

PNP Silicon Darlington Transistors

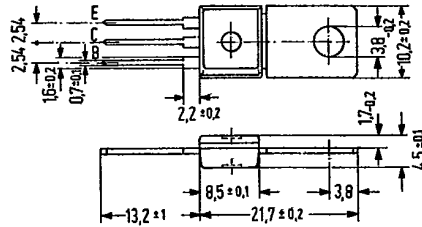
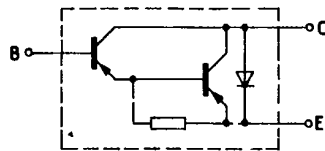
BD 976  
BD 978  
BD 980

SIEMENS AKTIENGESELLSCHAFT 04429 D  
T-33-31

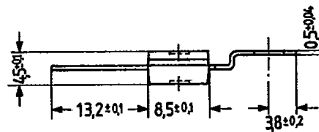
BD 976, BD 978, and BD 980 are epitaxial PNP silicon planar darlington transistors in plastic package similar to TO 202. These darlington transistors are designed for relay drivers as well as for general AF applications.

BD 975, BD 977, and BD 979 are provided as complementary transistors.

Type	Ordering code
BD 976	Q62702-D963
BD 978	Q62702-D965
BD 980	Q62702-D967



Approx. weight 15 g. Dimensions in mm



Available upon request also with bent fixing plate.

Maximum ratings ( $T_{amb} = 25^{\circ}\text{C}$ )

- Collector-emitter voltage
- Collector-base voltage
- Emitter-base voltage
- Collector current
- Collector peak current
- Base current
- Junction temperature
- Storage temperature range
- Total power dissipation ( $T_{amb} = 25^{\circ}\text{C}$ )
- ( $T_{case} = 60^{\circ}\text{C}$ )

	BD 976	BD 978	BD 980	
$-V_{CEO}$	45	60	80	V
$-V_{CBO}$	60	80	100	V
$-V_{EBO}$	5	5	5	V
$-I_C$	1	1	1	A
$-I_{CM}$	2	2	2	A
$-I_B$	0.1	0.1	0.1	A
$T_j$	150	150	150	$^{\circ}\text{C}$
$T_{stg}$	-65 to +150			$^{\circ}\text{C}$
$P_{tot}$	1.6	1.6	1.6	W
$P_{tot}$	3.6	3.6	3.6	W

Thermal resistance

- Junction to ambient air
- Junction to case

	BD 976	BD 978	BD 980	
$R_{thJA}$	78	78	78	K/W
$R_{thJC}$	25	25	25	K/W

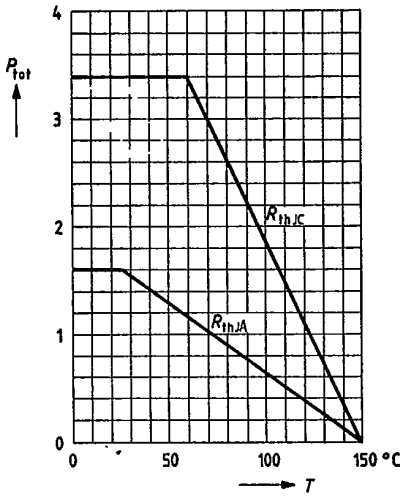
Static characteristics ( $T_{amb} = 25^{\circ}\text{C}$ )

	BD 976	BD 978	BD 980		
Collector cutoff current ( $-V_{CBO} = V_{CBmax}$ )	$-I_{CBO}$	100	100	100	nA
Collector cutoff current ( $-V_{CEO} = 0.5 V_{CEmax}$ )	$-I_{CEO}$	500	500	500	nA
Emitter cutoff current ( $-V_{EBO} = 4 \text{ V}$ )	$-I_{EBO}$	100	100	100	nA
Collector-emitter breakdown voltage ( $-I_C = 50 \text{ mA}$ )	$-V_{(BR)CEO}$	>45	>60	>80	V
Collector-base breakdown voltage ( $-I_C = 100 \mu\text{A}$ )	$-V_{(BR)CBO}$	>60	>80	>100	V
Emitter-base breakdown voltage ( $I_E = 100 \mu\text{A}$ )	$-V_{(BR)EBO}$	>5	>5	>5	V
DC current gain ( $-I_C = 150 \text{ mA}; -V_{CE} = 10 \text{ V}$ )	$h_{FE}$	>1000	>1000	>1000	-
( $-I_C = 0.5 \text{ A}; -V_{CE} = 10 \text{ V}$ )	$h_{FE}$	>2000	>2000	>2000	-
Collector-emitter saturation voltage ( $-I_C = 0.5 \text{ A}; -I_B = 0.5 \text{ mA}$ )	$-V_{CEsat}$	<1.3	<1.3	<1.3	V
( $-I_C = 1 \text{ A}; -I_B = 1 \text{ mA}$ )	$-V_{CEsat}$	<1.8	<1.8	<1.8	V
Base-emitter saturation voltage ( $-I_C = 1 \text{ A}; -I_B = 1 \text{ mA}$ )	$-V_{BEsat}$	<2.2	<2.2	<2.2	V

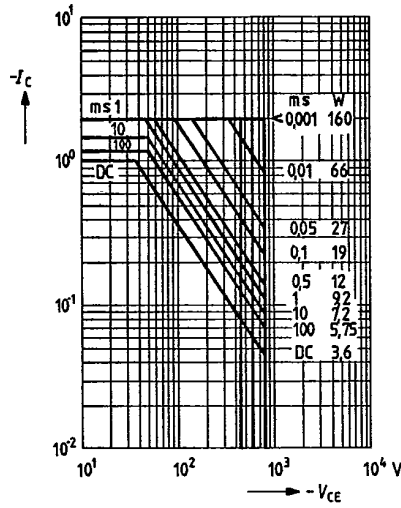
Dynamic characteristics ( $T_{amb} = 25^{\circ}\text{C}$ )

Transition frequency ( $-I_C = 0.5 \text{ A}; -V_{CE} = 5 \text{ V}; f = 35 \text{ MHz}$ )	$f_T$	200	200	200	MHz
---	-------	-----	-----	-----	-----

Total perm. power dissipation versus temperature  
 $P_{tot} = f(T)$

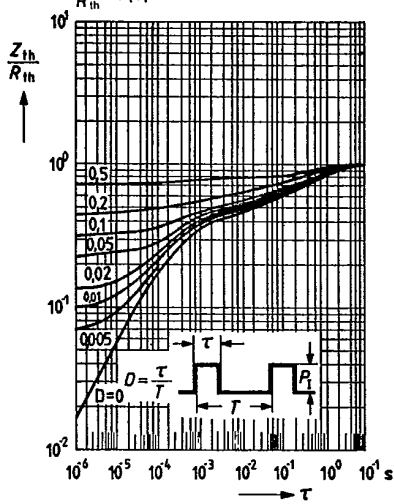


Permissible operating range  
 $I_C = f(V_{CE}); T_{case} \leq 100^\circ\text{C}; D = 0$



Total perm. power dissipation

$\frac{Z_{th}}{R_{th}} = f(\tau)$



DC current gain  $h_{FE} = f(T_{amb})$   
 $V_{CE} = 10\text{ V}; I_C = \text{parameter}$

