

# MMBTH24

CASE 318-02/03, STYLE 6  
SOT-23 (TO-236AA/AB)

VHF MIXER TRANSISTOR

NPN SILICON

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CE0}$	30	Vdc
Collector-Base Voltage	$V_{CBO}$	40	Vdc
Emitter-Base Voltage	$V_{EBO}$	4.0	Vdc
Collector Current — Continuous	$I_C$	100	mAdc

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	350 2.8	mW mW/ $^\circ\text{C}$
Storage Temperature	$T_{stg}$	150	$^\circ\text{C}$
*Thermal Resistance Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$

\*Package mounted on 99.5% alumina  $10 \times 8 \times 0.6$  mm.

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ( $I_C = 1.0$ mAdc, $I_B = 0$ )	$V_{(BR)CEO}$	30	—	—	Vdc
Collector-Base Breakdown Voltage ( $I_C = 100$ $\mu$ Adc, $I_E = 0$ )	$V_{(BR)CBO}$	40	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 10$ $\mu$ Adc, $I_C = 0$ )	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current ( $V_{CB} = 15$ Vdc, $I_E = 0$ )	$I_{CBO}$	—	—	50	nAdc

### ON CHARACTERISTICS

DC Current Gain ( $I_C = 8.0$ mAdc, $V_{CE} = 10$ Vdc)	$h_{FE}$	30	—	—	—
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### SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product(1) ( $I_C = 8.0$ mAdc, $V_{CE} = 10$ Vdc, $f = 100$ MHz)	$f_T$	400	620	—	MHz
Collector-Base Capacitance ( $V_{CB} = 10$ Vdc, $I_E = 0$ , $f = 1.0$ MHz)	$C_{cb}$	—	0.25	0.36	pF
Conversion Gain (213 MHz to 45 MHz) ( $I_C = 8.0$ mAdc, $V_{CC} = 20$ Vdc, Oscillator Injection = 150 mVrms) (60 MHz to 45 MHz) ( $I_C = 8.0$ mAdc, $V_{CC} = 20$ Vdc, Oscillator Injection = 150 mVrms)	— $C_G$	19 24	24 29	—	dB

(1) Pulse Test: Pulse Width  $\leq 300$   $\mu$ s, Duty Cycle  $\leq 2.0\%$ .