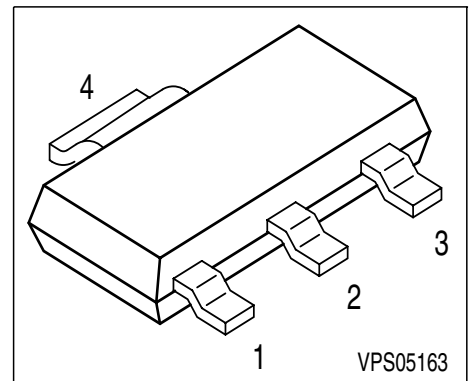


NPN Silicon High-Voltage Transistors

- 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	Pin Configuration				Package
BFN 36	BFN 36	1 = B	2 = C	3 = E	4 = C	SOT-223
BFN 38	BFN 38	1 = B	2 = C	3 = E	4 = C	SOT-223

Maximum Ratings

Parameter	Symbol	BFN 36	BFN 38	Unit
Collector-emitter voltage	V_{CEO}	250	300	V
Collector-base voltage	V_{CBO}	250	300	
Emitter-base voltage	V_{EBO}	5	5	
DC 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, $T_S = 124\text{ }^{\circ}\text{C}$	P_{tot}	1.5		W
Junction temperature	T_j	150		$^{\circ}\text{C}$
Storage temperature	T_{stg}	-65 ... 150		

Thermal Resistance

Junction ambient ¹⁾	R_{thJA}	≤72	K/W
Junction - soldering point	R_{thJS}	≤17	K/W

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 6cm² Cu

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$ BFN 36 BFN 38	$V_{(BR)CEO}$	250 300	- -	- -	V
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_B = 0$ BFN 36 BFN 38	$V_{(BR)CBO}$	250 300	- -	- -	
Emitter-base breakdown voltage $I_E = 100\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 200\text{ V}$, $I_E = 0$ $V_{CB} = 250\text{ V}$, $I_E = 0$ BFN 36 BFN 38	I_{CBO}	- -	- -	100 100	nA
Collector cutoff current $V_{CB} = 200\text{ V}$, $I_E = 0$, $T_A = 150\text{ }^\circ\text{C}$ $V_{CB} = 250\text{ V}$, $I_E = 0$, $T_A = 150\text{ }^\circ\text{C}$ BFN 36 BFN 38	I_{CBO}	- -	- -	20 20	μA
Emitter cutoff current $V_{EB} = 4\text{ V}$, $I_C = 0$	I_{EBO}	-	-	100	nA
DC current gain 1) $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$, $V_{CE} = 10\text{ V}$ $I_C = 30\text{ mA}$, $V_{CE} = 10\text{ V}$ BFN 36 BFN 38	h_{FE}	25 40 40 30	- - - -	- - - -	-
Collector-emitter saturation voltage1) $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$ BFN 36 BFN 38	V_{CEsat}	- -	- -	0.4 0.5	V
Base-emitter saturation voltage 1) $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$	V_{BEsat}	-	-	0.9	

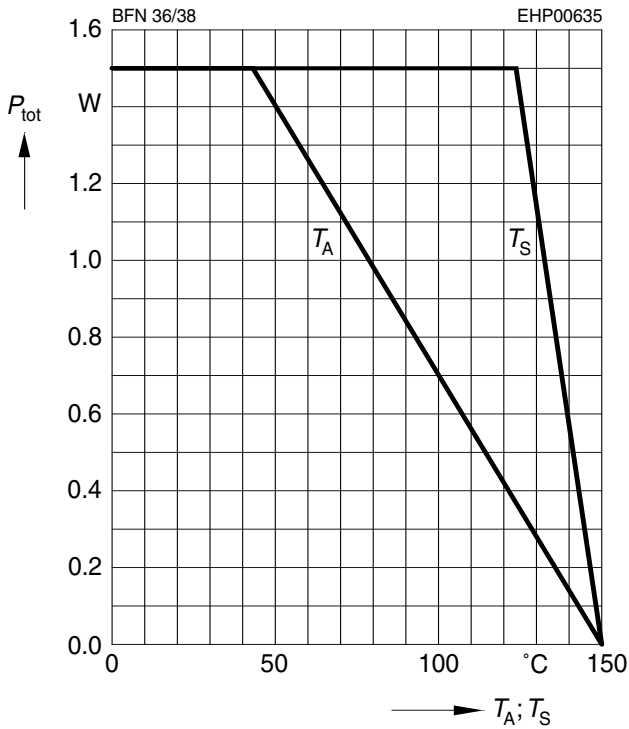
1) Pulse test: $t < 300\mu\text{s}$; $D < 2\%$

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 20\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 20\text{ MHz}$	f_T	-	70	-	MHz
Collector-base capacitance $V_{CB} = 30\text{ V}$, $f = 1\text{ MHz}$	C_{cb}	-	1.5	-	pF

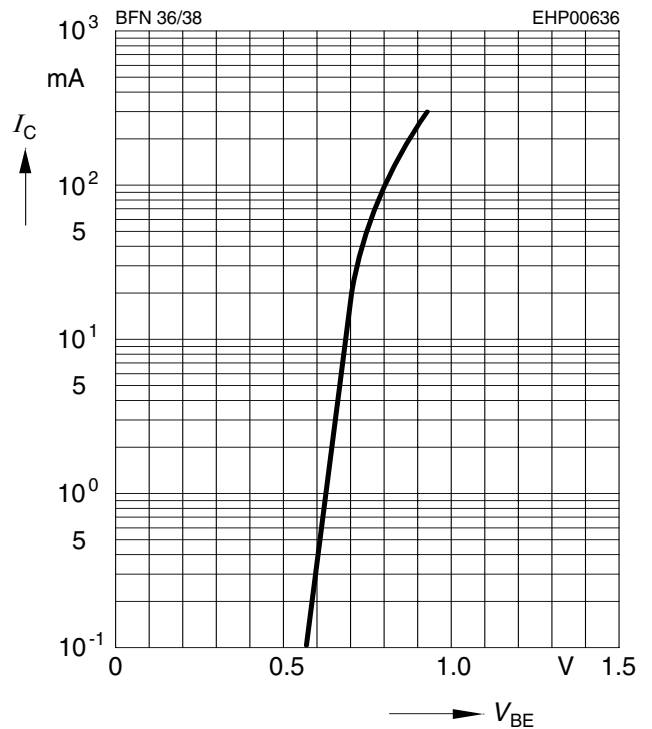
Total power dissipation $P_{\text{tot}} = f(T_A^*; T_S)$

* Package mounted on epoxy



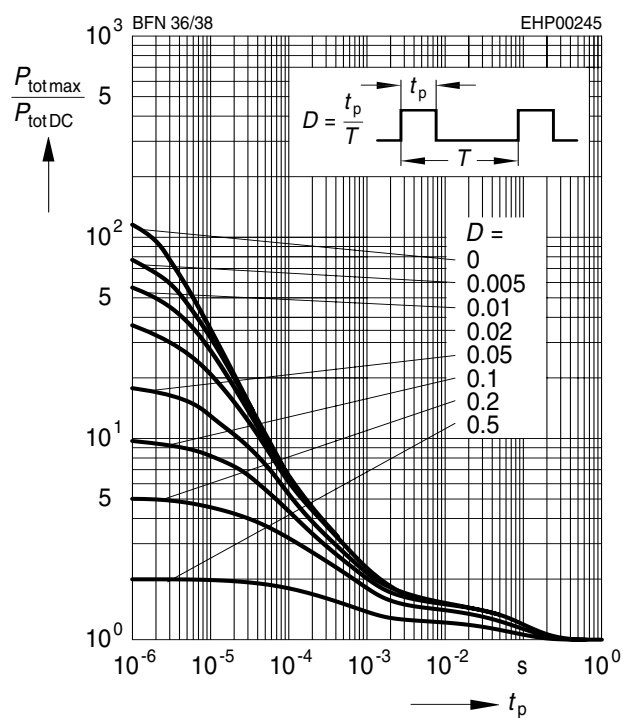
Collector current $I_C = f(V_{\text{BE}})$

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



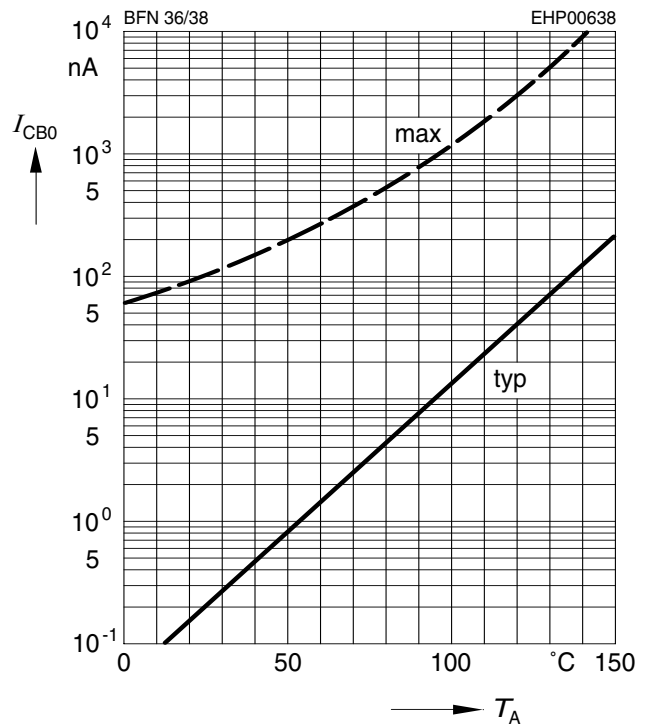
Permissible pulse load

$P_{\text{totmax}} / P_{\text{totDC}} = f(t_p)$



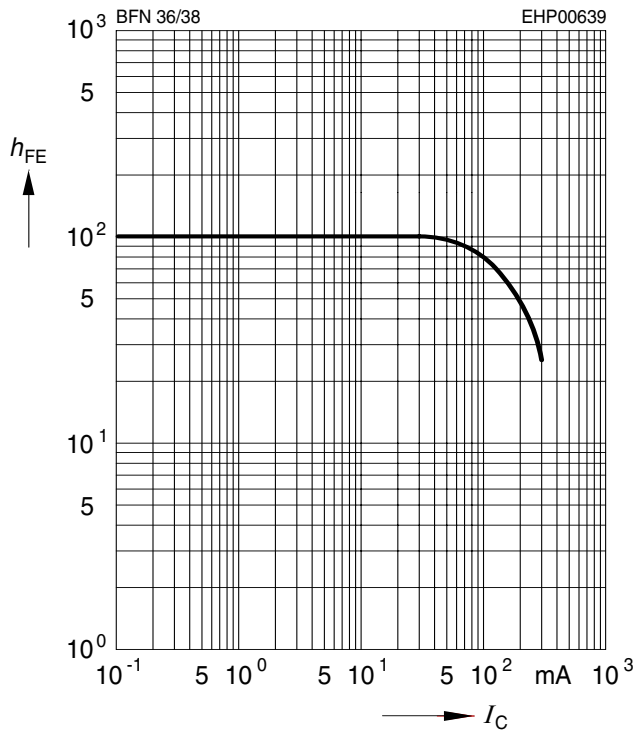
Collector cutoff current $I_{\text{CBO}} = f(T_A)$

$V_{\text{CB}} = 30\text{V}$



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

$V_{CE} = 10V$



Transition frequency $f_T = f(I_C)$

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

