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NPN Silicon Darlington Transistors

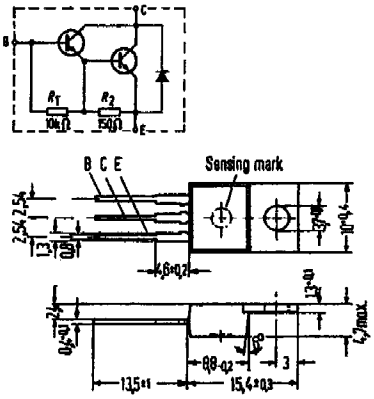
BD 643
BD 645
BD 647
BD 649

Epibase power darlington transistors (62.5W)

BD 643, BD 645, BD 647, and BD 649 are monolithic NPN silicon epibase power darlington transistors with diode and resistors in a TO 220 AB plastic package (TOP-66). The collectors of the two transistors are electrically connected to the metallic mounting area. These darlington transistors for AF applications are outstanding for particularly high current gain. Together with BD 644, BD 646, BD 648, and BD 650, they are particularly suitable for use as complementary AF push-pull output stages.

Type
BD 643
BD 643/BD 644
BD 645
BD 645/BD 646
BD 647
BD 647/BD 648
BD 649
BD 649/BD 650
Insulating nipple
Mica washer
Spring washer
A 3 DIN 137

Change in dimensional drawings in preparation.



Approx. weight 18 g. Dimensions in mm

Maximum ratings		BD 643	BD 645	BD 647	BD 649	
Collector-emitter voltage	V_{CEO}	45	60	80	100	V
Collector-base voltage	V_{CBO}	45	60	80	100	V
Base-emitter voltage	V_{EBO}	5	5	5	5	V
Collector current	I_C	8	8	8	8	A
Collector-peak current (t < 10 ms)	I_{CM}	12	12	12	12	A
Base current	I_B	150	150	150	150	mA
Storage temperature range	T_{stg}	−55 to +150				°C
Junction temperature	T_j	150	150	150	150	°C
Total power dissipation ($T_{case} \leq 25$ °C, $V_{CE} \leq 10$ V)	P_{tot}	62,5	62,5	62,5	62,5	W
Thermal resistance						
Junction to ambient air	R_{thJA}	≤80	≤80	≤80	≤80	K/W
Junction to case[1]	R_{thJC}	≤2	≤2	≤2	≤2	K/W

Static characteristics (T_{amb} = 25 °C)

		BD 643	BD 645	BD 647	BD 649	
Collector cutoff current						
($V_{CB} = V_{CBmax}$)	I_{CBO}	<0.2	<0.2	<0.2	<0.2	mA
($V_{CB} = V_{CBmax}$; T_{amb} = 100 °C)	I_{CBO}	<2	<2	<2	<2	mA
Collector cutoff current						
($V_{CE} = 0.5\ V_{CEmax}$)	I_{CEO}	<0.5	<0.5	<0.5	<0.5	mA
Emitter cutoff current						
(V_{EB} = 5 V)	I_{EBO}	<5	<5	<5	<5	mA
Collector-emitter breakdown						
voltage (I_C = 100 mA)[1]	$V_{(BR)CEO}$	>45	>60	<80	>100	V
Collector-base breakdown						
voltage (I_E = 5 mA)	$V_{(BR)CBO}$	>45	>60	>80	>100	V
Emitter-base breakdown						
voltage (I_E = 2 mA)	$V_{(BR)EBO}$	>5	>5	>5	>5	V
DC current gain						
(I_C = 0.5 A, V_{CE} = 3 V)	h_{FE}	1500	1500	1500	1500	–
(I_C = 3 A, V_{CE} = 3 V)	h_{FE}	>750	>750	>750	>750	–
(I_C = 6 A, V_{CE} = 3 V)	h_{FE}	750	750	750	750	–
Base-emitter forward voltage						
(I_C = 3 A, V_{CE} = 3 V)	V_{BE}	<2.5	<2.5	<2.5	<2.5	V
Collector-emitter saturation						
voltage						
(I_C = 3 A, I_B = 12 mA)	V_{CEsat}	<2	<2	<2	<2	V
Forward voltage of the protective						
diode at I_F = 3 A	V_F	1.8	1.8	1.8	1.8	V

Dynamic characteristics (T_{amb} = 25 °C)

Transition frequency						
(I_C = 3 A, V_{CE} = 3 V, f = 1 MHz)	f_T	7 (>1)	7 (>1)	7 (>1)	7 (>1)	MHz
Cutoff frequency in common						
emitter configuration						
(I_C = 3 A; V_{CE} = 3 V)	f_{hfe}	60	60	60	60	kHz