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BF496

SILICON PLANAR TRANSISTOR

NPN transistor in a plastic TO-92 envelope intended for VHF applications, e.g. as gain controlled pre-amplifier in VHF television and FM tuners.

QUICK REFERENCE DATA

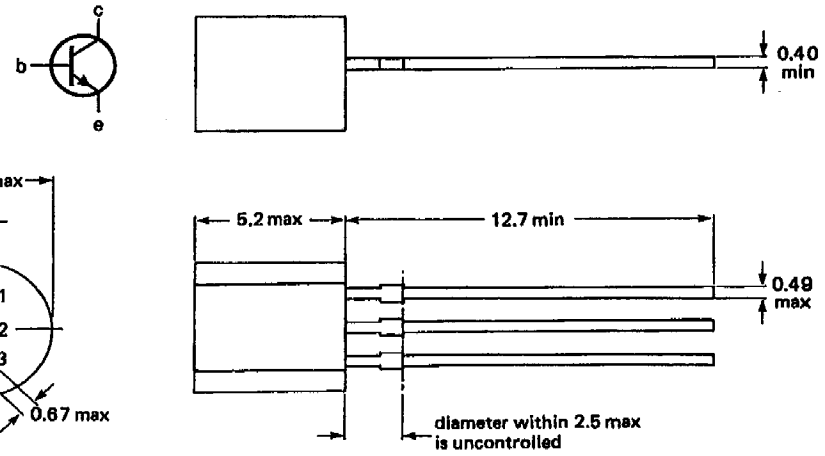
Collector-base voltage (open emitter)	V_{CBO}	max.	30	V
Collector-emitter voltage (open base)	V_{CEO}	max.	20	V
Collector current (DC)	I_C	max.	20	mA
Total power dissipation up to T_{amb} = 75 °C	P_{tot}	max.	300	mW
Junction temperature	T_j	max.	150	°C
Transition frequency $-I_E$ = 2 mA; V_{CB} = 10 V	f_T	min.	300	MHz

MECHANICAL DATA

Dimensions in mm

Fig.1 TO-92.

Pinning
1 = emitter
2 = base
3 = collector



RATINGS

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

Collector-base voltage (open emitter)	V_{CBO}	max.	30 V
Collector-emitter voltage (open base)	V_{CEO}	max.	20 V
Collector-emitter voltage ($R_{BE} \leq 1$ kΩ)	V_{CER}	max.	30 V
Emitter-base voltage (open collector)	V_{EBO}	max.	3 V
Collector current (DC)	I_C	max.	20 mA
Collector current (peak value)	I_{CM}	max.	20 mA
Total power dissipation up to T_{amb} = 75 °C	P_{tot}	max.	300 mW
Storage temperature range	T_{stg}		−65 to + 150 °C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	420 K/W

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified

DC current gain			
$-I_E$ = 2 mA; V_{CB} = 10 V	h_{FE}	min.	13
$-I_E$ = 12 mA; V_{CB} = 7 V*	h_{FE}	min.	6
Emitter-base voltage			
$-I_E$ = 2 mA; V_{CB} = 10 V	$-V_{EB}$	max.	0.9 V
$-I_E$ = 12 mA; V_{CB} = 7 V*	$-V_{EB}$	max.	1.0 V
Transition frequency			
$-I_E$ = 2 mA; V_{CB} = 10 V	f_T		300 to 800 MHz
$-I_E$ = 4 mA; V_{CB} = 5 V	f_T	max.	530 MHz
Feedback capacitance at f = 10.7 MHz			
I_C = 1 mA; V_{CE} = 10 V	C_{re}	typ.	0.8 pF
		max.	1.0 pF
Collector cut-off current			
I_E = 0; V_{CB} = 20 V	I_{CBO}	max.	500 nA
I_E = 0; V_{CB} = 20 V; T_{amb} = 150 °C	I_{CBO}	max.	10 μA
Emitter-base cut-off current			
I_C = 0; V_{EB} = 2 V	I_{EBO}	max.	500 nA

y-parameters at f = 100 MHz (common base)
I_C = 2 mA; V_{CE} = 10 V

Input conductance	g_{ib}	typ.	66 mS
Input susceptance	$-b_{ib}$	typ.	15 mS
Feedback admittance	$\lvert y_{rb} \rvert$	typ.	190 mS
Phase angle of feedback admittance	φ_{rb}	typ.	280°
Transfer admittance	$\lvert y_{fb} \rvert$	typ.	66 mS
Phase angle of transfer admittance	φ_{fb}	typ.	155°
Output conductance	g_{ob}	typ.	15 μS
Output susceptance	b_{ob}	typ.	660 μS

y-parameters at f = 50 MHz (common base)
$-I_E$ = 3 mA; V_{CB} = 10 V

Input conductance	g_{ib}	typ.	9.5 mS
Input susceptance	$-b_{ib}$	typ.	12 mS
Feedback admittance	$\lvert y_{rb} \rvert$	typ.	100 μS
Phase angle of feedback admittance	φ_{rb}	typ.	270°
Transfer admittance	$\lvert y_{fb} \rvert$	typ.	95 mS
Phase angle of transfer admittance	φ_{fb}	typ.	160°
Output conductance	g_{ob}	typ.	10 μS
Output susceptance	b_{ob}	typ.	350 μS

y-parameters at f = 200 MHz (common base)
$-I_E$ = 3 mA; V_{CB} = 10 V

Input conductance	g_{ib}	typ.	70 mS
Input susceptance	$-b_{ib}$	typ.	46 mS
Feedback admittance	$\lvert y_{rb} \rvert$	typ.	340 μS
Phase angle of feedback admittance	φ_{rb}	typ.	275°
Transfer admittance	$\lvert y_{fb} \rvert$	typ.	85 mS
Phase angle of transfer admittance	φ_{fb}	typ.	130°
Output conductance	g_{ob}	typ.	75 μS
Output susceptance	b_{ob}	typ.	1.3 mS