

NPN HIGH FREQUENCY TRANSISTOR

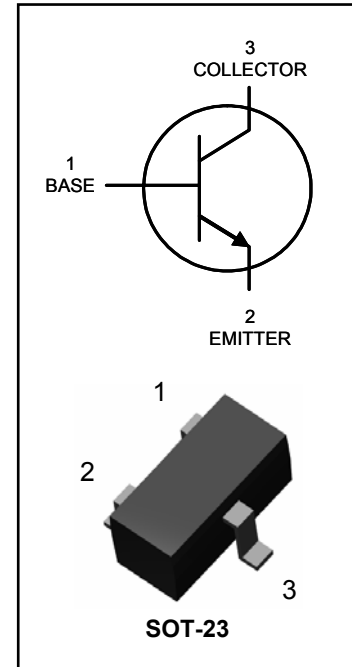
This device is designed for VHF/UHF amplifier applications and high output VHF oscillators.

SPECIFICATION FEATURES

- Guaranteed Minimum Current Gain-Bandwidth Product of 650 MHz
- Collector Currents up to 50mA
- Industry Standard SOT-23 Package

APPLICATIONS

- Low Noise VHF/UHF Amplifiers and Mixers
- Low Frequency Drift, High Output Oscillators



MAXIMUM RATINGS $T_J = 25^\circ\text{C}$

Rating	Symbol	Value	Units
Collector-Emitter Voltage	V_{CE0}	25	V
Collector-Base Voltage	V_{CB0}	30	V
Emitter-Base Voltage	V_{EB0}	3.0	V
Collector Current - Continuous (Note 1)	I_C	50	mA
Power Dissipation (Note 1)	P_D	225	mW
Operating Temperature Range	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

CHARACTERISTIC	Symbol	Value	Units
Thermal Resistance - Junction to Ambient (Note 1)	$R_{th JA}$	556	$^\circ\text{C/W}$

Note 1: Device mounted on FR-5 board 1.0 x 0.75 x 0.062 in. with recommended minimum pad layout



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ELECTRICAL CHARACTERISTICS (T_J = 25°C, unless otherwise noted)

OFF CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Collector-Emitter Breakdown Voltage	V _{(BR)CE0}	I _C = 1.0 mA, I _B = 0	25	-	-	V
Collector-Base Breakdown Voltage	V _{(BR)CB0}	I _C = 100 µA, I _E = 0	30	-	-	V
Emitter-Base Breakdown Voltage	V _{(BR)EB0}	I _E = 10 µA, I _C = 0	3.0	-	-	V
Collector Cutoff Current	I _{CB0}	V _{CB} = 25 V, I _E = 0	-	-	100	nA
Emitter Cutoff Current	I _{EB0}	V _{EB} = 2.0 V, I _C = 0	-	-	100	nA

ON CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typical	Max	Units
DC Current Gain	h _{FE}	I _C = 4.0 mA, V _{CE} = 10 V	60	180	-	-
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C = 4.0 mA, I _B = 0.4 mA	-	-	0.5	V
Base-Emitter On Voltage	V _{BE}	I _C = 4.0 mA, V _{CE} = 10 V	-	-	0.95	V

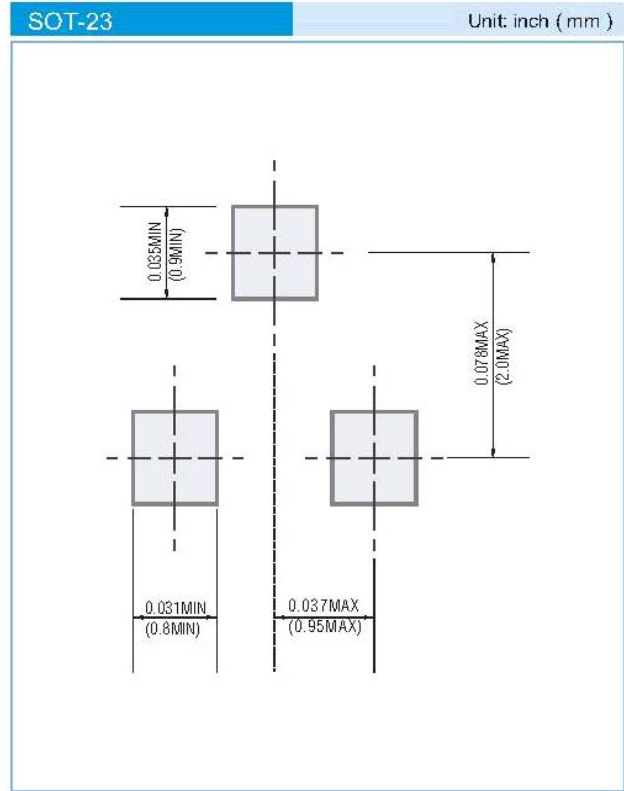
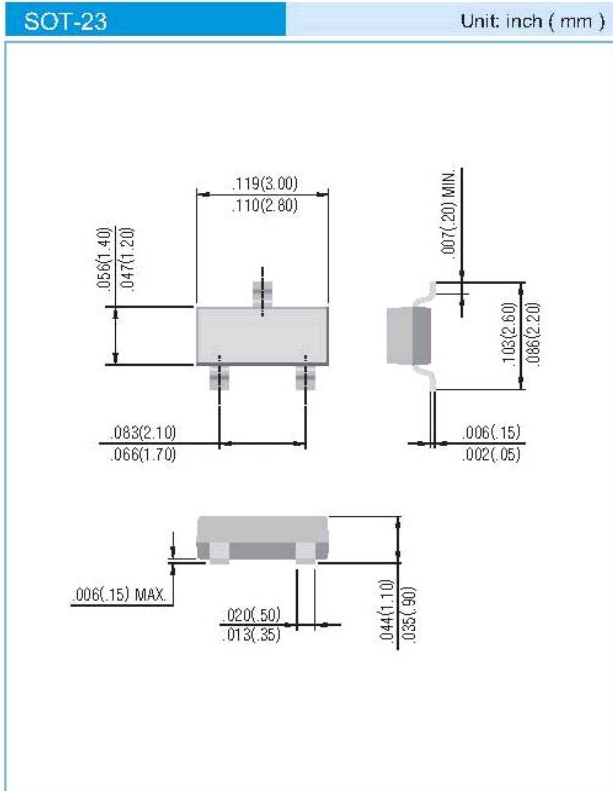
SMALL-SIGNAL CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Current Gain - Bandwidth Product	f _T	I _C = 4.0 mA, V _{CE} = 10 V f = 1.0 MHz	650	-	-	MHz
Collector-Base Capacitance	C _{cb}	V _{CB} = 10 V, I _E = 0 f = 1.0 MHz	-	-	0.7	pF
Common-Base Feedback Capacitance	C _{rb}	V _{CB} = 10 V, I _E = 0 f = 1.0 MHz	-	-	0.65	pF
Collector-Base Time Constant	rb'C _c	I _C = 4.0 mA, V _{CB} = 10 V f = 31.8 MHz	-	-	9.0	ps



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PACKAGE LAYOUT AND SUGGESTED PAD DIMENSIONS



ORDERING INFORMATION

MMBTH10-T/R7 - 7 inch reel, 3K units per reel

MMBTH10-T/R13 - 13 inch reel, 12K units per reel

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