

BFX87  
 BFX88

SILICON PLANAR EPITAXIAL TRANSISTORS

PNP transistors in TO-39 metal envelopes for general industrial applications.

QUICK REFERENCE DATA

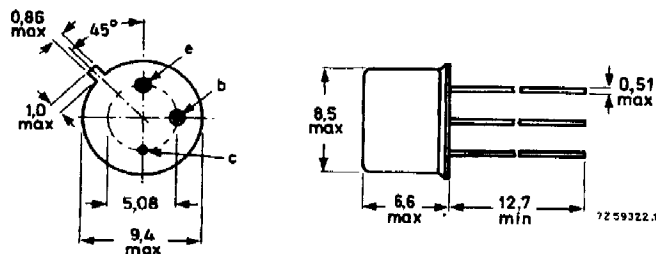
		BFX87	BFX88
Collector-base voltage (open emitter)	$-V_{CBO}$	max. 50	40 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max. 50	40 V
Collector current (peak value)	$-I_{CM}$	max. 600	600 mA
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	$P_{tot}$	max. 600	600 mW
DC current gain	$h_{FE}$	min. 40 typ. 125	40 125
Transition frequency at $f = 100\text{ MHz}$	$f_T$	min. 100	100 MHz
$-I_C = 10\text{ mA}; -V_{CE} = 10\text{ V}$			
$-I_C = 50\text{ mA}; -V_{CE} = 10\text{ V}$			

MECHANICAL DATA

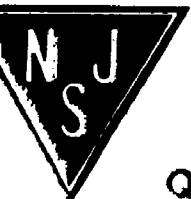
Dimensions in mm

Fig.1 TO-39.

Collector connected to case



Maximum lead diameter is guaranteed only for 12.7 mm.



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Quality Semi-Conductors

# BFX87 BFX88

## RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

		BFX87	BFX88	
Collector-base voltage (open emitter)	$-V_{CBO}$	max.	50	40 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	50	40 V
Collector current (DC)	$-I_C$	max.	600	mA
Collector current (peak value)	$-I_{CM}$	max.	600	mA
Emitter current	$I_{EM}$	max.	600	mA
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	$P_{tot}$	max.	600	mW
Storage temperature range	$T_{stg}$		-65 to +150	$^\circ\text{C}$
Junction temperature	$T_j$	max.	+200	$^\circ\text{C}$

## THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j-a}$	=	300	K/W
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## CHARACTERISTICS

		BFX87	BFX88	
Collector cut-off current $-V_{CB} = 50\text{ V}; I_E = 0$	$-I_{CBO}$	typ.	1.0	nA
		max.	500	nA
$-V_{CB} = 40\text{ V}; I_E = 0$	$-I_{CBO}$	typ.	0.5	1.0 nA
		max.	50	500 nA
$-V_{CB} = 30\text{ V}; I_E = 0$	$-I_{CBO}$	typ.	—	0.5 nA
		max.	—	50 nA
$-V_{CB} = 40\text{ V}; I_E = 0; T_j = 100\text{ }^\circ\text{C}$	$-I_{CBO}$	typ.	0.03	$\mu\text{A}$
		max.	2.0	$\mu\text{A}$
$-V_{CB} = 30\text{ V}; I_E = 0; T_j = 100\text{ }^\circ\text{C}$	$-I_{CBO}$	typ.	—	0.03 $\mu\text{A}$
		max.	—	2.0 $\mu\text{A}$
Emitter cut-off current $-V_{EB} = 4.0\text{ V}; I_C = 0$	$-I_{EBO}$	typ.	2.0	nA
		max.	500	nA
$-V_{EB} = 3.0\text{ V}; I_C = 0$	$-I_{EBO}$	typ.	1.0	nA
		max.	100	nA

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DC current gain				
$-I_C = 1.0 \text{ mA}; -V_{CE} = 10 \text{ V}$	$h_{FE}$	min.	40	
		typ.	105	
$-I_C = 10 \text{ mA}; -V_{CE} = 10 \text{ V}$	$h_{FE}$	min.	40	
		typ.	125	
$-I_C = 150 \text{ mA}; -V_{CE} = 10 \text{ V}$	$h_{FE}$	min.	40	
		typ.	90	
$-I_C = 500 \text{ mA}; -V_{CE} = 10 \text{ V}$	$h_{FE}$	min.	25	
		typ.	40	
Collector-emitter saturation voltage				
$-I_C = 150 \text{ mA}; -I_B = 15 \text{ mA}$	$-V_{CE(sat)}$	typ.	0.15	V
		max.	0.40	V
Base-emitter saturation voltage				
$-I_C = 30 \text{ mA}; -I_B = 1.0 \text{ mA}$	$-V_{BE(sat)}$	typ.	0.77	V
		max.	0.90	V
$-I_C = 150 \text{ mA}; -I_B = 15 \text{ mA}$	$-V_{BE(sat)}$	typ.	1.05	V
		max.	1.30	V
Collector capacitance				
$-V_{CB} = 10 \text{ V}; I_E = I_e = 0; f = 1.0 \text{ MHz}$	$C_c$	typ.	6.0	pF
		max.	12	pF
Emitter capacitance				
$-V_{EB} = 2.0 \text{ V}; I_C = I_c = 0; f = 1.0 \text{ MHz}$	$C_e$	typ.	18	pF
		max.	30	pF
Transition frequency				
$-I_C = 50 \text{ mA}; -V_{CE} = 10 \text{ V}; f = 100 \text{ MHz};$ $T_{amb} = 25 \text{ }^\circ\text{C}$	$f_T$	min.	100	MHz
		typ.	360	MHz
<b>Saturated switching times</b>				
Turn-on time	$t_{on}$	typ.	25	ns
		max.	60	ns
Turn-off time	$t_{off}$	typ.	55	ns
		max.	150	ns
<b>h-parameters</b>				
Measured at $-I_C = 10 \text{ mA}; -V_{CE} = 10 \text{ V}; f = 1.0 \text{ kHz}; T_{amb} = 25 \text{ }^\circ\text{C}$				
Input impedance	$h_{ie}$	typ.	600	$\Omega$
Voltage feedback ratio	$h_{re}$	typ.	$1.50 \times 10^{-4}$	
Forward current transfer ratio	$h_{fe}$	typ.	155	
Output admittance	$h_{oe}$	typ.	104	$\mu\text{mho}$