

**NPN Silicon Epibase Transistors**

7-33-07

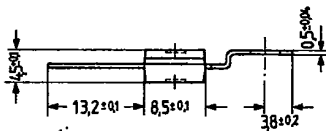
- BD 611
- BD 613
- BD 615
- BD 617
- BD 619

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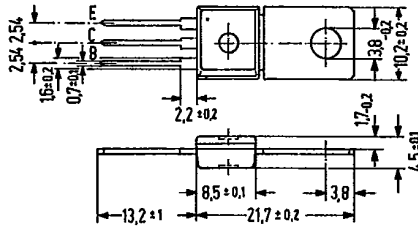
**SIEMENS AKTIENGESELLSCHAFT**

The transistors BD 611, BD 613, BD 615, BD 617, and BD 619 are NPN silicon epibase power transistors in a plastic package similar to TO 202. The collector is electrically connected to the metallic mounting area. The transistors are particularly suitable for use in push-pull output stages, driver stages as well as for general AF applications. Their complementary types are the PNP transistors BD 612, BD 614, BD 616, BD 618, and BD 620.

Type	Ordering code	Type	Ordering code
BD 611	Q62702-D946	BD 611/BD 612 pair.	Q62702-D1103
BD 613	Q62702-D948	BD 613/BD 614 pair.	Q62702-D1104
BD 615	Q62702-D950	BD 615/BD 616 pair.	Q62702-D1105
BD 617	Q62702-D952	BD 617/BD 618 pair.	Q62702-D1106
BD 619	Q62702-D954	BD 619/BD 620 pair.	Q62702-D1107



Available upon request also with bent fixing plate



Approx. weight 15 g.

Dimensions in mm

**Maximum ratings**

		BD 611	BD 613	BD 615	BD 617	BD 619	
Collector-emitter voltage	$V_{CE0}$	22	32	45	60	80	V
Collector-emitter voltage	$V_{CES}$	22	32	45	60	80	V
Collector-base voltage	$V_{CBO}$	22	32	45	60	80	V
Emitter-base voltage	$V_{EBO}$	5	5	5	5	5	V
Collector current	$I_C$	4	4	4	4	4	A
Collector peak current ( $t < 11$ ms)	$I_{CM}$	7	7	7	7	7	A
Emitter peak current ( $t < 10$ ms)	$I_{EM}$	7	7	7	7	7	A
Base current	$I_B$	1	1	1	1	1	A
Junction temperature	$T_j$	150	150	150	150	150	°C
Storage temperature range	$T_{stg}$	-55 to +150					°C
Total power dissipation ( $T_{case} \leq 25^\circ\text{C}$ )	$P_{tot}$	15	15	15	15	15	W

**Thermal resistance**

		$\leq 62,5$	$\leq 62,5$	$\leq 62,5$	$\leq 62,5$	$\leq 62,5$	K/W
Junction to ambient air	$R_{thJA}$	$\leq 8,3$	$\leq 8,3$	$\leq 8,3$	$\leq 8,3$	$\leq 8,3$	K/W
Junction to mounting area	$R_{thJC}$	$\leq 8,3$	$\leq 8,3$	$\leq 8,3$	$\leq 8,3$	$\leq 8,3$	K/W

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BD 611  
 BD 613  
 BD 615  
 BD 617  
 BD 619

Static characteristics ( $T_{\text{case}} = 25^\circ\text{C}$ )

		BD 611	BD 613	BD 615	BD 617	BD 619	
Collector-emitter breakdown voltage ( $I_C = 100 \text{ mA}$ )	$V_{(\text{BR})\text{CEO}}$	>22	>32	>45	>60	>80	V
Collector-emitter breakdown voltage ( $I_C = 100 \mu\text{A}$ )	$V_{(\text{BR})\text{CES}}$	>22	>32	>45	>60	>80	V
Collector-base breakdown voltage ( $I_C = 100 \mu\text{A}$ )	$V_{(\text{BR})\text{CBO}}$	>22	>32	>45	>60	>80	V
Emitter-base breakdown voltage ( $I_E = 1 \text{ mA}$ )	$V_{(\text{BR})\text{EBO}}$	>5	>5	>5	>5	>5	V
Collector cutoff current ( $V_{\text{CB}} = 22 \text{ V}$ )	$I_{\text{CBO}}$	<100	-	-	-	-	$\mu\text{A}$
Collector cutoff current ( $V_{\text{CB}} = 32 \text{ V}$ )	$I_{\text{CBO}}$	-	<100	-	-	-	$\mu\text{A}$
Collector cutoff current ( $V_{\text{CB}} = 45 \text{ V}$ )	$I_{\text{CBO}}$	-	-	<100	-	-	$\mu\text{A}$
Collector cutoff current ( $V_{\text{CB}} = 60 \text{ V}$ )	$I_{\text{CBO}}$	-	-	-	<100	-	$\mu\text{A}$
Collector cutoff current ( $V_{\text{CB}} = 80 \text{ V}$ )	$I_{\text{CBO}}$	-	-	-	-	<100	$\mu\text{A}$
Collector cutoff current ( $V_{\text{CB}} = 10 \text{ V}$ ; $T_{\text{amb}} = 150^\circ\text{C}$ )	$I_{\text{CBO}}$	<1	<1	<1	<1	<1	mA
Collector cutoff current ( $V_{\text{CB}} = V_{\text{CBmax}}$ ; $T_{\text{amb}} = 150^\circ\text{C}$ )	$I_{\text{CBO}}$	<3	<3	<3	<3	<3	mA
Base-emitter forward voltage ( $I_C = 2 \text{ A}$ ; $V_{\text{CE}} = 1 \text{ V}$ )	$V_{\text{BE}}$	<1.1	<1.1	<1.2	<1.5	<1.5	V
Base-emitter forward voltage ( $I_C = 3 \text{ A}$ ; $V_{\text{CE}} = 1 \text{ V}$ )	$V_{\text{BE}}$	-	-	<1.3	<1.6	<1.6	V
Collector-emitter saturation voltage ( $I_C = 2 \text{ A}$ ) <sup>1)</sup>	$V_{\text{CEsat}}$	<0.8	<0.8	-	-	-	V
Collector-emitter saturation voltage ( $I_C = 2 \text{ A}$ ; $I_B = 0.2 \text{ A}$ )	$V_{\text{CEsat}}$	<0.5	<0.5	<0.6	<0.8	<0.8	V
Collector-emitter saturation voltage ( $I_C = 3 \text{ A}$ ; $I_B = 0.3 \text{ A}$ )	$V_{\text{CEsat}}$	-	-	<0.7	<0.9	<0.9	V
DC current gain ( $I_C = 10 \text{ mA}$ ; $V_{\text{CE}} = 5 \text{ V}$ )	$h_{\text{FE}}$	>40	>40	>30	>20	>15	-
( $I_C = 500 \text{ mA}$ ; $V_{\text{CE}} = 1 \text{ V}$ )	$h_{\text{FE}}$	>85	>85	>85	>40	>40	-
( $I_C = 2 \text{ A}$ ; $V_{\text{CE}} = 1 \text{ V}$ )	$h_{\text{FE}}$	>50	>50	>40	>25	>15	-

1) For the characteristics which passes through the point  $I_C = 2.2 \text{ A}$  and  $V_{\text{CE}} = 1 \text{ V}$  at constant base current.

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T-33-07

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BD 611  
BD 613  
BD 615  
BD 617  
BD 619

Dynamic characteristics ( $T_{\text{case}} = 25^{\circ}\text{C}$ )

	BD 611	BD 613	BD 615	BD 617	BD 619	
Transition frequency ( $I_{\text{C}} = 0.25 \text{ A}$ ; $V_{\text{CE}} = 1 \text{ V}$ ; $f = 1 \text{ MHz}$ )	$f_{\text{T}} > 3$	$> 3$	$> 3$	$> 3$	$> 3$	MHz
Cutoff frequency in common emitter configuration ( $I_{\text{C}} = 0.25 \text{ A}$ ; $V_{\text{CE}} = 1 \text{ V}$ )	$f_{\text{hfe}} > 20$	$> 20$	$> 20$	$> 20$	$> 20$	kHz

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