COMSET SEMICONDUCTORS

BD644/646/648/650/652

SILICON DARLINGTON POWER TRANSISTORS

PNP epitaxial-base transistors in a monolithic Dalrington 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-Emitter Voltage	**BD644**	45	V
		BD646	60	
		BD648	80	
		BD650	100	
		BD652	120	
$-V_{EBO}$	Emitter-Base Voltage	**BD644**	5	V
		BD646		
		BD648		
		BD650		
		BD652		
$-I_C$	Collector Current	**BD644**	8	A
		BD646		
		BD648		
		BD650		
		BD652		
$-I_{CM}$	Collector Peak Current	**BD644**	12	A
		BD646		
		BD648		
		BD650		
		BD652		

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

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**	2	K/W
		BD646		
		BD648		
		BD650		
		BD652		
R_{thJ-A}	From junction to ambient in free air	**BD644**	70	K/W
		BD646		
		BD648		
		BD650		
		BD652		

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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**	-	-	0.1	mA
			BD646				
			BD648				
			BD650				
			BD652				
		$-I_E$=0,$-V_{CB}$ =1/2 $-V_{CBO}$MAX, T_J=150°C	**BD644**	-	-	1	mA
			BD646				
			BD648				
			BD650				
			BD652				
$-I_{CEO}$	Collector Cutoff Current	$-I_E$=0, $-V_{CE}$ =1/2 $-V_{CEO}$MAX	**BD644**	-	-	0.2	mA
			BD646				
			BD648				
			BD650				
			BD652				
$-I_{EBO}$	Emitter Cutoff Current	$-V_{EB}$=5 V, $-I_C$=0	**BD644**	-	-	5.0	mA
			BD646				
			BD648				
			BD650				
			BD652				
$-V_{CE(SAT)}$	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, $-I_B$=50 mA	**BD644**	-	-	3	V
			BD646				
			BD648				
			BD650				
			BD652				

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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	-	-	
t_{on}	turn-on time	$-I_C$=3 A, $-I_{Bon}$= I_{Boff}=12 mA	**All types**	-	1	-	µs
t_{off}	turn-off time			-	5	-	µs

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

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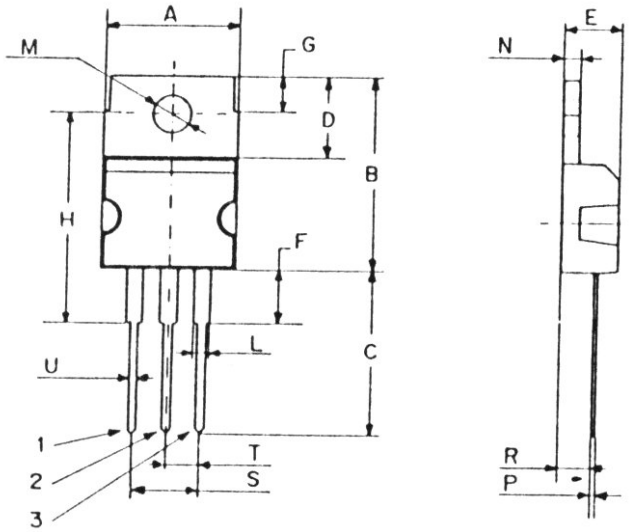
MECHANICAL DATA CASE TO-220

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	2,51	0,098
U	0,79	0,03



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