

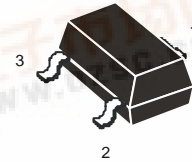
## The Small-Signal PNP Silicon Chopper Low-Power Transistor

### DESCRIPTION

The MMBT404A is an PNP silicon epitaxial transistor designed for application in TV tuner, frequency converter, oscillator, mixer and amplifier.

It has dynamic range and good current characteristic.

This chopper transistor in 3-Pin surface-mountable plastic package SOT23 offers superior quality and performance at low cost.



1 – Collector  
2 – Emitter  
3 – Base

### FEATURES

- High collector current  
 $I_C = -300 \text{ mA}$
- Low saturation voltages  
 $V_{CE(sat)} = -0.4 \text{ V}$   
 $V_{BE(sat)} = -1.5 \text{ V}$
- High total power dissipation  
 $P_T = 200 \text{ mW}$
- Excellent  $h_{FE}$  linearity

	SOT23
JEDEC	TO-236
EIAJ	SC-59
GOST	ÉO-46
Weight:	0.01g

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25 \text{ }^\circ\text{C}$ )

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	$V_{CEO}$	<b>-35</b>	V
Collector – Base Voltage	$V_{CBO}$	<b>-40</b>	V
Emitter – Base Voltage	$V_{EBO}$	<b>-25</b>	V
Collector Current	$I_C$	<b>-300</b>	mA
Total Dissipation	$P_{tot}$	<b>200</b>	mW
Junction Temperature	$T_{JMAX}$	<b>150</b>	$^\circ\text{C}$
Operating Junction Temperature Range	$T_{OPR}$	<b>-60 to +100</b>	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	<b>-65 to +150</b>	$^\circ\text{C}$

### ORDERING INFORMATION

Device	Marking	Package	Quantity	Packing Style
MMBT404A	2N	SOT-23	–	In bulk
MMBT404A-T1	2N	SOT-23	3 Kpcs / Reel	Embossed tape 8-mm wide 7" dia. Pin 1 (Collector) face to perforation side of the tape.
MMBT404A-T3	2N	SOT-23	10 Kpcs / Reel	Embossed tape 8-mm wide 13" dia. Pin 1 (Collector) face to perforation side of the tape.



# MMBT404A

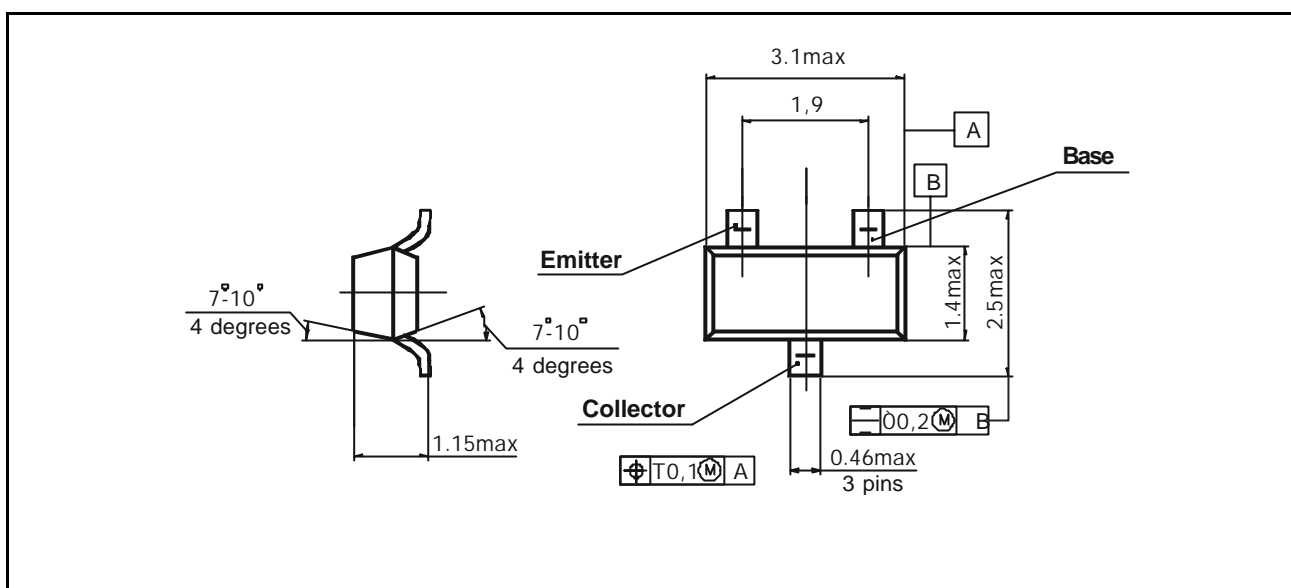
## ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>DC CHARACTERISTICS</b>					
Collector – Base Cutoff Current, $I_E = 0\text{mA}$ , $V_{CB} = -10\text{V}$	$I_{CBO}$	–	–	<b>-100</b>	nA
Emitter – Base Cutoff Current, $I_C = 0\text{mA}$ , $V_{EB} = -10\text{V}$	$I_{EBO}$	–	–	<b>-100</b>	nA
Collector – Base Breakdown Voltage, $I_C = -10\mu\text{A}$ , $I_E = 0\text{mA}$	$V_{(BR)CBO}$	<b>-40</b>	–	–	V
Collector – Emitter Breakdown Voltage, $I_C = -10\text{mA}$ , $I_B = 0\text{mA}$	$V_{(BR)CEO}$	<b>-35</b>	–	–	V
Emitter – Base Breakdown Voltage, $I_E = -10\mu\text{A}$ , $I_C = 0\text{mA}$	$V_{(BR)CEO}$	<b>-25</b>	–	–	V
DC Current Gain, $I_C = -12\text{mA}$ , $V_{CE} = -0.15\text{V}$	$h_{FE1}$	<b>80</b>	–	<b>400</b>	–

## AC CHARACTERISTICS

Collector – Emitter Saturation Voltage, $I_C = -300\text{mA}$ , $I_B = -30\text{mA}$	$V_{CE(sat)}$	–	–	<b>-0.4</b>	V
Base – Emitter Saturation Voltage, $I_C = -300\text{mA}$ , $I_B = -30\text{mA}$	$V_{BE(sat)}$	–	–	<b>-1.5</b>	V
Collector – Base Capacitance, $I_E = 0\text{mA}$ , $V_{CB} = -10\text{V}$ , $f = 500\text{kHz}$	$C_{OB}$	–	–	<b>20</b>	pF
Current Gain – Bandwidth Product, $I_C = -10\text{mA}$ , $V_{CE} = -5\text{V}$ , $f = 500\text{kHz}$	$f_T$	<b>4</b>	–	–	MHz

## PACKAGE DIMENSIONS of MMBT404A in mm



## PLASTIC CASE KT-46