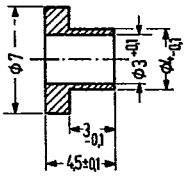
NPN Silicon Power Transistors

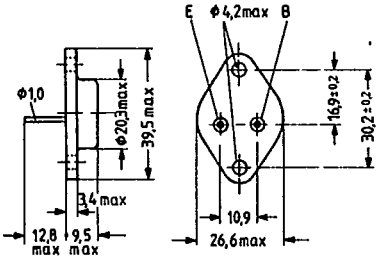
BUX 80
BUX 81

SIEMENS AKTIENGESELLSCHAF

BUX 80 and BUX 81 are triple diffused NPN silicon power transistors in a case similar to TO 3 (3 A 2 DIN 41 872). The collector is electrically connected to the case. The transistors are particularly suitable for use as high-speed power switch at high voltages. BUX 80 is intended as replacement for BUW 77 (also BUW 76).

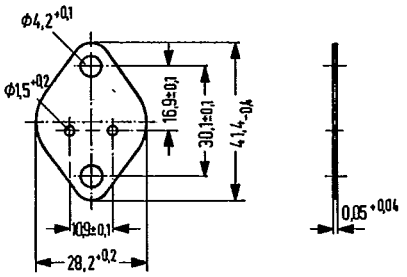
Type	Ordering code
BUX 80	Q68000-A4634
BUX 81	Q68000-A4675
Mica washer	Q62901-B11-A
Insulating nipple	Q62901-B50





Approx. weight 18 g

Dimensions in mm

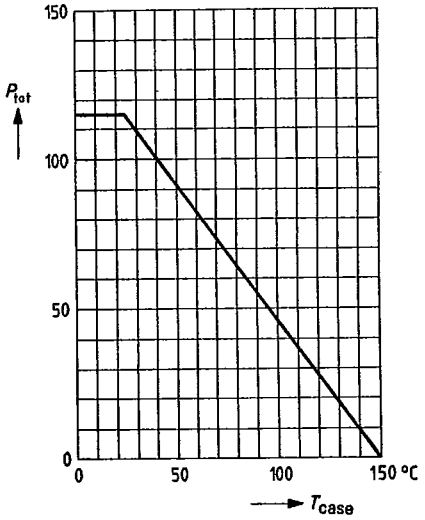


Maximum ratings		BUX 80	BUX 81	
Collector-emitter voltage	V_{CES}	800	1000	V
Collector-emitter voltage	V_{CEO}	400	450	V
Collector-emitter voltage (R_{BE} = 50 Ω)	V_{CER}	500	500	V
Collector current	I_C	10	10	A
Collector peak current (t < 2 ms)	I_{CM}	15	15	A
Base current	I_B	4	4	A
Base peak current (t < 2 ms)	I_{BM}	6	6	A
Negative base peak current at turning off	$-I_{BM}$	6	6	A
Storage temperature range	T_{stg}	−65 to +150		°C
Junction temperature	T_j	150	150	°C
Total power dissipation (T_{case} ≦ 40 °C)	P_{tot}	100	100	W
Thermal resistance				
Junction to case	R_{thJC}	≦ 1.1	≦ 1.1	K/W

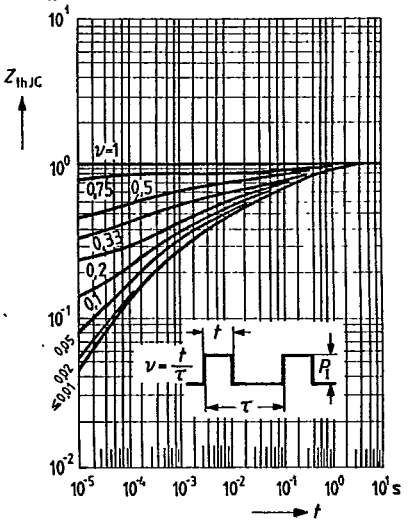
Static characteristics (T_{amb} = 25 °C)		BUX 80	BUX 81	
Collector-emitter breakdown voltage				
(I_C = 100 mA; I_B = 0; L = 25 mH)	$V_{(BR)CEO}$	> 400	> 450	V
(I_C = 100 mA; R_{BE} = 50 Ω; L = 15 mH)	$V_{(BR)CER}$	> 500	> 500	V
Collector cutoff current				
(V_{CES} = 800 V)	I_{CES}	< 1	–	mA
(V_{CES} = 800 V; T_j = 125 °C)	I_{CES}	< 3	–	mA
(V_{CES} = 1000 V)	I_{CES}	–	< 1	mA
(V_{CES} = 1000 V; T_j = 125 °C)	I_{CES}	–	< 3	mA
Emitter cutoff current (V_{EBO} = 10 V)	I_{EBO}	< 10	< 10	mA
DC current gain (I_C = 1.2 A; V_{CE} = 5 V)	h_{FE}	30	30	–
Collector-emitter saturation voltage				
(I_C = 8 A; I_B = 2.5 A)	V_{CEsat}	< 3	< 3	V
(I_C = 5 A; I_B = 1 A)	V_{CEsat}	< 1.5	< 1.5	V
Base-emitter saturation voltage				
(I_C = 8 A; I_B = 2.5 A)	V_{BEsat}	< 1.8	< 1.8	V
(I_C = 5 A; I_B = 1 A)	V_{BEsat}	< 1.4	< 1.4	V
Dynamic characteristics (T_{amb} = 25 °C)				
Transition frequency				
(I_C = 0.2 A; V_{CE} = 10 V; f = 1 MHz)	f_T	6	6	MHz
Switching times:				
(V_{CC} = 250 V; I_C = 5 A; I_B = 1 A; $-I_B$ = 2 A)				
Turn-on time	t_{on}	0.35 (<0.5)	0.35 (<0.5)	µs
Storage time	t_s	2.5 (<3.5)	2.5 (<3.5)	µs
Fall time[1)]	t_f	0.3	0.3	µs

1) at T_{case} = 95 °C is t_f < 0.8 µs

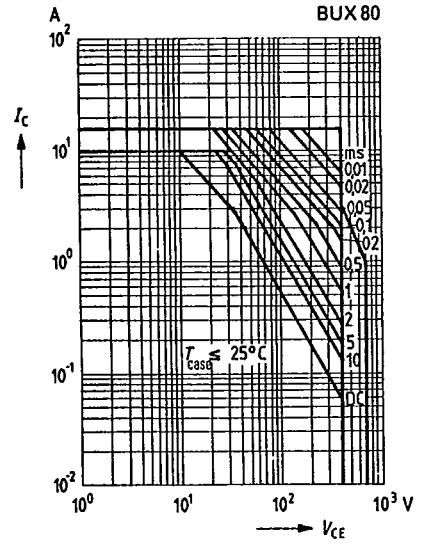
Total perm. power dissipation versus temperature
$P_{tot} = f(T_{case})$



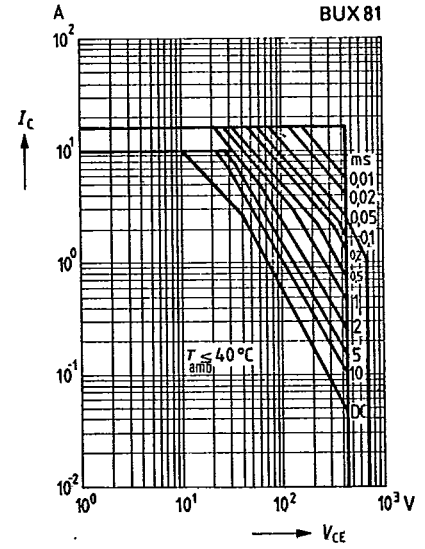
Permissible pulse load
$Z_{thJC} = f(t)$; ν = parameter



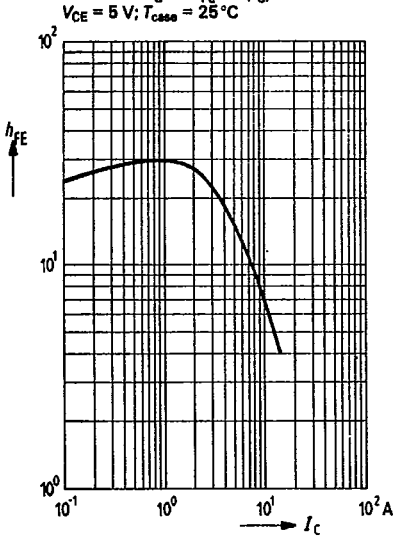
Permissible operating range
$I_C = f(V_{CE})$; $T_{case} \leq 25$ °C



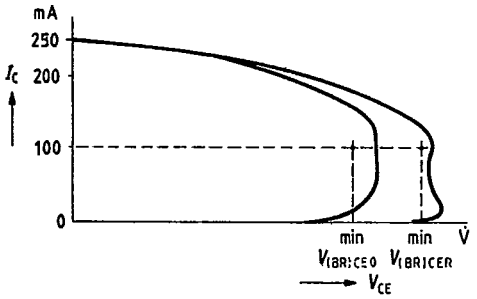
Permissible operating range
$I_C = f(V_{CE})$; $T_{amb} \leq 40$ °C



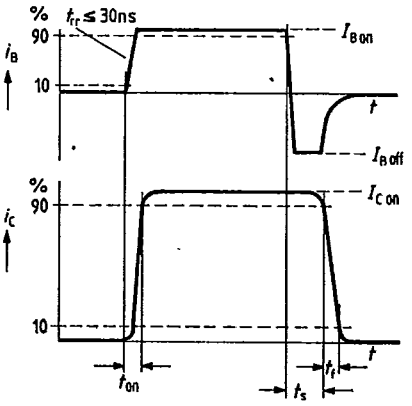
DC current gain $h_{FE} = f(I_C)$
$V_{CE} = 5$ V; $T_{case} = 25$ °C



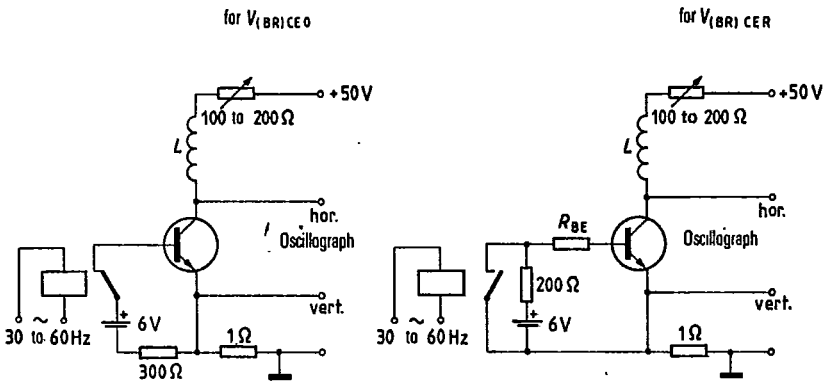
Oscillator – voltage curve



Timing diagram



Test circuits for breakdown voltages



Test circuit for switching times