BD644/646/648/650/652

SILICON DARLINGTON POWER TRANSISTORS

PNP epitaxial-base transistors in a monolithic Darlington circuit and housed in a TO-220 enveloppe. They are intended for output stages in audio equipment, general amplifiers, and analogue switching application.

NPN complements are BD643, BD645, BD647, BD649 and BD651

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
V_{CBO}	Collector-Base Voltage	**BD644**	45	V
		BD646	60	
		BD648	80	
		BD650	100	
		BD652	120	
V_{CEO}	Collector-EmitterVoltage	**BD644**	45	V
		BD646	60	
		BD648	80	
		BD650	100	
		BD652	120	
I_C	Collector Current	**BD644 BD646 BD648 BD650 BD652**	8	A
I_{CM}	Collector Peak Current	**BD644 BD646 BD648 BD650 BD652**	12	A

Symbol	Ratings			Value	Unit
I_B	Base Current		**BD644 BD646 BD648 BD650 BD652**	150	mA
P_T	Power Dissipation	@ T_{mb} < 25°	**BD644 BD646 BD648 BD650 BD652**	62.5	Watts
T_J T_s	Junction Storage Temperature		**BD644 BD646 BD648 BD650 BD652**	150 -65 to +150	°C

Limiting values in accordance with the Absolute Maximum System (IEC 134)

THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
R_{thJ-MB}	From junction to mounting base	**BD644 BD646 BD648 BD650 BD652**	2	K/W
R_{thJ-A}	From junction to ambient in free air	**BD644 BD646 BD648 BD650 BD652**	70	K/W

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Mx	Unit
I_{CBO}	Collector Cutoff Current	I_E=0,V_{CB} =V_{CEO}MAX	**BD644 BD646 BD648 BD650 BD652**	-	-	0.1	mA
		I_E=0,V_{CB} =1/2 V_{CBO}MAX, T_J=150°C	**BD644 BD646 BD648 BD650 BD652**	-	-	1	mA
I_{CEO}	Collector Cutoff Current	I_E=0, V_{CE} =1/2 V_{CEO}MAX	**BD644 BD646 BD648 BD650 BD652**	-	-	0.2	mA
I_{EBO}	Emitter Cutoff Current	V_{EB}=5 V, I_C=0	**BD644 BD646 BD648 BD650 BD652**	-	-	5.0	mA
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	I_C=4 A, I_B=16 mA	**BD644**	-	-	2	V
			BD646	-	-	-	
			BD648	-	-	-	
			BD650	-	-	-	
			BD652	-	-	-	
		I_C=3 A, I_B=12 mA	**BD644**	-	-	-	
			BD646	-	-	2	
			BD648	-	-	2	
			BD650	-	-	2	
			BD652	-	-	2	
		I_C=5 A, I_B=50 mA	**BD644**	-	-	2.5	
			BD646	-	-	2.5	
			BD648	-	-	2.5	
			BD650	-	-	2.5	
			BD652	-	-	2.5	
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage (*)	I_C=12 A, I_B=120 mA	**BD644 BD646 BD648 BD650 BD652**	-	-	3	V

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Symbol	Ratings			Value			Unit
V_{BE}	Base-Emitter Voltage (*)	I_C=4 A, V_{CE}=3 V	**BD644**	-	-	2.5	V
			BD646	-	-	-	
			BD648	-	-	-	
			BD650	-	-	-	
			BD652	-	-	-	
		I_C=3 A, V_{CE}=3 V	**BD644**	-	-	-	
			BD646	-	-	2.5	
			BD648	-	-	2.5	
			BD650	-	-	2.5	
			BD652	-	-	2.5	
h_{FE}	DC Current Gain (*)	V_{CE}=3.0 V, I_C=0.5 A	**BD644**	-	2700	-	-
			BD646	-		-	
			BD648	-		-	
			BD650	-		-	
			BD652	-		-	
		V_{CE}=3.0 V, I_C=4 A	**BD644**	750	-	-	
			BD646	-	-	-	
			BD648	-	-	-	
			BD650	-	-	-	
			BD652	-	-	-	
		V_{CE}=3.0 V, I_C=3 A	**BD644**	-	-	-	
			BD646	750	-	-	
			BD648		-	-	
			BD650		-	-	
			BD652		-	-	
		V_{CE}=3.0 V, I_C=8 A	**BD644**	-	200	-	
			BD646	-		-	
			BD648	-		-	
			BD650	-		-	
			BD652	-		-	
h_{fe}	Small Signal Current Gain	V_{CE}=3.0 V, I_C=4 A, f=1MHz	**BD644**	10	-	-	
			BD646	-	-	-	
			BD648	-	-	-	
			BD650	-	-	-	
			BD652	-	-	-	
		V_{CE}=3.0 V, I_C=3 A, f=1MHz	**BD644**	-	-	-	
			BD646	10	-	-	
			BD648	10	-	-	
			BD650	10	-	-	
			BD652	10	-	-	

(*) Pulse Width ≈ 300 μs, Duty Cycle ∠ 2.0%

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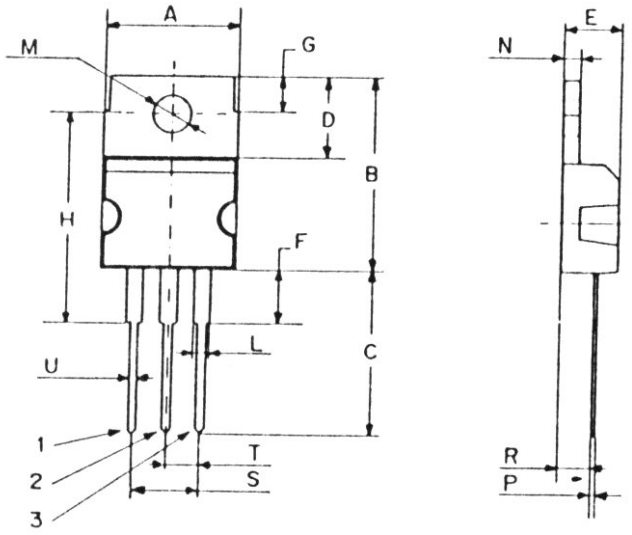
MECHANICAL DATA CASE TO-220

DIMENSIONS		
	mm	inches
A	9,86	0,39
B	15,73	0,62
C	13,37	0,52
D	6,67	0,26
E	4,44	0,17
F	4,21	0,16
G	2,99	0,11
H	17,21	0,68
L	1,29	0,05
M	3,6	0,14
N	1,36	0,05
P	0,46	0,02
R	2,1	0,08
S	5	0,19
T	2,52	0,098
U	0,79	0,03



Pin 1 :	Anode 1
Pin 2 :	Anode 2
Pin 3 :	Gate