PNP Silicon Epibase Transistors

T-33-17

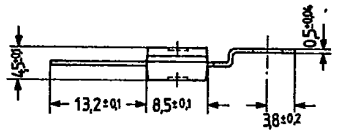
SIEMENS AKTIENGESELLSCHAF 04383 D

BD 612
BD 614
BD 616
BD 618
BD 620

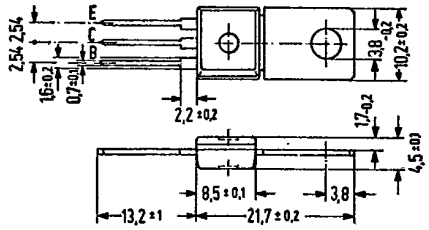
The transistors BD 612, BD 614, BD 616, BD 618, and BD 620 are PNP silicon epibase power transistors in a plastic package similar to TO 202. The collector is electrically connected to the metallic mounting area. The transistors are particularly suitable for use in push-pull output stages, driver stages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

Type	Ordering code
BD 612	Q62702-D947
BD 614	Q62702-D949
BD 616	Q62702-D951
BD 618	Q62702-D953
BD 620	Q62702-D955

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



Available upon request also with bent fixing plate.



Approx. weight 15 g

Dimensions in mm

Maximum ratings		BD 612	BD 614	BD 616	BD 618	BD 620	
Collector-emitter voltage	$-V_{CEO}$	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 ($t \leq 10$ 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 ($T_{case} \leq 25$ °C; $V_{CE} \leq 12$ V)	P_{tot}	15	15	15	15	15	W
Thermal resistance							
Junction to ambient air	R_{thJA}	≤62,5	≤62,5	≤62,5	≤62,5	≤62,5	K/W
Junction to mounting area	R_{thJC}	≤8,3	≤8,3	≤8,3	≤8,3	≤8,3	K/W

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

		BD 612	BD 614	BD 616	BD 618	BD 620	
Collector-emitter breakdown voltage ($-I_C$ = 100 mA)	$-V_{(BR)CEO}$	>22	>32	>45	>60	>80	V
Collector-emitter breakdown voltage ($-I_C$ = 100 µA)	$-V_{(BR)CES}$	>22	>32	>45	>60	>80	V
Collector-base breakdown voltage ($-I_C$ = 100 µA)	$-V_{(BR)CBC}$	>22	>32	>45	>60	>80	V
Emitter-base breakdown voltage (I_E = 1 mA)	$-V_{(BR)EBO}$	>5	>5	>5	>5	>5	V
Collector cutoff current ($-V_{CB}$ = 22 V)	$-I_{CBO}$	<100	–	–	–	–	µA
Collector cutoff current ($-V_{CB}$ = 32 V)	$-I_{CBO}$	–	<100	–	–	–	µA
Collector cutoff current ($-V_{CB}$ = 45 V)	$-I_{CBO}$	–	–	<100	–	–	µA
Collector cutoff current ($-V_{CB}$ = 60 V)	$-I_{CBO}$	–	–	–	<100	–	µA
Collector cutoff current ($-V_{CB}$ = 80 V)	$-I_{CBO}$	–	–	–	–	<100	µA
Collector cutoff current ($-V_{CB}$ = 10 V; T_{amb} = 150 °C)	$-I_{CBO}$	<1	<1	<1	<1	<1	mA
Collector cutoff current ($-V_{CB} = V_{CBmax}$; T_{amb} = 150 °C)	$-I_{CBO}$	<3	<3	<3	<3	<3	mA
Base-emitter forward voltage ($-I_C$ = 2 A; $-V_{CE}$ = 1 V)	$-V_{BE}$	<1.1	<1.1	<1.2	<1.5	<1.5	V
Base-emitter forward voltage ($-I_C$ = 3 A; $-V_{CE}$ = 1 V)	$-V_{BE}$	–	–	<1.3	<1.6	<1.6	V
Collector-emitter saturation voltage ($-I_C$ = 2 A)[1]	$-V_{CEsat}$	<0.8	<0.8	–	–	–	V
Collector-emitter saturation voltage ($-I_C$ = 2 A; $-I_B$ = 0.2 A)	$-V_{CEsat}$	<0.5	<0.5	<0.6	<0.8	<0.8	V
Collector-emitter saturation voltage ($-I_C$ = 3 A; $-I_B$ = 0.3 A)	$-V_{CEsat}$	–	–	<0.7	<0.9	<0.9	V
DC current gain ($-I_C$ = 10 mA; $-V_{CE}$ = 5 V)	h_{FE}	>40	>40	>30	>20	>15	–
($-I_C$ = 500 mA; $-V_{CE}$ = 1 V[2])	h_{FE}	>85	>85	>85	>40	>40	–
($-I_C$ = 2 A; $-V_{CE}$ = 1 V)	h_{FE}	>50	>50	>40	>25	>15	–

1) For the characteristic which passes through the point I_C = 2.2 A and V_{CE} = 1 V at constant base current.
2) Available as matching pairs with BD 611, BD 613, BD 615, BD 617, and BD 619. Condition for matching pairs $h_{FE1}/h_{FE2} \leq 1.41$.

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

		BD 612	BD 614	BD 616	BD 618	BD 620	
Transition frequency ($-I_C$ = 0.25 A; $-V_{CE}$ = 1 V; f = 1 MHz)	f_T	>3	>3	>3	>3	>3	MHz
Cutoff frequency in common emitter configuration ($-I_C$ = 0.25 A; $-V_{CE}$ = 1 V)	f_{hfe}	>20	>20	>20	>20	>20	kHz

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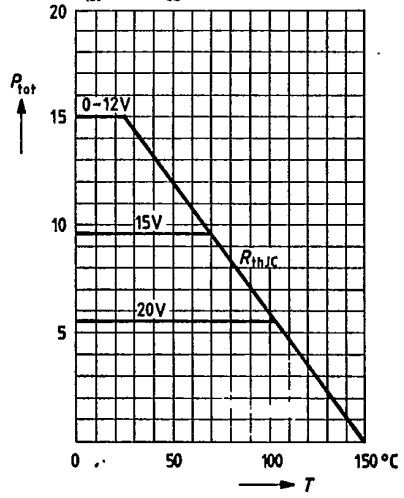
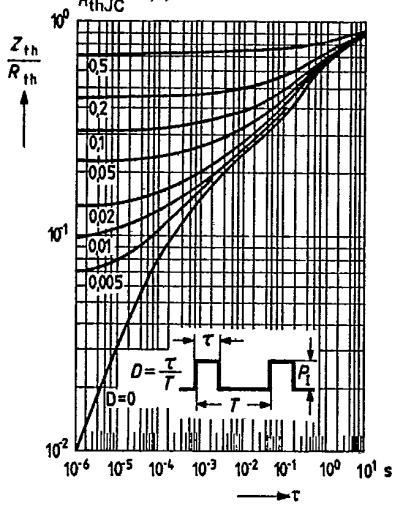
Total perm. power dissipation versus temperature
$P_{tot} = f(T)$; V_{CE} = 0 to 12 V

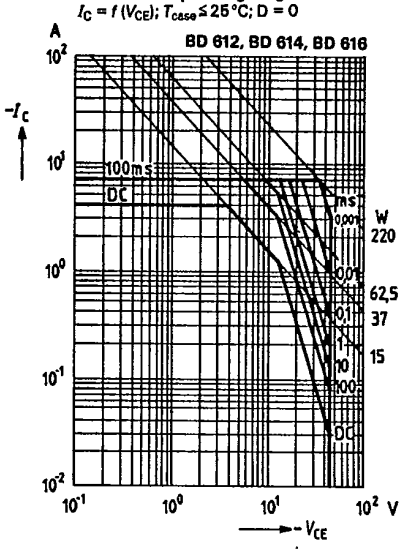


Permissible pulse load
$\frac{Z_{thJC}}{R_{thJC}} = f(\tau)$



Permissible operating range
$I_C = f(V_{CE})$; $T_{case} \leq 25$ °C; D = 0

BD 612, BD 614, BD 616



Permissible operating range
$I_C = f(V_{CE})$; $T_{case} \leq 25$ °C; D = 0

BD 618, BD 620