



PNP BDX45 – BDX46 – BDX47
NPN BDX42 – BDX43– BDX44

SILICON PLANAR DARLINGTON TRANSISTORS

The BDX45, BDX46 and BDX47 are silicon PNP planar Darlington transistors and are mounted in Jedec TO-126 plastic package.
They are intended for use in industrial switching applications.

The complementary NPN types are the BDX42, BDX43 and BDX44 respectively.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
- V_{CBO}	Collector-Base Voltage	BDX45	60	V
		BDX46	80	
		BDX47	90	
- V_{CER}	Collector-Emitter Voltage	BDX45	45	V
		BDX46	60	
		BDX47	80	
- V_{EBO}	Emitter-Base Voltage	BDX45	5	V
		BDX46		
		BDX47		
- I_C	Collector Current	- I_C	BDX45	A
			BDX46	
			BDX47	
		- I_{CM}	BDX45	
			BDX46	
			BDX47	
- I_B	Base Current		BDX45	0.1
			BDX46	
			BDX47	
P_T	Power Dissipation	@ $T_C = 25^\circ$	BDX45	1.25
			BDX46	
			BDX47	
T_J	Junction Temperature		BDX45	150
			BDX46	
			BDX47	
T_S	Storage Temperature		BDX45	-65 to +150
			BDX46	
			BDX47	

PNP BDX45 – BDX46 – BDX47 NPN BDX42 – BDX43– BDX44

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to Ambient	100	K/W
R_{thJ-mb}	Thermal Resistance, Junction to Mounting base	BDX45	
		BDX46	
		BDX47	
		BDX45	
		BDX46	
		BDX47	

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit
- I_{CES}	Collector cut-off current	$V_{BE} = 0 ; -V_{CE} = 45V$	BDX45	-	-	10
		$V_{BE} = 0 ; -V_{CE} = 60V$	BDX46	-	-	10
		$V_{BE} = 0 ; -V_{CE} = 80V$	BDX47	-	-	10
- I_{EBO}	Emitter cut-off current	$I_C = 0 ; V_{EB} = 4V$	BDX45	-	-	10
			BDX46	-	-	10
			BDX47	-	-	10

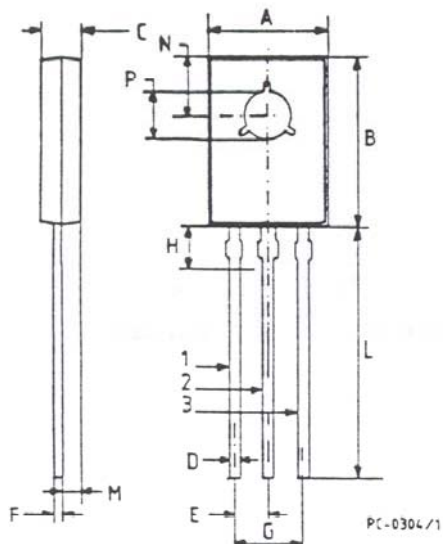
- $V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$-I_C=500 \text{ mA}, -I_B=0.5 \text{ mA}$	BDX45	-	-	1.3	V
			BDX46	-	-	1.3	
			BDX47	-	-	1.3	
		$-I_C=1.0 \text{ A}, -I_B=1.0 \text{ mA}$	BDX46	-	-	1.6	
			BDX45	-	-	1.6	
		$-I_C=1.0 \text{ A}, -I_B=4.0 \text{ mA}$	BDX47	-	-	1.6	
			BDX45	-	-	1.3	
		$-I_C=500 \text{ mA}, -I_B=0.5 \text{ mA}$ $T_J=150^\circ\text{C}$	BDX46	-	-	1.3	
			BDX47	-	-	1.3	
			BDX45	-	-	1.8	
		$-I_C=1.0 \text{ A}, -I_B=1.0 \text{ mA}$ $T_J=150^\circ\text{C}$	BDX46	-	-	1.6	
			BDX45	-	-	1.6	
- $V_{BE(SAT)}$	Base-Emitter saturation Voltage (*)	$-I_C=500 \text{ mA}, -I_B=0.5 \text{ mA}$	BDX45	-	-	1.9	V
			BDX46	-	-	1.9	
			BDX47	-	-	1.9	
		$-I_C=1.0 \text{ A}, -I_B=1.0 \text{ mA}$	BDX46	-	-	2.2	
			BDX45	-	-	2.2	
		$-I_C=1.0 \text{ A}, -I_B=4.0 \text{ mA}$	BDX47	-	-	2.2	
h_{FE}	DC Current Gain	$-V_{CE}=10.0 \text{ V}, -I_C=150 \text{ mA}$	BDX45	1000	-	-	-
			BDX46	1000	-	-	
			BDX47	1000	-	-	
		$-V_{CE}=10.0 \text{ V}, -I_C=500 \text{ mA}$	BDX45	2000	-	-	
			BDX46	2000	-	-	
			BDX47	2000	-	-	

PNP BDX45 – BDX46 – BDX47 NPN BDX42 – BDX43– BDX44

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit
h_{fe}	Small Signal Current Gain	$-V_{CE}=5.0\text{ V}$, $-I_C=500\text{ mA}$, $f=35\text{ MHz}$	BDX45 BDX46 BDX47	- 10 10 10	- - -	-
t_{on}	Turn-on time	$-I_C=500\text{ mA}$, $-I_{B(on)} = I_{B(off)}=0.5\text{ mA}$	BDX45 BDX46 BDX47	- 400 400 400	- - -	ns
t_{off}	Turn-off time		BDX45 BDX46 BDX47	- 1500 1500 1500	- - -	
t_{on}	Turn-on time		BDX45 BDX46 BDX47	- 400 400 400	- - -	ns
t_{off}	Turn-off time	$-I_C=1\text{ A}$, $-I_{B(on)} = I_{B(off)}=1.0\text{ mA}$	BDX45 BDX46 BDX47	- 1500 1500 1500	- - -	

MECHANICAL DATA CASE TO-126

	DIMENSIONS			
	mm		inches	
	min	max	min	max
A	7.4	7.8	0.295	0.307
B	10.5	10.8	0.413	0.425
C	2.4	2.7	0.094	0.106
D	0.7	0.9	0.027	0.035
E	2.2 typ.		0.087 typ.	
F	0.49	0.75	0.019	0.029
G	4.4 typ.		0.173 typ.	
H	2.54 typ.		0.100 typ.	
L	15.7 typ.		0.618 typ.	
M	1.2 typ.		0.047 typ.	
N	3.8 typ.		0.149 typ.	
P	3.0	3.2	0.118	0.126



Pin 1 :	Emitter
Pin 2 :	Collector
Case :	Base