

NPN Silicon High-Voltage Transistors

BFN 36
BFN 38

- Suitable for video output stages in TV sets and switching power supplies
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary types: BFN 37, BFN 39 (PNP)



Type	Marking	Ordering Code (tape and reel)	Pin Configuration				Package ¹⁾
			1	2	3	4	
BFN 36 BFN 38	BFN 36 BFN 38	Q62702-F1246 Q62702-F1303	B	C	E	C	SOT-223

Maximum Ratings

Parameter	Symbol	Values		Unit
		BFN 36	BFN 38	
Collector-emitter voltage	V_{CE0}	250	300	V
Collector-base voltage	V_{CB0}	250	300	
Emitter-base voltage	V_{EB0}	5		
Collector current	I_C	200		mA
Peak collector current	I_{CM}	500		
Base current	I_B	100		
Peak base current	I_{BM}	200		
Total power dissipation, $T_s = 124\text{ °C}$	P_{tot}	1.5		W
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	- 65 ... + 150		

Thermal Resistance

Junction - ambient ²⁾	$R_{th\ JA}$	≤ 72	K/W
Junction - soldering point	$R_{th\ JS}$	≤ 17	

¹⁾ For detailed information see chapter Package Outlines.

²⁾ Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm² Cu.

Electrical Characteristics

at $T_A = 25\text{ °C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC characteristics

Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CE0}$	250 300	– –	– –	V
BFN 36					
BFN 38					
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_B = 0$	$V_{(BR)CB0}$	250 300	– –	– –	V
BFN 36					
BFN 38					
Emitter-base breakdown voltage $I_E = 100\text{ }\mu\text{A}$, $I_B = 0$	$V_{(BR)EB0}$	5	–	–	
Collector-base cutoff current $V_{CB} = 200\text{ V}$ $V_{CB} = 250\text{ V}$ $V_{CB} = 200\text{ V}$, $T_A = 150\text{ °C}$ $V_{CB} = 250\text{ V}$, $T_A = 150\text{ °C}$	I_{CB0}	– – – –	– – – –	100 100 20 20	nA nA μA μA
BFN 36					
BFN 38					
BFN 36					
BFN 38					
Emitter-base cutoff current $V_{EB} = 4\text{ V}$, $I_C = 0$	I_{EB0}	–	–	100	nA
DC current gain ¹⁾ $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$, $V_{CE} = 10\text{ V}$ $I_C = 30\text{ mA}$, $V_{CE} = 10\text{ V}$ $I_C = 30\text{ mA}$, $V_{CE} = 10\text{ V}$	h_{FE}	25 40 40 30	– – – –	– – – –	–
BFN 36					
BFN 38					
Collector-emitter saturation voltage ¹⁾ $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$	V_{CEsat}	– –	– –	0.4 0.5	V
BFN 36					
BFN 38					
Base-emitter saturation voltage ¹⁾ $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$	V_{BEsat}	–	–	0.9	

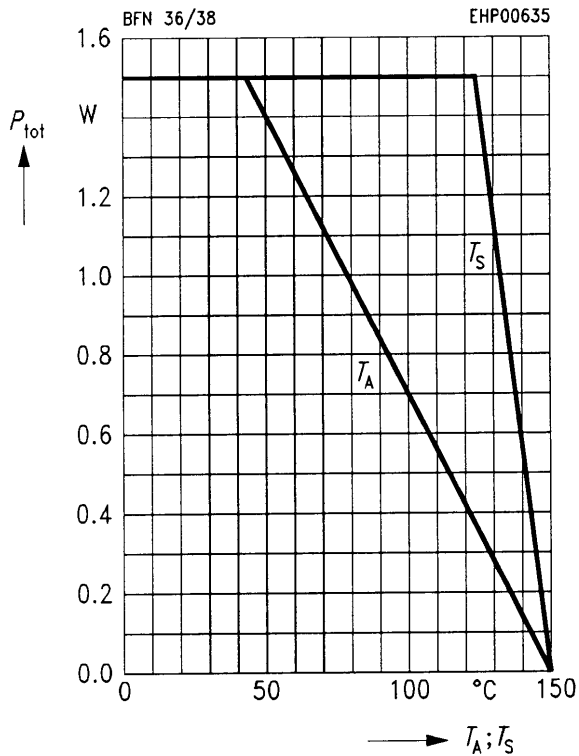
AC characteristics

Transition frequency $I_C = 20\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$	f_T	–	70	–	MHz
Output capacitance $V_{CB} = 30\text{ V}$, $f = 1\text{ MHz}$	C_{obo}	–	1.5	–	pF

¹⁾ Pulse test conditions: $t \leq 300\text{ }\mu\text{s}$, $D = 2\%$.

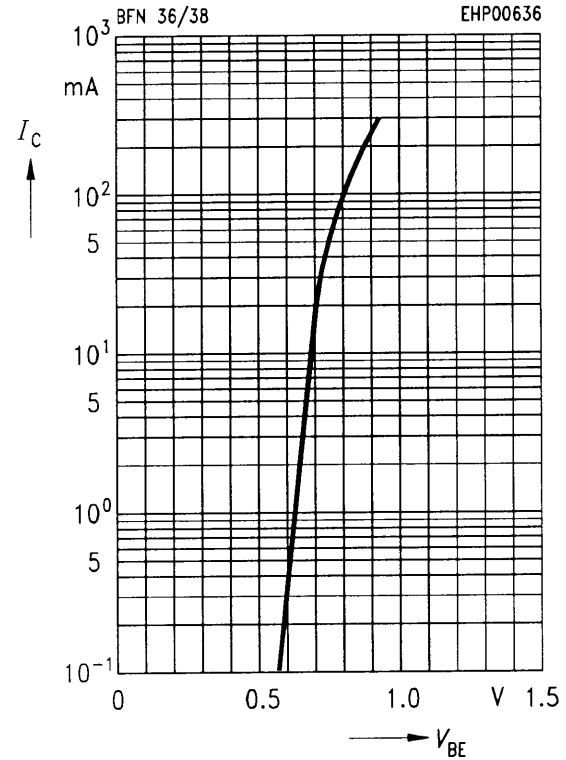
Total power dissipation $P_{tot} = f(T_A^*; T_S)$

* Package mounted on epoxy

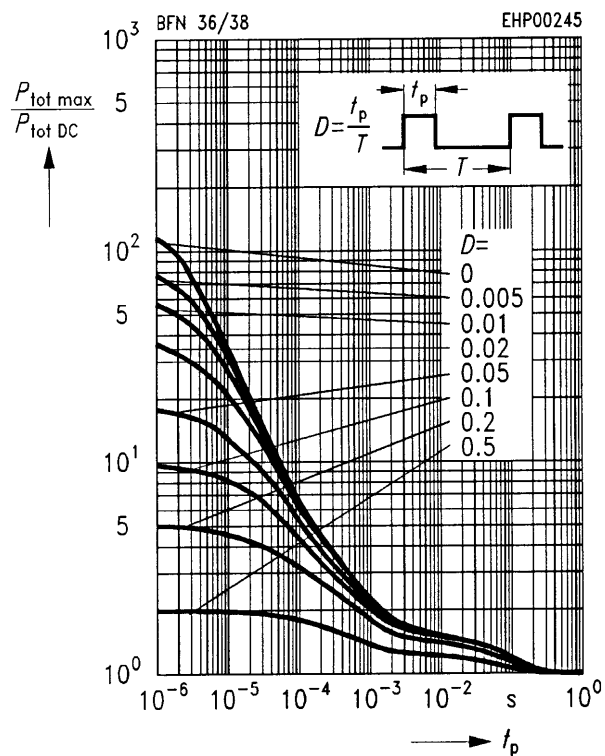


Collector current $I_C = f(V_{BE})$

$V_{CE} = 10\text{ V}$

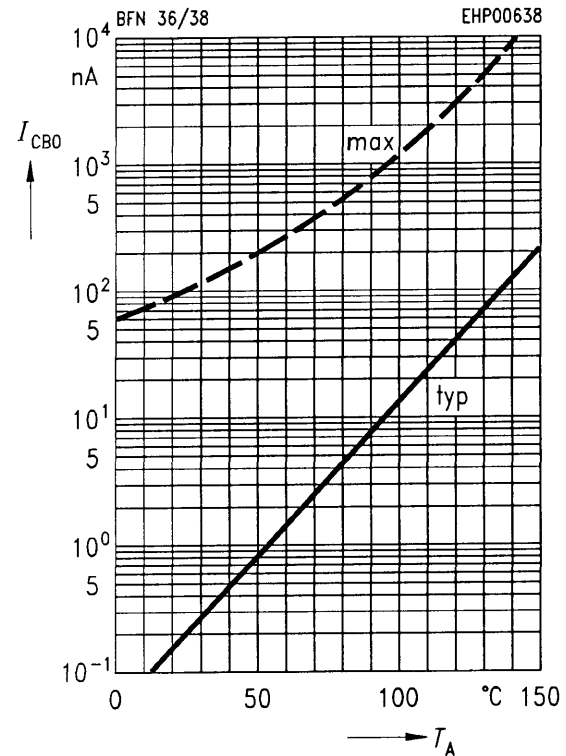


Permissible pulse load $P_{tot\ max}/P_{tot\ DC} = f(t_p)$



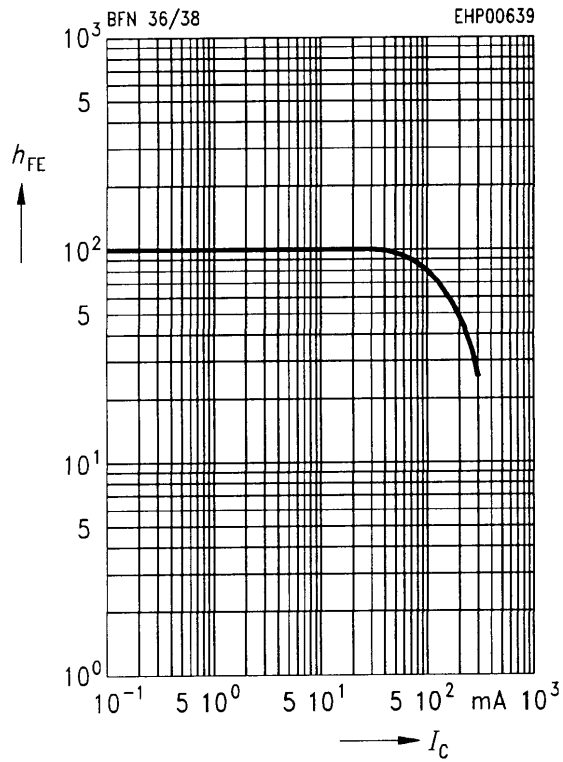
Collector cutoff current $I_{CB0} = f(T_A)$

$V_{CB} = 200\text{ V}$



DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 10\text{ V}$



Transition frequency $f_T = f(I_C)$

$V_{CE} = 10\text{ V}, f = 100\text{ MHz}$

