

BFN18

NPN Silicon High-Voltage Transistors

Data Sheet

Revision 1.0, 2010-10-13

RF & Protection Devices

Edition 2010-10-13

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Revision History

Page or Item	Subjects (major changes since previous revision)
Revision 1.0, 2010-10-13	
	Converted to the new IFX Template.

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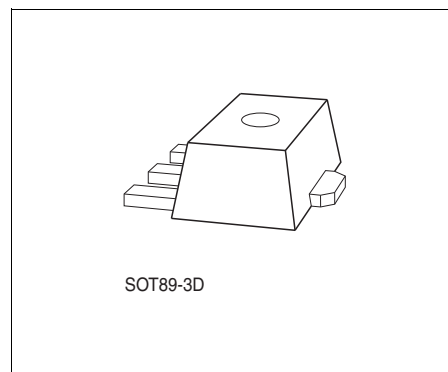
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1 Features

Main features:

- Suitable for video output stages TV sets and switching power supplies
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary types: BFN19 (PNP)
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101



1) Pb-containing package may be available upon special request

Product Name	Package	Pin Configuration				Marking
BFN18	SOT89	1 = B	2 = C	3 = E	4 = C	DE

2 Electrical Characteristics

Table 1 Absolute Maximum Ratings

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Collector-emitter voltage	V_{CEO}	–	–	300	V	–
Collector-base voltage	V_{CBO}	–	–	300	V	–
Emitter-base voltage	V_{EBO}	–	–	5	V	–
Collector current	I_C	–	–	200	mA	–
Peak collector current	I_{CM}	–	–	500	mA	–
Base current	I_B	–	–	100	mA	–
Peak base current	I_{BM}	–	–	200	mA	–
Total power dissipation- $T_S = 120\text{ °C}$	P_{tot}	–	–	1.5	W	–
Junction temperature	T_j	–	–	150	°C	–
Storage temperature	T_{stg}	-65	–	150	°C	–

Attention: Stresses above the max. values listed here may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Maximum ratings are absolute ratings; exceeding only one of these values may cause irreversible damage to the device.

Table 2 Thermal Resistance

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Junction - soldering point ¹⁾	R_{thJS}	–	–	≤ 20	K/W	–

1) For calculation of R_{thJA} please refer to Application Note Thermal Resistance.

Electrical Characteristics

Table 3 DC Characteristics at $T_A = 25\text{ °C}$, Unless Otherwise Specified

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Collector emitter breakdown voltage	$V_{(BR)CEO}$	300	–	–	V	$I_C = 1\text{ mA}$, $I_B = 0$
Collector-base breakdown voltage	$V_{(BR)CBO}$	300	–	–	V	$I_C = 100\text{ }\mu\text{A}$, $I_E = 0$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	–	–	V	$I_E = 100\text{ }\mu\text{A}$, $I_C = 0$
Collector-base cutoff current	I_{CBO}	–	–	0.1	μA	$V_{CB} = 250\text{ V}$, $I_E = 0$
		–	–	20		$V_{CB} = 250\text{ V}$, $I_E = 0$, $T_A = 150\text{ °C}$
Emitter-base cutoff current	I_{EBO}	–	–	100	nA	$V_{EB} = 5\text{ V}$, $I_C = 0$
DC current gain ¹⁾	h_{FE}	25	–	–		$I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$
		40	–	–		$I_C = 10\text{ mA}$, $V_{CE} = 10\text{ V}$
		30	–	–		$I_C = 30\text{ mA}$, $V_{CE} = 10\text{ V}$
Collector-emitter saturation voltage ¹⁾	V_{CEsat}	–	–	0.5	V	$I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$
Base emitter saturation voltage ¹⁾	V_{BEsat}	–	–	0.9	V	$I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$

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

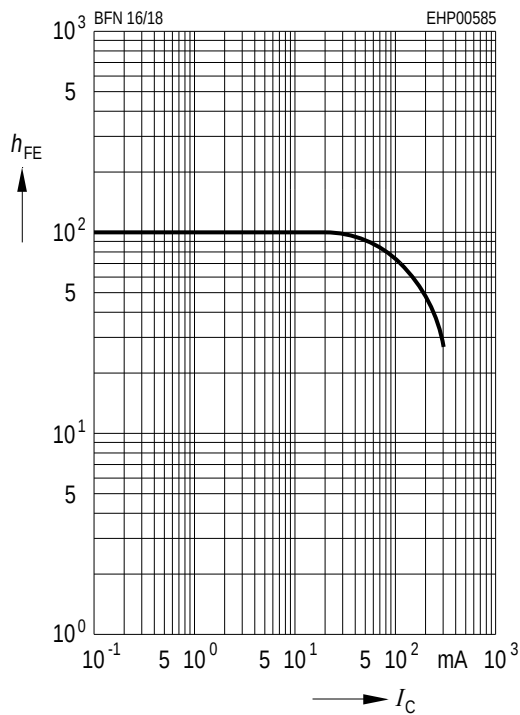
Table 4 AC Characteristics at $T_A = 25\text{ °C}$

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Transition frequency	f_T	–	70	–	MHz	$I_C = 20\text{ MHz}$, $V_{CE} = 10\text{ V}$, $f = 20\text{ MHz}$
Collector base capacitance	C_{Cb}	–	1.5	–	pF	$V_{CB} = 30\text{ V}$, $f = 1\text{ MHz}$

3 Characteristic DC Diagrams

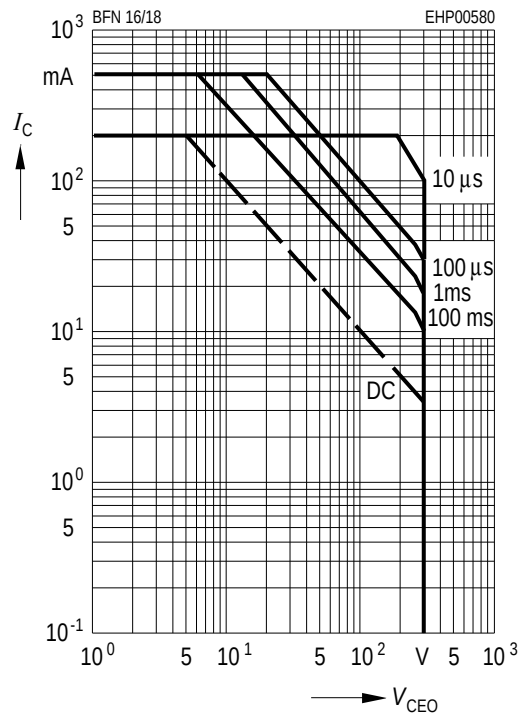
DC Current Gain

$$h_{FE} = f(I_C), V_{CE} = 10 \text{ V}$$



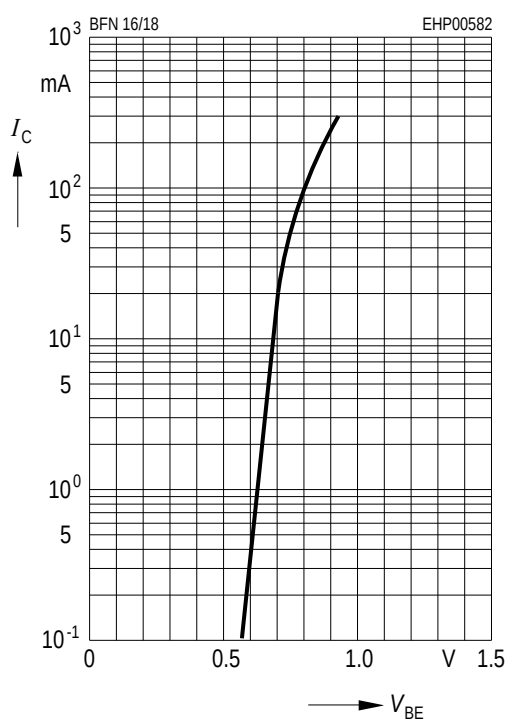
Operating Range

$$I_C = f(V_{CEO}), T_A = 25^\circ\text{C}, D = 0$$



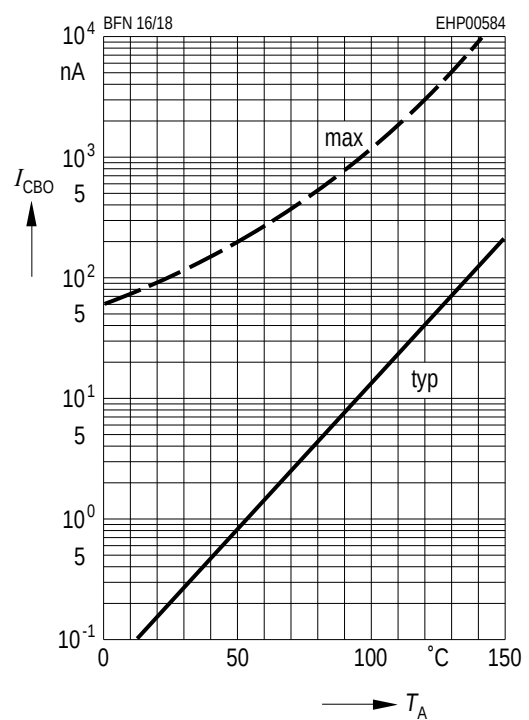
Collector Current

$$I_C = f(V_{BE}), V_{CE} = 10 \text{ V}$$



Collector Cutoff Current

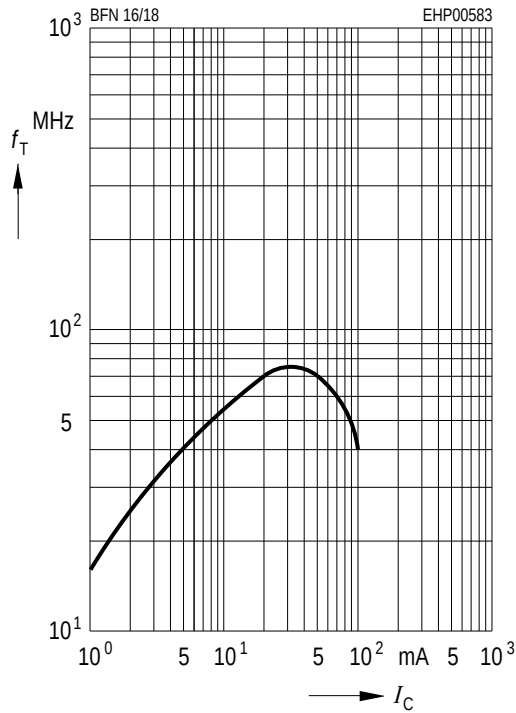
$$I_{CBO} = f(T_A), V_{CBO} = 200 \text{ V}$$



Characteristic DC Diagrams

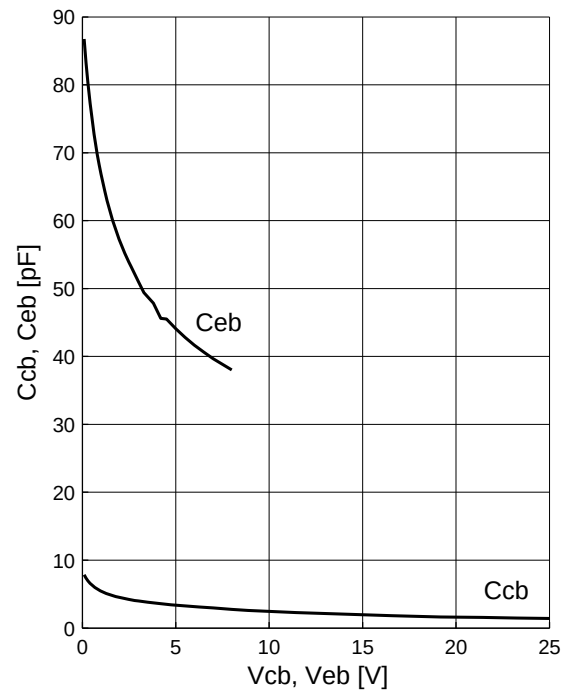
Transition Frequency

$$f_T = f(I_C), V_{CE} = 10 \text{ V}$$



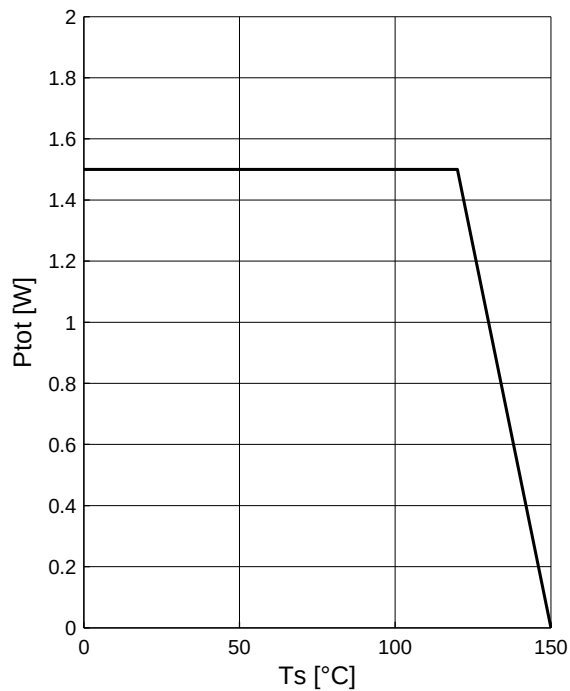
Collector Base Capacitance $C_{cb} = f(V_{CB})$

$$\text{Emitter Base Capacitance } C_{eb} = f(V_{EB})$$



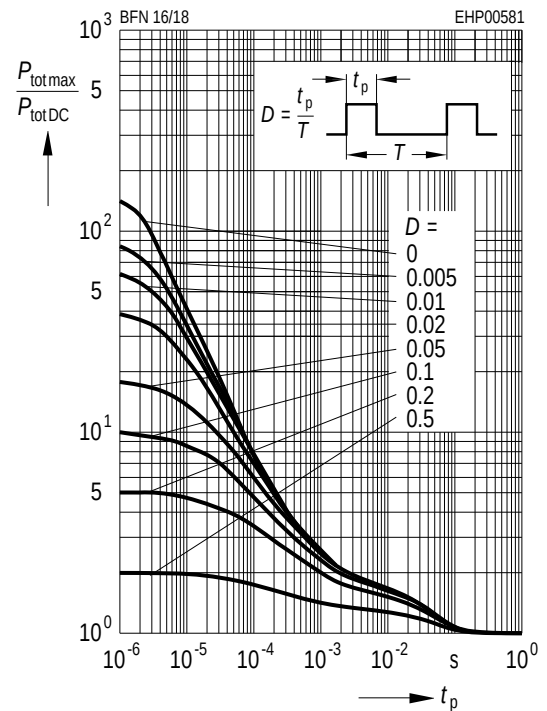
Total Power Dissipation

$$P_{tot} = f(T_S)$$



Permissible Pulse Load

$$P_{totmax} / P_{totDC} = f(T_S)$$



4 Package Information SOT89

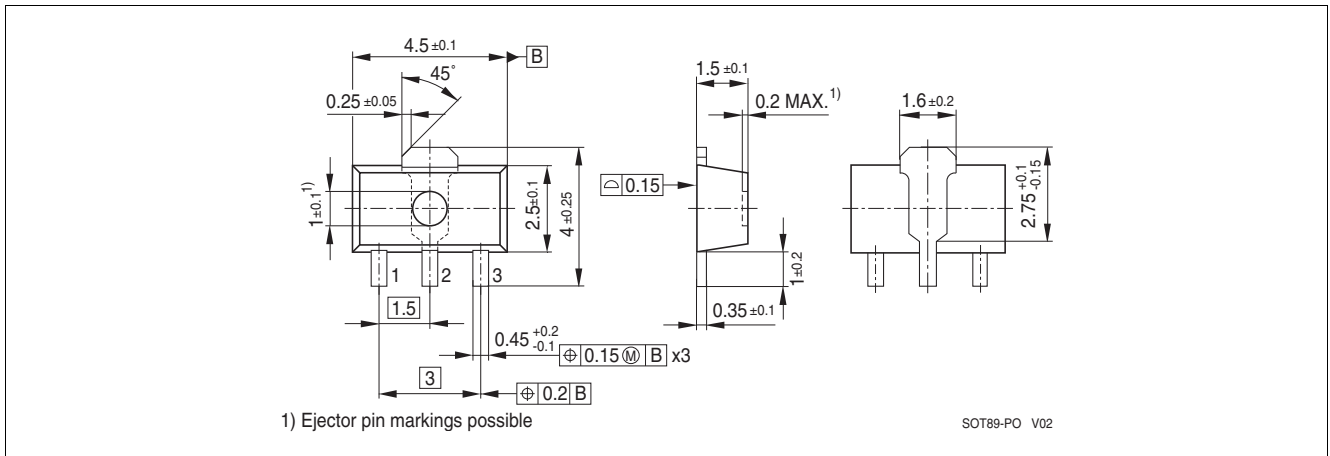


Figure 1 Package Outline

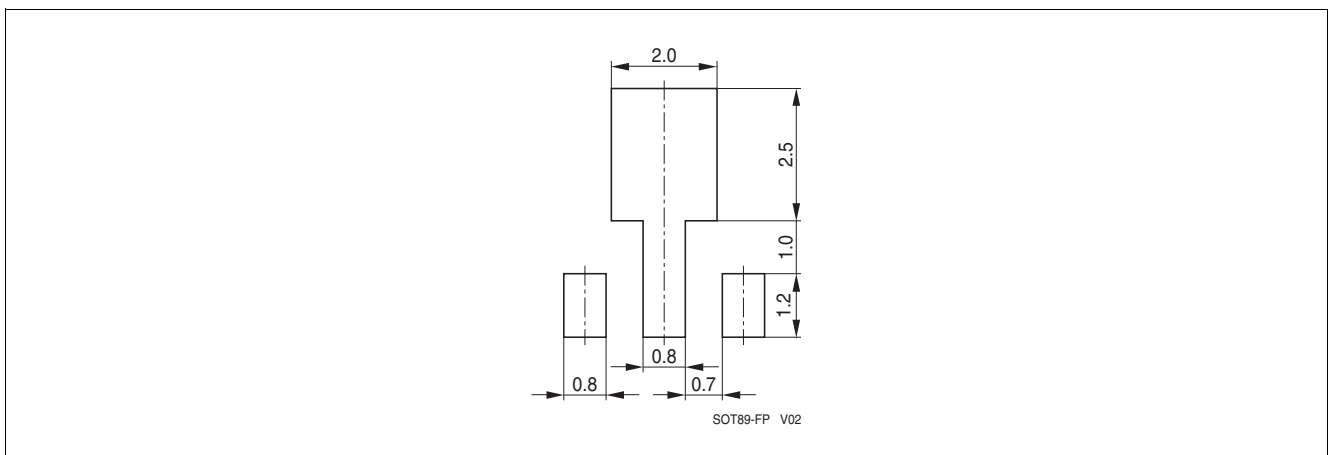


Figure 2 Package Foot Print

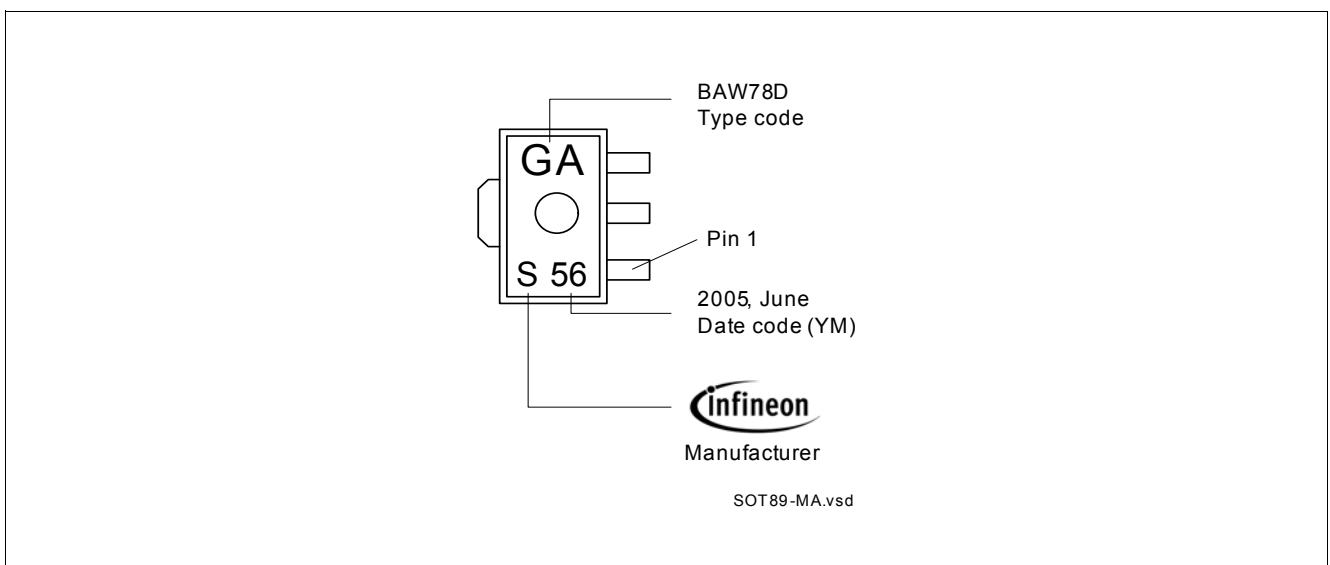


Figure 3 Marking Example

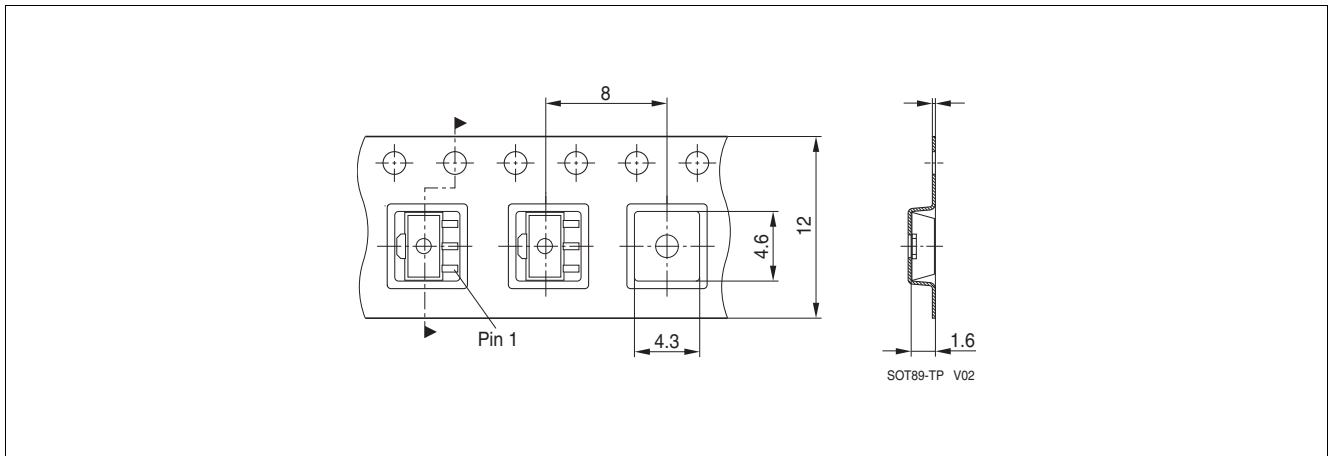


Figure 4 Tape Dimensions

Packing Description

Reel Ø180 mm = 1.000 Pieces/Reel

Reel Ø330 mm = 4.000 Pieces/Reel

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