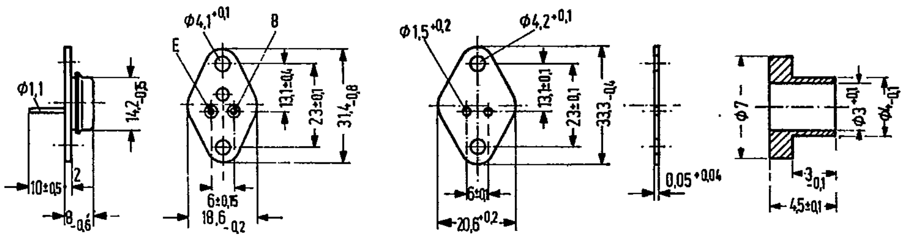
PNP Silicon Planar Transistors

BDX 27
BDX 28
BDX 29
BDX 30

BDX 27, BDX 28, BDX 29, and BDX 30 are epitaxial PNP silicon power transistors in SOT 9 case (9 A 2 DIN 41875). The collector is electrically connected to the case. The transistors are particularly suitable for use in high Q AF output stages and for switching applications.

Type	Ordering code	Type	Ordering code
BDX 27	Q62702-D162	BDX 29	Q62702-D160
BDX 27-6	Q62702-D162-V6	BDX 29-6	Q62702-D160-V6
BDX 27-10	Q62702-D162-V10	BDX 29-10	Q62702-D160-V10
BDX 27-16	Q62702-D162-V16	BDX 30	Q62702-D163
BDX 28	Q62702-D159	BDX 30-6	Q62702-D163-V6
BDX 28-6	Q62702-D159-V6	BDX 30-10	Q62702-D163-V10
BDX 28-10	Q62702-D159-V10	Mica washer	Q62902-B16-A
BDX 28-16	Q62702-D159-V16	Insulating nipple	Q62902-B50



Approx. weight 8.3 g. Dimensions in mm

Mica washer
dry: R_{th} = 2.5 K/W
greased: R_{th} = 1 K/W

Insulating nipple scale 2:1

Maximum ratings		BDX 27	BDX 28	BDX 29	BDX 30	
Collector-emitter voltage	$-V_{CEO}$	40	60	80	125	V
Collector-emitter voltage	$-V_{CES}$	40	60	80	125	V
Collector-base voltage	$-V_{CBO}$	40	60	80	125	V
Emitter-base voltage	$-V_{EBO}$	5	5	5	5	V
Collector peak current ($t \leq 1$ ms)	$-I_{CM}$	7	7	7	7	A
Collector current	$-I_C$	5	5	5	5	A
Emitter current	$-I_E$	6	6	6	6	A
Base current	$-I_B$	1	1	1	1	A
Junction temperature	T_j	200	200	200	200	°C
Storage temperature range	T_{stg}	−65 to +200				°C
Total power dissipation ($T_{case} < 45$°C; $V_{CE} < 13$ V)	P_{tot}	50	50	50	50	W
Thermal resistance						
Junction to ambient air	R_{thJA}	≤85	≤85	≤85	≤85	K/W
Junction to case	R_{thJC}	≤3.5	≤3.5	≤3.5	≤3.5	K/W

BDX 27
BDX 28
BDX 29
BDX 30

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

		BDX 27	BDX 28	BDX 29	BDX 30	
Collector-emitter breakdown voltage (I_C = −50 mA)	$-V_{(BR)CEO}$	>40	>60	>80	>125	V
Collector-emitter breakdown voltage (I_C = 0.1 mA)	$-V_{(BR)CES}$	>40	>60	>80	>125	V
Emitter-base breakdown voltage (I_E = −10 µA)	$-V_{(BR)EBO}$	>5	>5	>5	>5	V
Collector cutoff current						
($-V_{CE}$ = 40 V)	$-I_{CBO}$	<1	–	–	–	µA
($-V_{CE}$ = 40 V; T_{case} = 150°C)	$-I_{CBO}$	<100	–	–	–	µA
($-V_{CE}$ = 60 V)	$-I_{CBO}$	–	<1	–	–	µA
($-V_{CE}$ = 60 V; T_{case} = 150°C)	$-I_{CBO}$	–	<100	–	–	µA
($-V_{CE}$ = 80 V)	$-I_{CBO}$	–	–	<1	–	µA
($-V_{CE}$ = 80 V; T_{case} = 150°C)	$-I_{CBO}$	–	–	<100	–	µA
($-V_{CE}$ = 125 V)	$-I_{CBO}$	–	–	–	<1	µA
($-V_{CE}$ = 125 V; T_{case} = 150°C)	$-I_{CBO}$	–	–	–	<100	µA
Collector cutoff current						
($-V_{CE}$ = 40 V; $-V_{BE}$ = 0.2 V; T_{case} = 100°C)	$-I_{CEX}$	<300	–	–	–	µA
($-V_{CE}$ = 60 V; $-V_{BE}$ = 0.2 V; T_{case} = 100°C)	$-I_{CEX}$	–	<300	–	–	µA
($-V_{CE}$ = 80 V; $-V_{BE}$ = 0.2 V; T_{case} = 100°C)	$-I_{CEX}$	–	–	<300	–	µA
($-V_{CE}$ = 100 V; $-V_{BE}$ = 0.2 V; T_{case} = 100°C)	$-I_{CEX}$	–	–	–	<300	µA

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BDX 30

Static characteristics		BDX 27	BDX 28	BDX 29	BDX 30	
Emitter cutoff current ($-V_{EB}$ = 4 V)	$-I_{EBO}$	<1	<1	<1	<1	μA
Base-emitter forward voltage ($-I_C$ = 1 A; $-V_{CE}$ = 1 V)	$-V_{BE}$	<1.1	<1.1	<1.1	<1.1	V
($-I_C$ = 5 A; $-V_{CE}$ = 2 V)	$-V_{BE}$	<1.7	<1.7	<1.7	<1.7	V
Collector-emitter saturation voltage ($-I_C$ = 1 A; $-I_B$ = 0.1 A)	$-V_{CEsat}$	<0.5	<0.5	<0.5	<0.5	V
($-I_C$ = 3 A; $-I_B$ = 0.3 A)	$-V_{CEsat}$	<1.0	<1.0	<1.0	<1.0	V

The transistors are grouped according to the DC current gain h_{FE} and marked by numerals of the German DIN R 5 standard.

Type		BDX 27 BDX 28 BDX 29	BDX 27 BDX 28 BDX 29	BDX 27 BDX 28 –
h_{FE} group		6	10	16
$-I_C$ mA	$-V_{CE}$ V	h_{FE} I_C/I_B	h_{FE} I_C/I_B	h_{FE} I_C/I_B
10	1	40 (>30)	115 (>55)	180 (>80)
1000	1	63 (40-100)	100 (63-160)	160 (100-250)
3000	2	32 (>20)	55 (>20)	85 (>20)
5000	2	20 (>10)	55 (>20)	85 (>20)

Type		BDX 30	BDX 30
h_{FE} group		6	10
10	1	70 (>30)	115 (>30)
1000	1	63 (>40-100)	100 (63-160)
3000	2	32 (>15)	55 (>15)
5000	2	20 (>7)	55 (>7)

		BDX 27	BDX 28	BDX 29	BDX 30	
Transition frequency ($-I_C$ = 200 mA; $-V_{CE}$ = 10 V; f = 20 MHz)	f_T	50	50	50	50	MHz
Output capacitance ($-V_{CB}$ = 10 V)	C_{ob}	130	130	100	100	pF
Switching times: Operating point: ($-I_C$=2A; $-I_{B1}$ approx. I_{B2}=200mA)	t_{on}	<0.5	<0.5	<0.5	<0.5	μs
($-I_C$=2A; $-I_{B1}$ approx. I_{B2}=200mA)	t_{off}	<2	<2	<2	<2	μs

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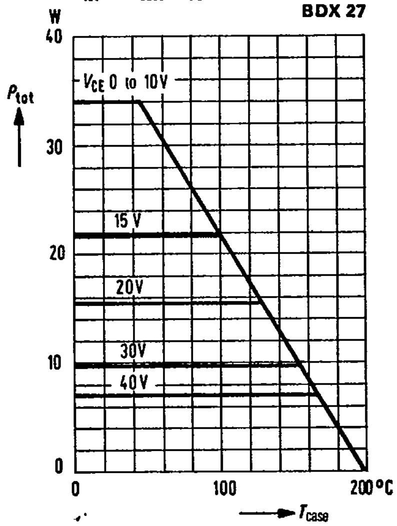
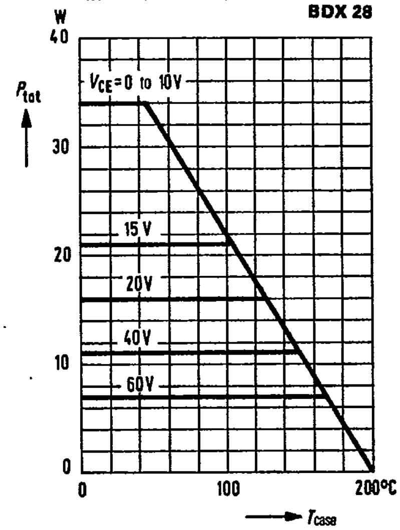
Total perm. power dissipation versus temperature
$P_{tot} = f(T_{case})$; V_{CE} = parameter

BDX 27



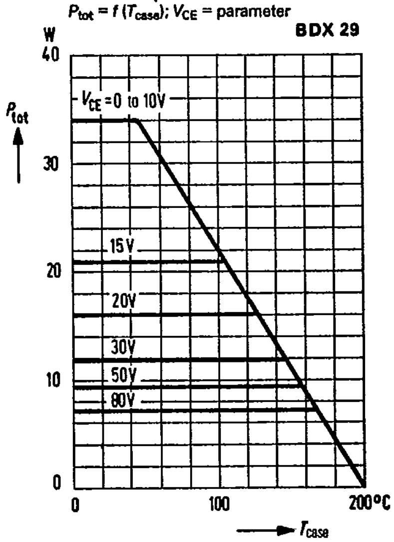
Total perm. power dissipation versus temperature
$P_{tot} = f(T_{case})$; V_{CE} = parameter

BDX 28



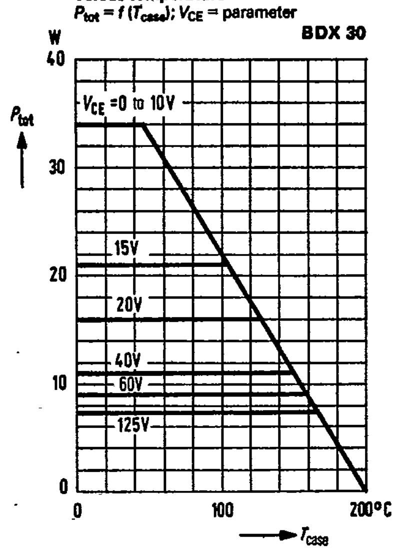
Total perm. power dissipation versus temperature
$P_{tot} = f(T_{case})$; V_{CE} = parameter

BDX 29



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

BDX 30



BDX 27
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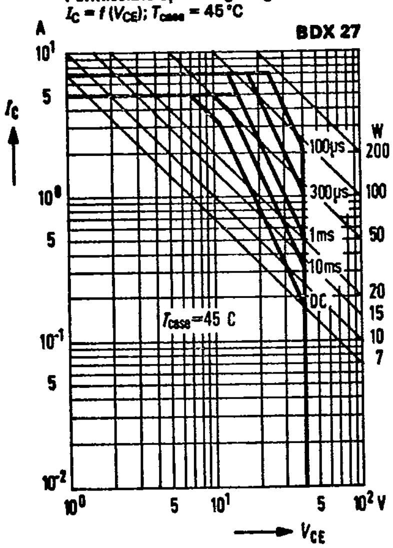
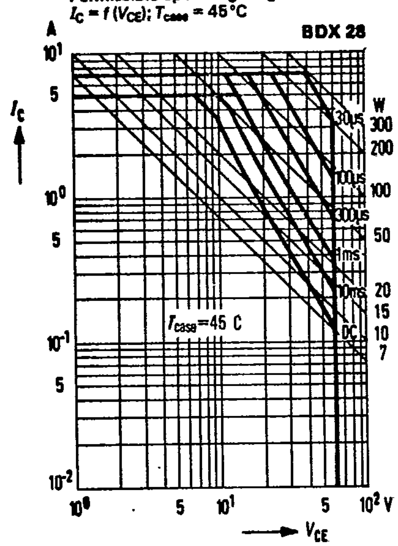
BDX 30

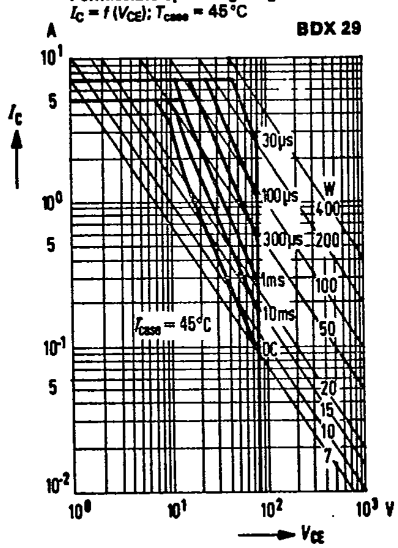
Permissible operating range
$I_C = f(V_{CE})$; $T_{case} = 45\,°C$



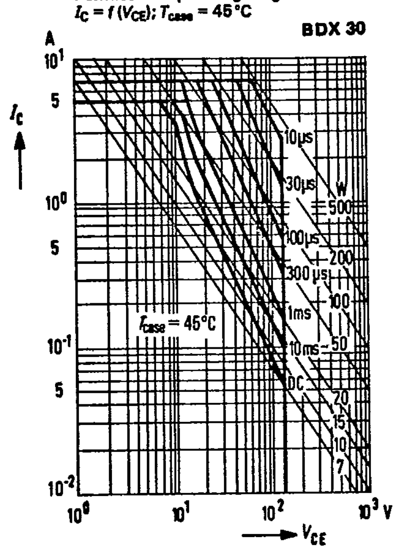
Permissible operating range
$I_C = f(V_{CE})$; $T_{case} = 45\,°C$



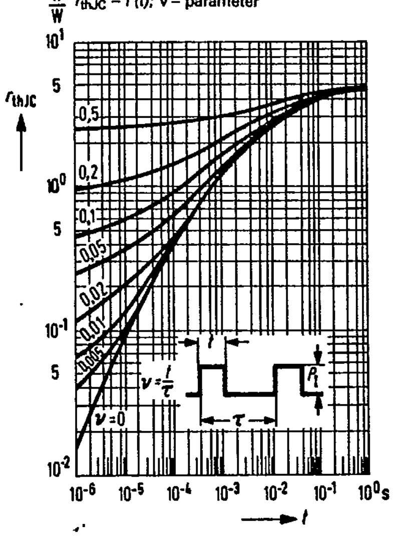
Permissible operating range
$I_C = f(V_{CE})$; $T_{case} = 45\,°C$



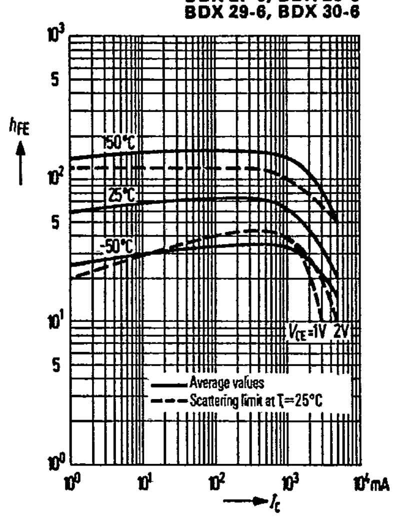
Permissible operating range
$I_C = f(V_{CE})$; $T_{case} = 45\,°C$



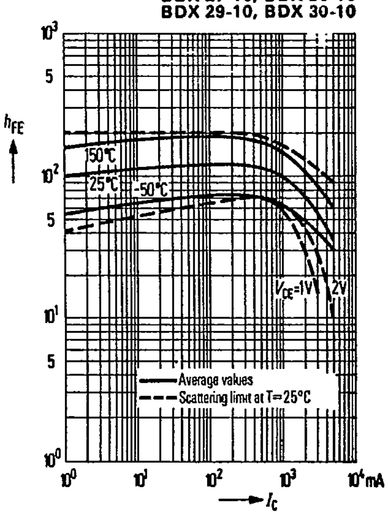
Permissible pulse load
$r_{thJC} = f(t)$; v = parameter



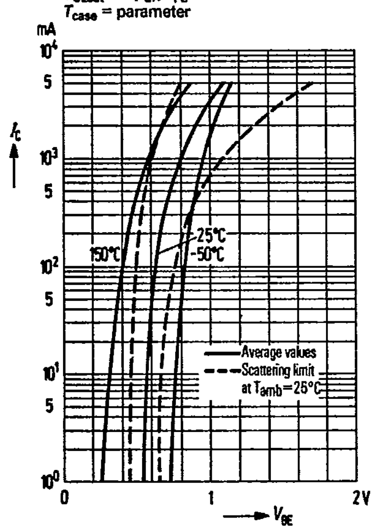
DC current gain $h_{FE} = f(I_C)$
T_{case} = parameter
BDX 27-6, BDX 28-6
BDX 29-6, BDX 30-6



DC current gain $h_{FE} = f(I_C)$
T_{case} = parameter
BDX 27-10, BDX 28-10
BDX 29-10, BDX 30-10



Collector-emitter saturation voltage
$V_{CEsat} = f(I_C)$; $h_{FE} = 10$
T_{case} = parameter



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