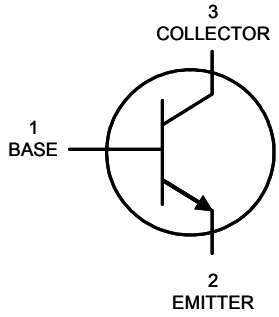
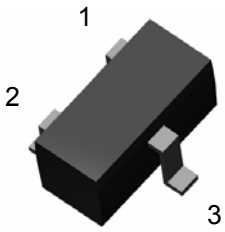
MMBTH10

NPN HIGH FREQUENCY TRANSISTOR

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





SOT-23

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°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	°C
Storage Temperature Range	T_{stg}	-55 to 150	°C

THERMAL CHARACTERISTICS

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

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

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 uA, I_E = 0	30	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EB0}$	I_E = 10 uA, 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

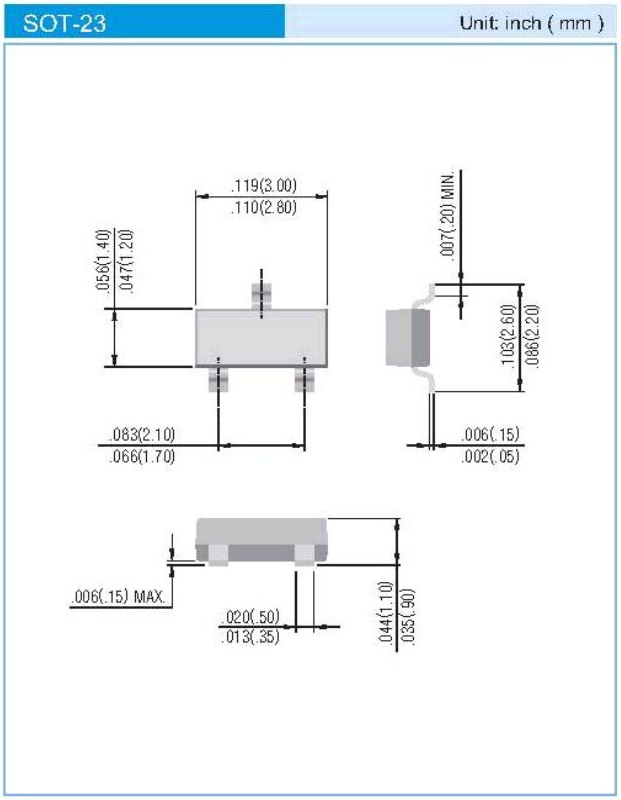
ON CHARACTERISTICS

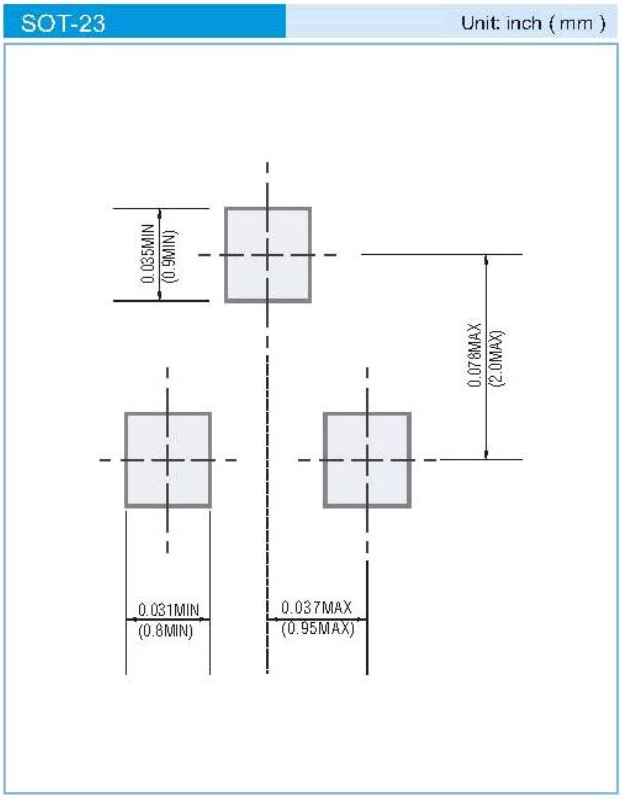
Parameter	Symbol	Conditions	Min	Typical	Max	Units
DC Current Gain	h_{FE}	I_C = 4.0 mA, V_{CE} = 10 V	60	180	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 4.0 mA, I_B = 0.4 mA	-	-	0.5	V
Base-Emitter On Voltage	V_{BE}	I_C = 4.0 mA, V_{CE} = 10 V	-	-	0.95	V

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

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