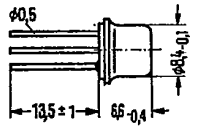
NPN Silicon Planar Transistors

BSX 62
BSX 63

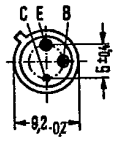
SIEMENS AKTIENGESELLSCHAF

BSX 62 and BSX 63 are epitaxial NPN silicon planar transistors in TO 39 case (5 C 3 DIN 41873). The collector is electrically connected to the case. The transistors are particularly suitable for AF output stages and as a medium-power switch.

Type	Ordering code
BSX 62	Q60218-X62
BSX 62-6	Q60218-X62-B
BSX 62-10	Q60218-X62-C
BSX 62-16	Q60218-X62-D
BSX 63	Q60218-X63
BSX 63-6	Q60218-X63-B
BSX 63-10	Q60218-X63-C



Approx. weight 1.5 g



Dimensions in mm

Maximum ratings		BSX 62	BSX 63	
Collector-emitter voltage	V_{CEO}	40	60	V
Collector-emitter voltage	V_{CES}	60	80	V
Emitter-base voltage	V_{EBO}	5	5	V
Collector current	I_C	3	3	A
Base current	I_B	500	500	mA
Junction temperature	T_j	200	200	°C
Storage temperature range	T_{stg}	−65 to +200	−65 to +200	°C
Total power dissipation ($T_{case} \leq 25$ °C)	P_{tot}	5	5	W
Thermal resistance				
Junction to case	R_{thJC}	≤35	≤35	K/W
Junction to ambient air	R_{thJA}	≤200	≤200	K/W

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

Transistors BSX 62 and BSX 63 are grouped according to their DC current gain h_{FE} at I_C = 1 A and V_{CE} = 1 V. The different groups are marked by figures of the DIN-R 5 series. Valid for the following operating points are:

Type		BSX 62 BSX 63	BSX 62 BSX 63	BSX 62 –	BSX 62, BSX 63		
h_{FE} group		6	10	16			
V_{CE} V	I_C A	h_{FE} I_C/I_B	h_{FE} I_C/I_B	h_{FE} I_C/I_B	V_{BE} V	V_{CEsat} [1] V	V_{BEsat} [1] V
1	0.1	70 (>30)	110	180	0.72 (<1)	–	–
1	1	63 (40 to 100)*	100 (63 to 160)*	160 (100 to 250)*	0.9 (<1.2)	–	–
5	2	40 (>25)	70	120	1.0 (<1.3)	–	–
	2	–	–	–	–	0.4 (<0.8)	1.0 (<1.3)
	2	–	–	–	–	0.2 (<0.7)	0.9 (<1.2)

1) The transistor is saturated to such an extent that the DC current gain decreases to h_{FE} = 10.
* AQL = 0.65%

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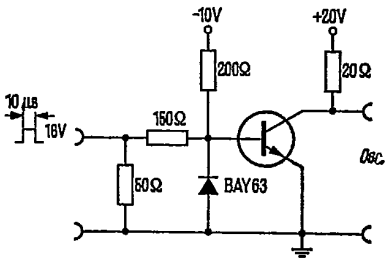
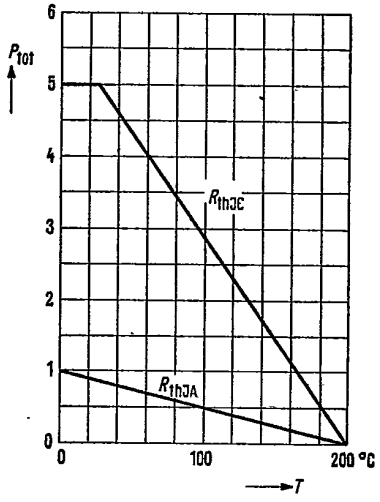
Static characteristics (T_{amb} = 25 °C)		**BSX 62**	**BSX 63**	
Collector cutoff current (V_{CES} = 40 V)	I_{CES}	10 (<100)*	–	nA
Collector cutoff current (V_{CES} = 60 V)	I_{CES}	–	10 (<100)*	nA
Collector cutoff current (V_{CES} = 40 V; T_{case} = 150 °C)	I_{CES}	10 (<100)	–	µA
Collector cutoff current (V_{CES} = 60 V; T_{case} = 150 °C)	I_{CES}	–	10 (<100)	µA
Collector-emitter breakdown voltage (I_{CE} = 100 mA; pulse length 200 µs; duty cycle 1%)	$V_{(BR)CEO}$	>40	>60	V
Emitter-base breakdown voltage (I_{EB} = 10 µA)	$V_{(BR)EBO}$	>5	>5	V
Collector-base breakdown voltage (I_{CB} = 100 µA)	$V_{(BR)CBO}$	>60	>60	V

Dynamic characteristics (T_{case} = 25 °C)				
Transition frequency (I_C = 200 mA; V_{CE} = 10 V)	f_T	70 (>30)	70 (>30)	MHz
Collector-base capacitance (V_{CB} = 10 V)	C_{CBO}	35 (<70)	35 (<70)	pF
Switching times: (I_C approx. 1A; I_{B1} approx. $-I_{B2}$ approx. 50 mA)	t_{on}	<0.3	<0.3	µs
	t_{off}	<1.5	<1.5	µs

Test circuit for switching times



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



* AQL = 0.65%

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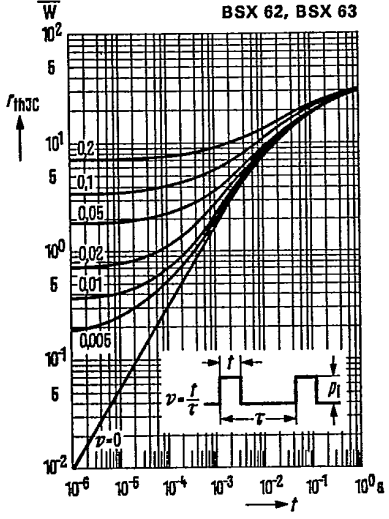
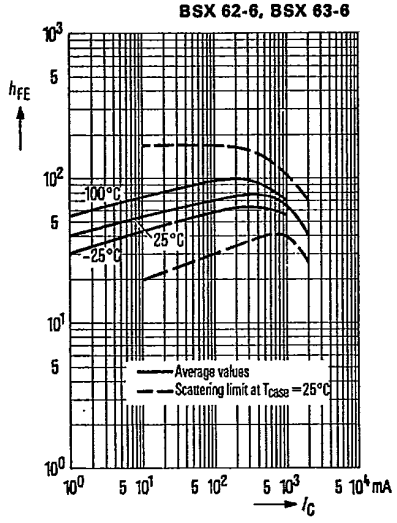
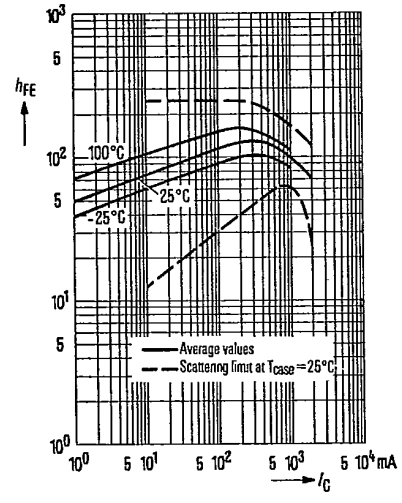


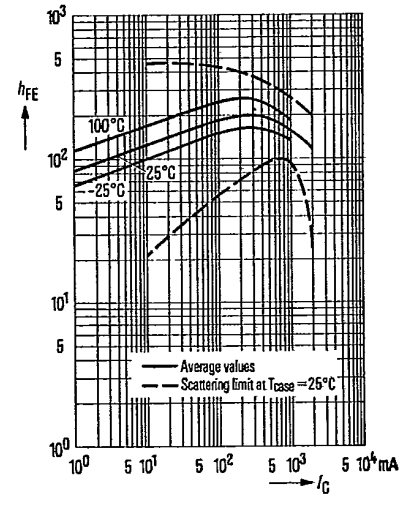
DC current gain $h_{FE} = f(I_C)$
V_{CE} = 1 V; T_{amb} = parameter
(common emitter configuration)
BSX 62-6, BSX 63-6



DC current gain $h_{FE} = f(I_C)$
V_{CE} = 1 V; T_{amb} = parameter
(common emitter configuration)
BSX 62-10, BSX 63-10



DC current gain $h_{FE} = f(I_C)$
V_{CE} = 1 V; T_{amb} = parameter
(common emitter configuration)
BSX 62-16



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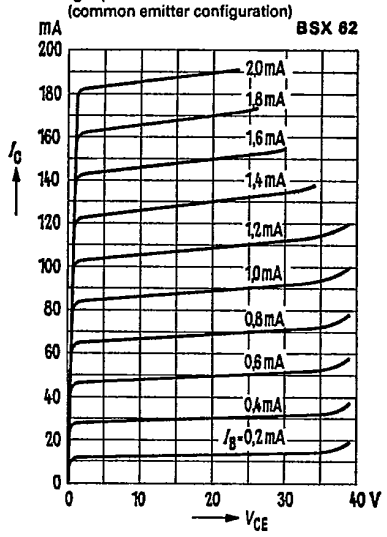
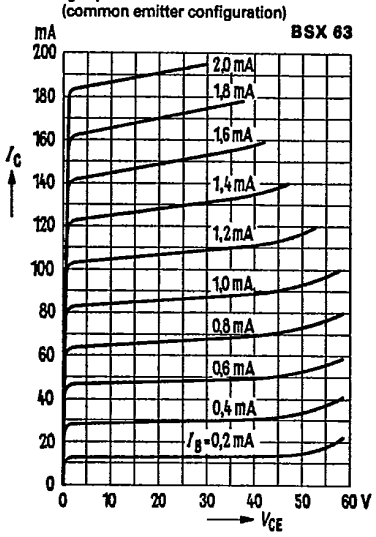
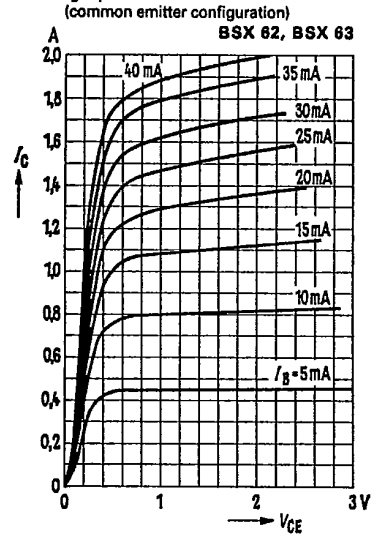
Output characteristics $I_C = f(V_{CE})$
I_B = parameter
(common emitter configuration)



Output characteristics $I_C = f(V_{CE})$
I_B = parameter
(common emitter configuration)



Output characteristics $I_C = f(V_{CE})$
I_B = parameter
(common emitter configuration)



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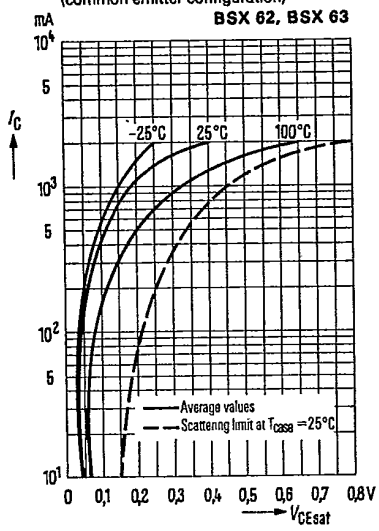
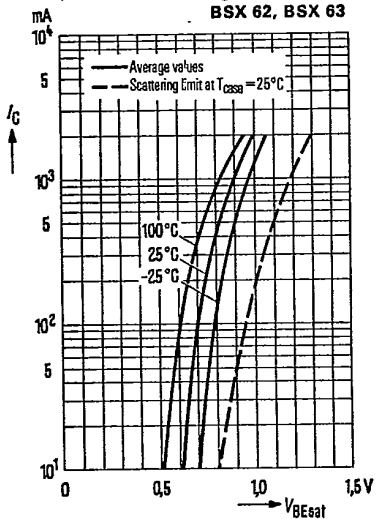
Collector-emitter saturation voltage $V_{CEsat} = f(I_C)$
$h_{FE} = 10$; T_{amb} = parameter
(common emitter configuration)



Collector-base saturation voltage $V_{BEsat} = f(I_C)$
$h_{FE} = 10$; T_{amb} = parameter
(common emitter configuration)



Collector cutoff current versus temperature $I_{CBO} = f(T_{amb})$