

## NPN Silicon Planar Darlington Transistors

BD 875

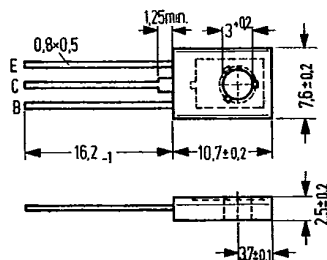
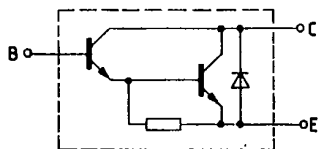
BD 877

BD 879

SIEMENS AKTIENGESELLSCHAFT 21 D

BD 875, BD 877, and BD 879 are epitaxial NPN silicon planar darlington transistors in TO 126 plastic package (12 A 3 DIN 41869, sheet 4). These darlington transistors are designed for relay drivers as well as for general AF applications. BD 876, BD 878, and BD 880 are provided as complementary transistors.

| Type          | Ordering code |
|---------------|---------------|
| BD 875        | Q62702-D902   |
| BD 877        | Q62702-D903   |
| BD 879        | Q62702-D904   |
| Spring washer |               |
| A 3 DIN 137   | Q62902-B63    |
| Mica washer   | Q62902-B62    |



Approx. weight 0.5 g Dimensions in mm

Transistor fixing with M 3 screw; starting torque max. 0.8 Nm; washer or spring washer should be used.

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  
( $T_{amb} \leq 25^\circ\text{C}$ )  
( $T_{case} \leq 60^\circ\text{C}$ )

|           | BD 875      | BD 877 | BD 879 |                  |
|-----------|-------------|--------|--------|------------------|
| $V_{CEO}$ | 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 |        |        | $^\circ\text{C}$ |
| $P_{tot}$ | 1.25        | 1.25   | 1.25   | W                |
| $P_{tot}$ | 9           | 9      | 9      | W                |

Thermal resistance  
Junction to ambient air  
Junction to case

|            |      |      |      |     |
|------------|------|------|------|-----|
| $R_{thJA}$ | <100 | <100 | <100 | K/W |
| $R_{thJC}$ | <10  | <10  | <10  | K/W |

25C D ■ 8235605 0004422 5 ■ SIEG T-33-29  
25C 04422 D

BD 875  
BD 877  
BD 879

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| Static characteristics ( $T_{amb} = 25^{\circ}\text{C}$ )                                     |               | BD 875 | BD 877 | BD 879 |    |
|-----------------------------------------------------------------------------------------------|---------------|--------|--------|--------|----|
| Collector cutoff current<br>( $V_{CB} = V_{CBmax}$ )                                          | $I_{CBO}$     | <100   | <100   | <100   | nA |
| Collector cutoff current<br>( $V_{CE} = 0.5 V_{CEmax}$ )                                      | $I_{CEO}$     | <500   | <500   | <500   | nA |
| Emitter cutoff current<br>( $V_{EB} = 4 \text{ V}$ )                                          | $I_{EBO}$     | <100   | <100   | <100   | nA |
| Collector-emitter breakdown<br>voltage ( $I_C = 50 \text{ mA}$ )                              | $V_{(BR)CEO}$ | >45    | >60    | >80    | V  |
| Collector-base breakdown<br>voltage ( $I_C = 100 \mu\text{A}$ )                               | $V_{(BR)CBO}$ | >60    | >80    | >100   | V  |
| Emitter-base breakdown<br>voltage ( $I_E = 100 \mu\text{A}$ )                                 | $V_{(BR)EBO}$ | >5     | >5     | >5     | V  |
| DC current gain<br>( $I_C = 150 \text{ mA}$ ; $V_{CE} = 10 \text{ V}$ )                       | $h_{FE}$      | >1000  | >1000  | >1000  | -  |
| ( $I_C = 0.5 \text{ A}$ ; $V_{CE} = 10 \text{ V}$ )                                           | $h_{FE}$      | >2000  | >2000  | >2000  | -  |
| Collector-emitter saturation<br>voltage<br>( $I_C = 0.5 \text{ A}$ ; $I_B = 0.5 \text{ mA}$ ) | $V_{CEsat}$   | <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<br>voltage<br>( $I_C = 1 \text{ A}$ ; $I_B = 1 \text{ mA}$ )          | $V_{BEsat}$   | <2.2   | <2.2   | <2.2   | V  |

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

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

## PNP Silicon Planar Darlington Transistors

BD 876

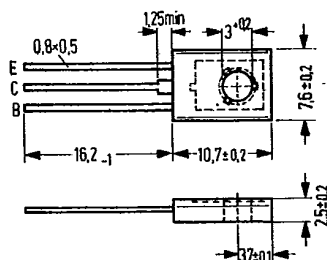
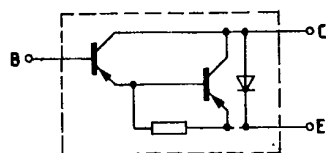
BD 878

BD 880

SIEMENS AKTIENGESELLSCHAFT 23 D

BD 876, BD 878, and BD 880 are epitaxial PNP silicon planar darlington transistors in TO 126 plastic package (12 A 3 DIN 41 869, sheet 4). These darlington transistors are designed for relay drivers as well as for general AF applications. BD 875, BD 877, and BD 879 are provided as complementary transistors.

| Type          | Ordering code |
|---------------|---------------|
| BD 876        | Q62702-D908   |
| BD 878        | Q62702-D907   |
| BD 880        | Q62702-D906   |
| Spring washer |               |
| A 3 DIN 137   | Q62902-B63    |
| Mica washer   | Q62902-B62    |



Approx. weight 0.5 g. Dimensions in mm  
Transistor fixing with M 3 screw; starting torque max. 0.8 Nm; washer or spring washer should be used.

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  
( $T_{amb} \leq 25^\circ\text{C}$ )  
( $T_{case} \leq 60^\circ\text{C}$ )

|            | BD 876      | BD 878 | BD 880 |                  |
|------------|-------------|--------|--------|------------------|
| $-V_{CEO}$ | 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 |        |        | $^\circ\text{C}$ |
| $P_{tot}$  | 1.25        | 1.25   | 1.25   | W                |
| $P_{tot}$  | 9           | 9      | 9      | W                |

## Thermal resistance

Junction to ambient air  
Junction to case

|            |      |      |      |     |
|------------|------|------|------|-----|
| $R_{thJA}$ | <100 | <100 | <100 | K/W |
| $R_{thJC}$ | <10  | <10  | <10  | K/W |

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

|                                                                                                 |                | BD 876 | BD 878 | BD 880 |    |
|-------------------------------------------------------------------------------------------------|----------------|--------|--------|--------|----|
| Collector cutoff current<br>( $V_{CB} = V_{CBmax}$ )                                            | $-I_{CBO}$     | <100   | <100   | <100   | nA |
| Collector cutoff current<br>( $V_{CE} = 0.5 V_{CEmax}$ )                                        | $-I_{CEO}$     | <500   | <500   | <500   | nA |
| Emitter cutoff current<br>( $-V_{EB} = 4 \text{ V}$ )                                           | $-I_{EBO}$     | <100   | <100   | <100   | nA |
| Collector-emitter breakdown<br>voltage ( $-I_C = 50 \text{ mA}$ )                               | $-V_{(BR)CEO}$ | >45    | >60    | >80    | V  |
| Collector-base breakdown<br>voltage ( $-I_C = 100 \mu\text{A}$ )                                | $-V_{(BR)CBO}$ | >60    | >80    | >100   | V  |
| Emitter-base breakdown<br>voltage ( $I_E = 100 \mu\text{A}$ )                                   | $-V_{(BR)EBO}$ | >5     | >5     | >5     | V  |
| DC current gain<br>( $-I_C = 150 \text{ mA}$ ; $-V_{CE} = 10 \text{ V}$ )                       | $h_{FE}$       | >1000  | >1000  | >1000  | —  |
| ( $-I_C = 0.5 \text{ A}$ ; $-V_{CE} = 10 \text{ V}$ )                                           | $h_{FE}$       | >2000  | >2000  | >2000  | —  |
| Collector-emitter saturation<br>voltage<br>( $-I_C = 0.5 \text{ A}$ ; $-I_B = 0.5 \text{ mA}$ ) | $-V_{CEsat}$   | <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<br>voltage<br>( $-I_C = 1 \text{ A}$ ; $-I_B = 1 \text{ mA}$ )          | $-V_{BEsat}$   | <2.2   | <2.2   | <2.2   | V  |

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

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

## NPN Silicon Darlington Transistors

BD 975

BD 977

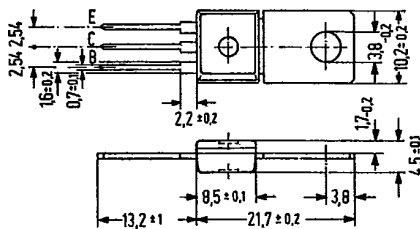
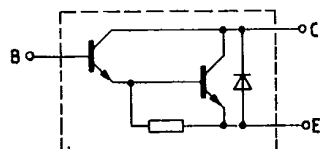
BD 979

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BD 975, BD 977, and BD 979 are epitaxial NPN 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.

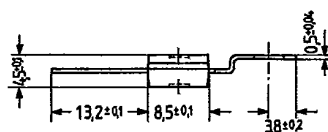
BD 976, BD 978, and BD 980 are provided as complementary transistors.

| Type   | Ordering code |
|--------|---------------|
| BD 975 | Q62702-D962   |
| BD 977 | Q62702-D964   |
| BD 979 | Q62702-D966   |



Approx. weight 16 g.

Dimensions in mm



Available upon request also with bent fixing plate.

## Maximum ratings

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

|           | BD 975      | BD 977 | BD 979 |                  |
|-----------|-------------|--------|--------|------------------|
| $V_{CEO}$ | 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                |
| $T_{stg}$ | -65 to +150 |        |        | $^\circ\text{C}$ |
| $T_j$     | 150         | 150    | 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

|            |    |    |    |     |
|------------|----|----|----|-----|
| $R_{thJA}$ | 78 | 78 | 78 | K/W |
| $R_{thJC}$ | 25 | 25 | 25 | K/W |

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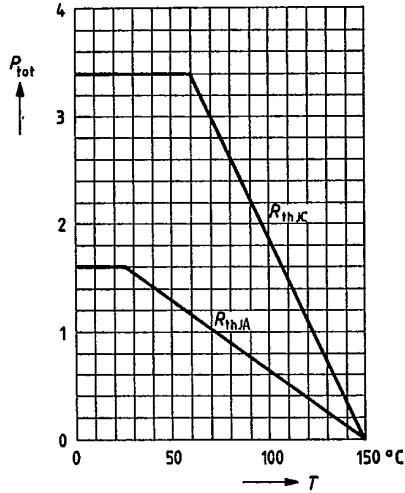
Static characteristics ( $T_{amb} = 25^{\circ}\text{C}$ )

|                                                                                               |               | BD 975 | BD 977 | BD 979 |    |
|-----------------------------------------------------------------------------------------------|---------------|--------|--------|--------|----|
| Collector cutoff current<br>( $V_{CBO} = V_{CBmax}$ )                                         | $I_{CBO}$     | <100   | <100   | <100   | nA |
| Collector cutoff current<br>( $V_{CEO} = 0.5 V_{CEmax}$ )                                     | $I_{CEO}$     | <500   | <500   | <500   | nA |
| Emitter cutoff current<br>( $V_{EBO} = 4 \text{ V}$ )                                         | $I_{EBO}$     | <100   | <100   | <100   | nA |
| Collector-emitter breakdown<br>voltage ( $I_C = 50 \text{ mA}$ )                              | $V_{(BR)CEO}$ | >45    | >60    | >80    | V  |
| Collector-base breakdown<br>voltage ( $I_C = 100 \mu\text{A}$ )                               | $V_{(BR)CBO}$ | >60    | >80    | >100   | V  |
| Emitter-base breakdown<br>voltage ( $I_E = 100 \mu\text{A}$ )                                 | $V_{(BR)EBO}$ | >5     | >5     | >5     | V  |
| DC current gain<br>( $I_C = 150 \text{ mA}$ ; $V_{CE} = 10 \text{ V}$ )                       | $h_{FE}$      | >1000  | >1000  | >1000  | —  |
| ( $I_C = 0.5 \text{ A}$ ; $V_{CE} = 10 \text{ V}$ )                                           | $h_{FE}$      | >2000  | >2000  | >2000  | —  |
| Collector-emitter saturation<br>voltage<br>( $I_C = 0.5 \text{ A}$ ; $I_B = 0.5 \text{ mA}$ ) | $V_{CEsat}$   | <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<br>voltage<br>( $I_C = 1 \text{ A}$ ; $I_B = 1 \text{ mA}$ )          | $V_{BEsat}$   | <2.2   | <2.2   | <2.2   | V  |

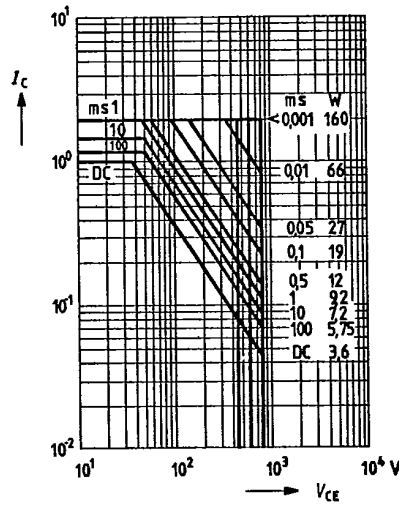
Dynamic characteristics ( $T_{amb} = 25^{\circ}\text{C}$ )

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

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

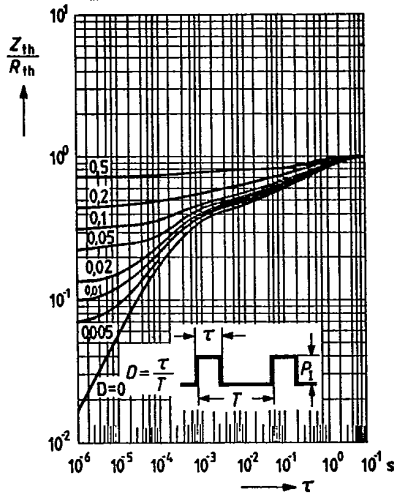


Permissible operating range  
 $I_C = f(V_{CE})$ ;  $T_{\text{case}} \leq 100^\circ\text{C}$ ;  $D = 0$



Permissible power dissipation

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



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

