circ}\text{C}$ for BDX33B/34B $V_{CB} = 80\text{ V}$ for BDX33C/34C $V_{CB} = 100\text{ V}$			0.2 0.2 5 5	mA mA mA mA
I_{CEO}	Collector Cut-off Current ($I_B = 0$)	for BDX33B/34B $V_{CE} = 40\text{ V}$ for BDX33C/34C $V_{CE} = 50\text{ V}$ $T_{case} = 100^{\circ}\text{C}$ for BDX33B/34B $V_{CE} = 40\text{ V}$ for BDX33C/34C $V_{CE} = 50\text{ V}$			0.5 0.5 10 10	mA mA mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			5	mA
$V_{CE(sus)}^*$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100\text{ mA}$ for BDX33B/34B for BDX33C/34C	80 100			V V
$V_{CER(sus)}^*$	Collector-emitter Sustaining Voltage ($R_{BE} = 100\ \Omega$)	$I_C = 100\text{ mA}$ for BDX33B/34B for BDX33C/34C	80 100			V V
$V_{CEV(sus)}^*$	Collector-emitter Sustaining Voltage ($V_{BE} = -1.5\text{ V}$)	$I_C = 100\text{ mA}$ for BDX33B/34B for BDX33C/34C	80 100			V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 3\text{ A}$ $I_B = 6\text{ mA}$			2.5	V
V_{BE}^*	Base-emitter Voltage	$I_C = 3\text{ A}$ $V_{CE} = 3\text{ V}$			2.5	V
h_{FE}^*	DC Current Gain	$I_C = 3\text{ A}$ $V_{CE} = 3\text{ V}$	750			V
V_F^*	Parallel-Diode Forward Voltage	$I_F = 8\text{ A}$			4	V
h_{fe}	Small Signal Current Gain	$I_C = 1\text{ A}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ MHz}$	100			

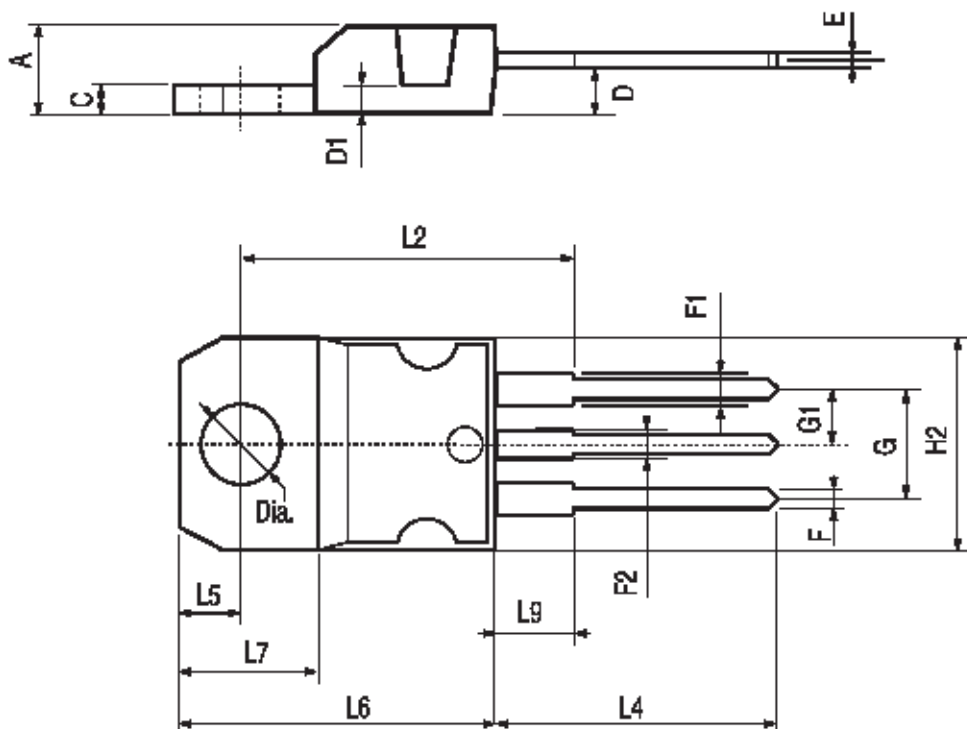
* Pulsed: Pulse duration = 300 μs , duty cycle 1.5 %
For PNP types voltage and current values are negative.

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



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