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T-33-29

NPN Silicon Darlington Transistors

BD 861

BD 863

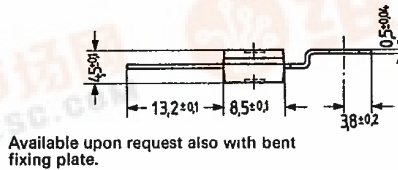
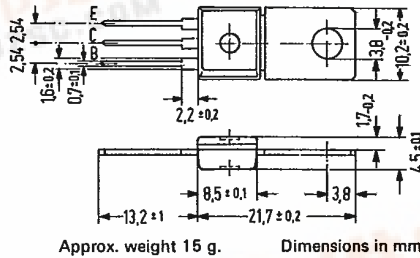
BD 865

SIEMENS AKTIENGESELLSCHAFT 5C 04413 D

**Epibase power darlington transistors (15 W)**

BD 861, BD 863, and BD 865 are monolithic silicon NPN epibase power darlington transistors with diode and resistors in a plastic package similar to TO 202. The collectors of the two transistors are electrically connected to the metallic mounting area. These darlington transistors for AF applications are outstanding for a particularly high current gain. Together with BD 862, BD 864, and BD 866, they are especially useful as complementary AF push-pull output stages for color TV correction stages.

Type	Ordering code
BD 861	Q62702-D956
BD 863	Q62702-D958
BD 865	Q62702-D960



**Maximum ratings**

	BD 861	BD 863	BD 865		
Collector-emitter voltage	$V_{CE0}$	45	60	80	V
Collector-base voltage	$V_{CBO}$	45	60	80	V
Base-emitter voltage	$V_{EBO}$	5	5	5	V
Collector current	$I_C$	4	4	4	A
Collector peak current ( $t \leq 1$ ms)	$I_{CM}$	7	7	7	A
Base current	$I_B$	0.1	0.1	0.1	A
Storage temperature range	$T_{stg}$	-55 to +150		°C	
Junction temperature	$T_j$	150	150	150	°C
Total power dissipation ( $T_{case} \leq 25^\circ\text{C}$ )	$P_{tot}$	15	15	15	W

**Thermal resistance**

Junction to ambient air	$R_{thJA}$	62.5	62.5	62.5	K/W
Junction to case	$R_{thJC}$	8.3	8.3	8.3	K/W



BD 861  
 BD 863  
 BD 865

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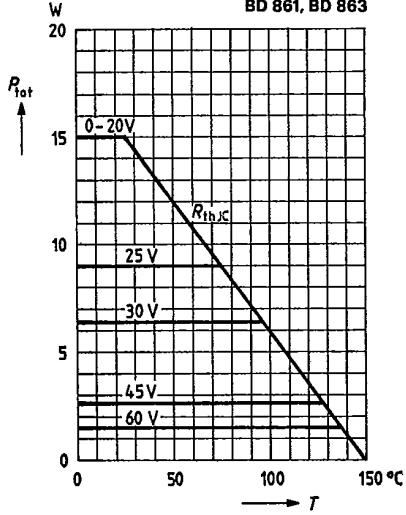
Static characteristics ( $T_{amb} = 25^{\circ}\text{C}$ )		BD 861	BD 863	BD 865	
Collector cutoff current ( $V_{CB} = V_{CBmax}$ )	$I_{CBO}$	<0.2	<0.2	<0.2	mA
( $V_{BC} = V_{CBmax}$ ; $T_{amb} = 100^{\circ}\text{C}$ )	$I_{CBO}$	<2	<2	<2	mA
Collector cutoff current ( $V_{CE} = 0.5 V_{CEmax}$ )	$I_{CEO}$	<0.5	<0.5	<0.5	mA
Emitter cutoff current ( $V_{EBO} = 5\text{ V}$ )	$I_{EBO}$	<5	<5	<5	mA
Collector-emitter breakdown voltage ( $I_C = 100\text{ mA}$ )	$V_{(BR)CEO}$	>45	>60	>60	V
Collector-base breakdown voltage ( $I_C = 1\text{ mA}$ )	$V_{(BR)CBO}$	>45	>60	>80	V
Emitter-base breakdown voltage ( $I_E = 5\text{ mA}$ )	$V_{(BR)EBO}$	>5	>5	>5	V
DC current gain ( $I_C = 50\text{ mA}$ ; $V_{CE} = 3\text{ V}$ )	$h_{FE}$	750	750	750	-
( $I_C = 1.5\text{ A}$ ; $V_{CE} = 3\text{ V}$ )	$h_{FE}$	>750	>750 (3000)	>750 (3000)	-
( $I_C = 4\text{ A}$ ; $V_{CE} = 3\text{ V}$ )	$h_{FE}$	1000	1000	1000	-
Base-emitter forward voltage ( $I_C = 1.5\text{ A}$ ; $V_{CE} = 3\text{ V}$ )	$V_{BE}$	<2.5	<2.5	<2.5	V
Collector-emitter saturation voltage ( $I_C = 1.5\text{ A}$ ; $I_B = 30\text{ mA}$ )	$V_{CEsat}$	<2.5	<2.5	<2.5	V
Forward voltage of the protective diode at $I_F = 3\text{ A}$	$V_F$	1.8	1.8	1.8	V

Dynamic characteristics ( $T_{amb} = 25^{\circ}\text{C}$ )					
Transition frequency ( $I_C = 1.5\text{ A}$ ; $V_{CE} = 3\text{ V}$ ; $f = 1\text{ MHz}$ )	$f_T$	7 (>1)	7 (>1)	7 (>1)	MHz
Cutoff frequency in common emitter emitter configuration ( $I_C = 1.5\text{ A}$ ; $V_{CE} = 3\text{ V}$ )	$f_{hfe}$	60	60	60	kHz

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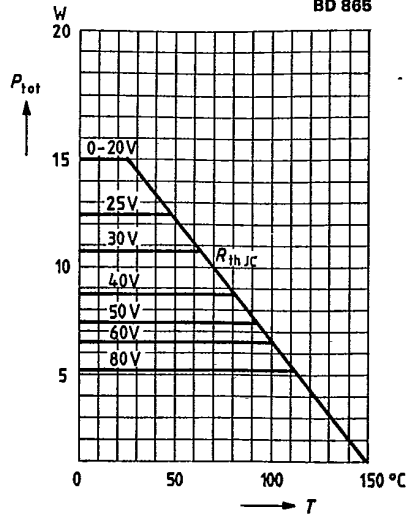
Total perm. power dissipation versus temperature  
 $P_{tot} = f(T); V_{CE} = \text{parameter}$

BD 861, BD 863



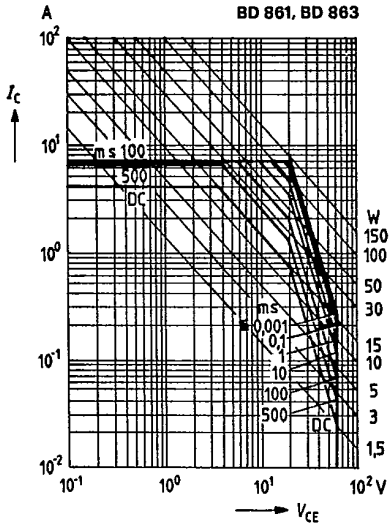
Total perm. power dissipation versus temperature  
 $P_{tot} = f(T); V_{CE} = \text{parameter}$

BD 865



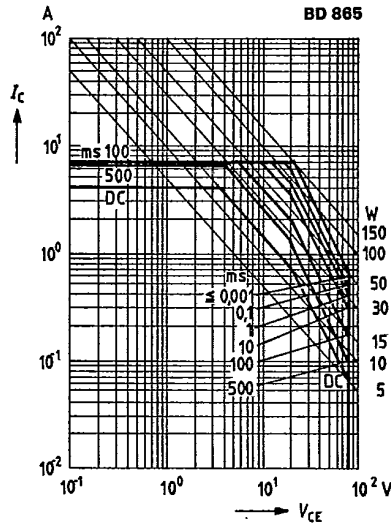
Permissible operating range  
 $I_C = f(V_{CE}); T_{case} \approx 25^\circ\text{C}; D = 0.01$

BD 861, BD 863



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 $I_C = f(V_{CE}); T_{case} \approx 25^\circ\text{C}; D = 0.01$

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