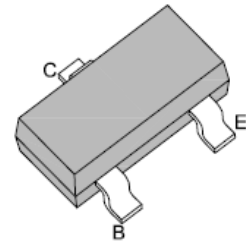
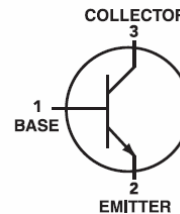


## SMD General Purpose Transistor (NPN)

### Features

- NPN Silicon Epitaxial Planar Transistor for Switching and Amplifier Applications
- RoHS compliance



SOT-23



### Mechanical Data

<b>Case:</b>	SOT-23, Plastic Package
<b>Terminals:</b>	Solderable per MIL-STD-202G, Method 208
<b>Weight:</b>	0.008 gram

### Maximum Ratings *(T<sub>Ambient</sub>=25°C unless noted otherwise)*

Symbol	Description	MMBTA05	MMBTA06	Unit
	Marking Code	1H/B05	1G/1GM/B06	
<b>V<sub>CEO</sub></b>	Collector-Emitter Voltage	60	80	V
<b>V<sub>CB0</sub></b>	Collector-Base Voltage	60	80	V
<b>V<sub>EB0</sub></b>	Emitter-Base Voltage	4.0		V
<b>I<sub>c</sub></b>	Collector Current-Continuous	500		mA

### Thermal Characteristics

Symbol	Description	MMBTA05	MMBTA06	Unit
<b>P<sub>tot</sub></b>	Total Device Dissipation FR-5 Board, (Note 1) T <sub>A</sub> = 25°C	225		mW
	Derate above 25°C	1.8		mW/° C
<b>R<sub>θJA</sub></b>	Thermal Resistance from Junction to Ambient	556		° C/W
<b>P<sub>tot</sub></b>	Total Device Dissipation Alumina Substrate, (Note 2) T <sub>A</sub> = 25°C	300		mW
	Derate above 25°C	2.4		mW/° C
<b>R<sub>θJA</sub></b>	Thermal Resistance from Junction to Ambient	417		° C/W
<b>T<sub>J</sub>, T<sub>STG</sub></b>	Junction and Storage Temperature Range	-55 to +150		° C

# SMD General Purpose Transistor (NPN)

## MMBTA05/MMBTA06

### Electrical Characteristics ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

#### Off Characteristics

Symbol	Description	MMBTA05		MMBTA06		Unit	Conditions
		Min.	Max.	Min.	Max.		
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage (Note 3)	60	-	80	-	V	$I_C=1mA, I_B=0$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	60	-	80	-	V	$I_C=100\mu A, I_E=0$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	4.0	-	4.0	-	V	$I_E=100\mu A, I_C=0$
$I_{CES}$	Collector-Emitter Cut-off Current	-	0.1	-	0.1	$\mu A$	$V_{CE}=60V, I_B=0$
$I_{CBO}$	Collector-Base Cut-off Current	-	0.1	-	0.1	$\mu A$	
		$V_{CB}=60V, I_E=0$		$V_{CB}=80V, I_E=0$			

#### On Characteristics

Symbol	Description	MMBTA05		MMBTA06		Unit	Conditions
		Min.	Max.	Min.	Max.		
$h_{FE}$	D.C. Current Gain	100	-	100	-		$V_{CE}=1V, I_C=10mA$
		100	-	100	-		$V_{CE}=1V, I_C=100mA$
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	-	0.25	-	0.25	V	$I_C=100mA, I_B=10mA$
$V_{BE(on)}$	Base-Emitter On Voltage	-	1.2	-	1.2	V	$I_C=100mA, V_{CE}=1V$

#### Small – Signal Characteristics

Symbol	Description	MMBTA05		MMBTA06		Unit	Conditions
		Min.	Max.	Min.	Max.		
$f_T$	Current Gain-Bandwidth Product	100	-	100	-	MHz	$V_{CE}=2V, I_C=10mA, f=100MHz$

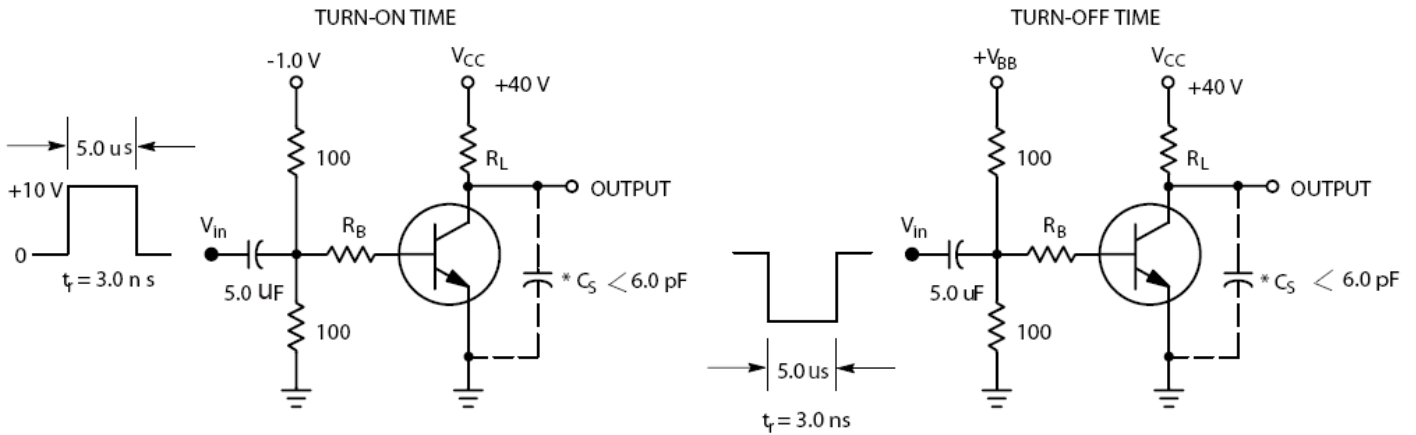
- Note:**
- FR-5=1.0x0.75x0.062 in.
  - Alumina=0.4x0.3x0.024 in, 99.5% alumina.
  - Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$ .
  - $f_T$  is defined as the frequency at which  $h_{fe}$  x trapolates to unity.

# SMD General Purpose Transistor (NPN)

## MMBTA05/MMBTA06

### Typical Characteristics Curves

Fig.1-Switching Time Test Circuits



\*Total S hunt Capacitance of Test Jig and Connectors  
For PNP Test Circuits, Reverse All Voltage Polarities

Fig.2- Current-Gain- Bandwidth Product

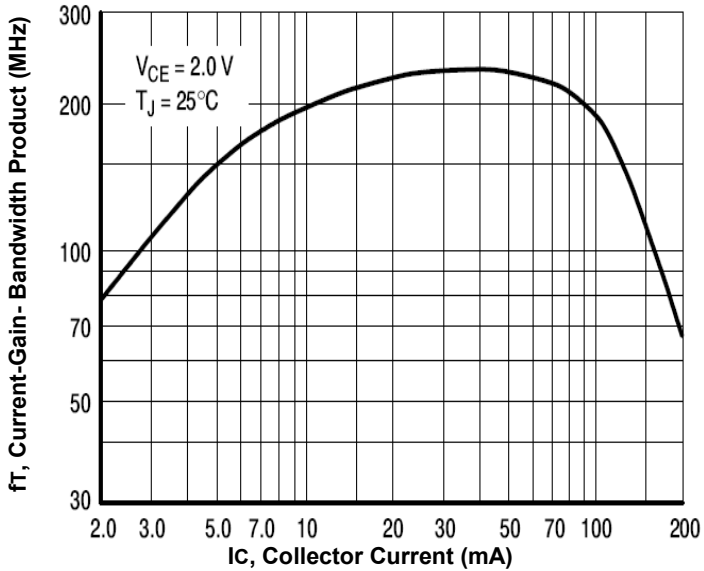
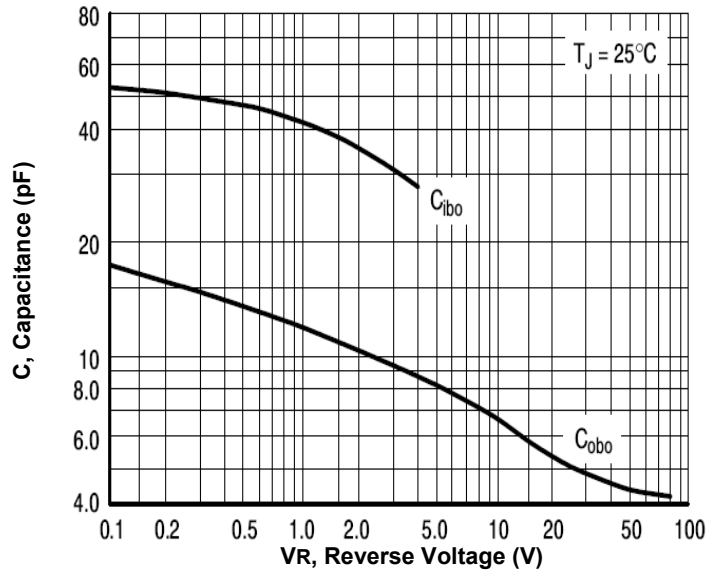


Fig.3- Capacitance



# SMD General Purpose Transistor (NPN)

## MMBTA05/MMBTA06

Fig.4- Switching Time

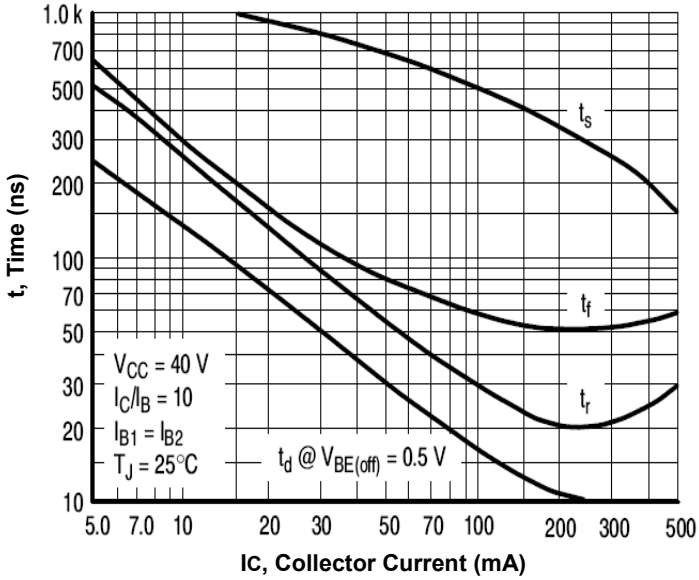


Fig.5- DC Current Gain

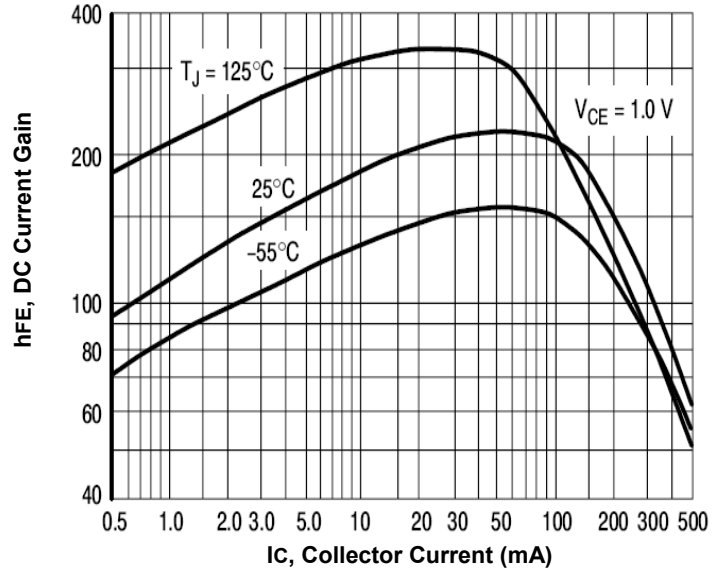


Fig.6- "ON" Voltages

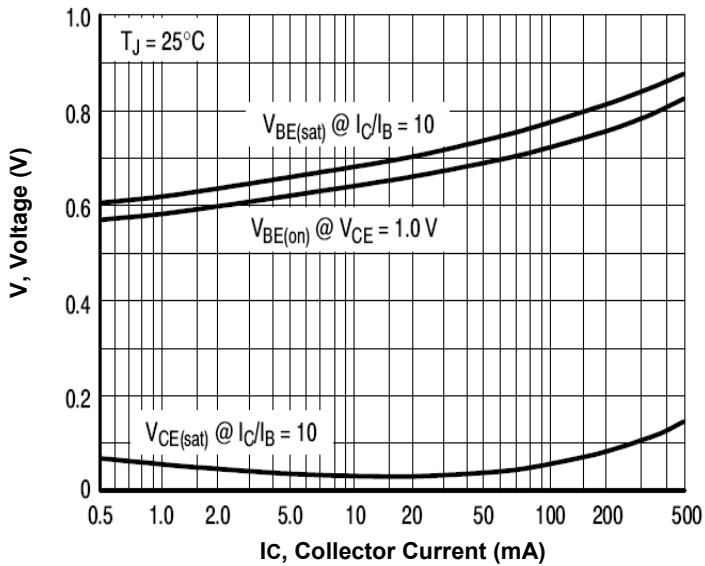
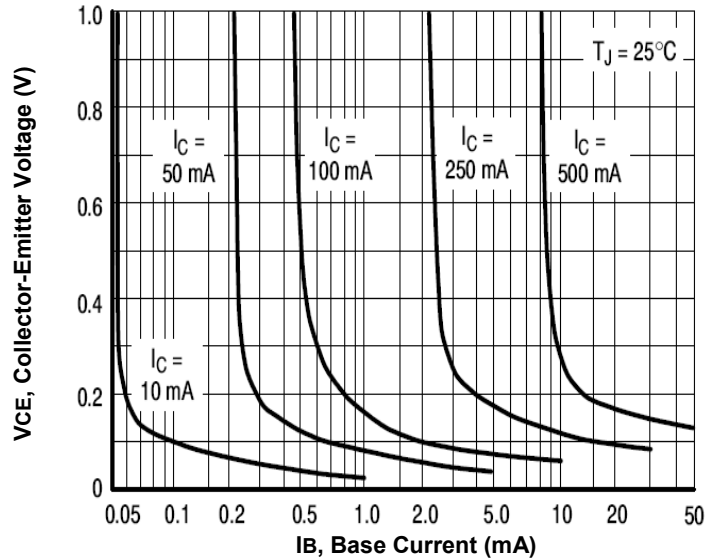
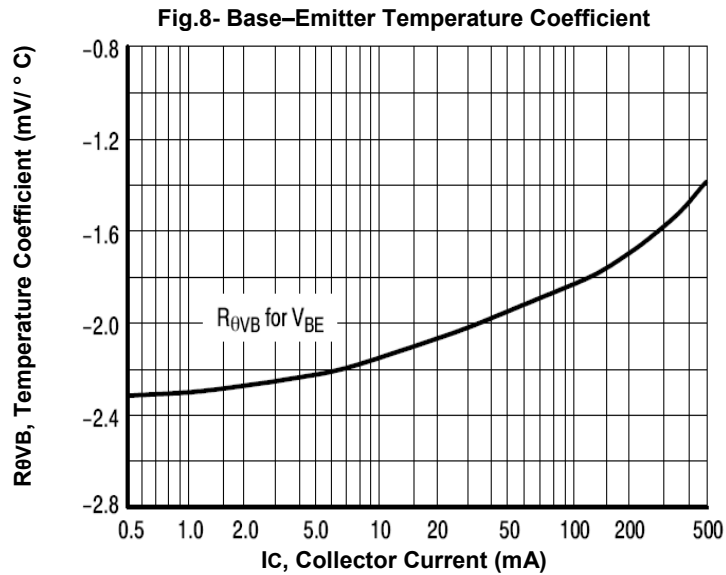


Fig.7- Collector Saturation Region



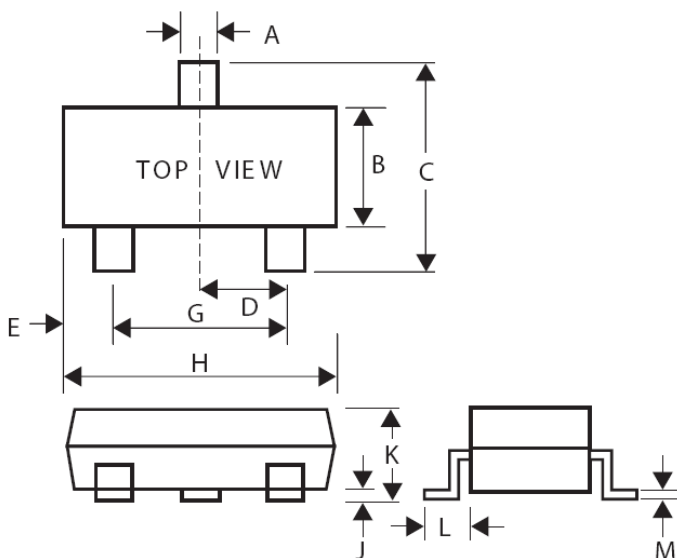
# SMD General Purpose Transistor (NPN)

## MMBTA05/MMBTA06



### Dimensions in mm

### SOT-23



Dim	Min	Max
A	0.35	0.51
B	1.19	1.80
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.60
L	0.30	0.61
M	0.076	0.25

# SMD General Purpose Transistor (NPN)

---

## MMBTA05/MMBTA06

### How to contact us:

#### **US HEADQUARTERS**

28040 WEST HARRISON PARKWAY, VALENCIA, CA 91355-4162

Tel: (800) TAITRON (800) 824-8766 (661) 257-6060

Fax: (800) TAITFAX (800) 824-8329 (661) 257-6415

Email: [taitron@taitroncomponents.com](mailto:taitron@taitroncomponents.com)

Http://[www.taitroncomponents.com](http://www.taitroncomponents.com)

#### **TAITRON COMPONENTS MEXICO, S.A .DE C.V.**

BOULEVARD CENTRAL 5000 INTERIOR 5 PARQUE INDUSTRIAL ATITALAQUIA, HIDALGO C.P.  
42970 MEXICO

Tel: +52-55-5560-1519

Fax: +52-55-5560-2190

#### **TAITRON COMPONENTS INCORPORATED REPRESENTAÇÕES DO BRASIL LTDA**

RUA DOMINGOS DE MORAIS, 2777, 2.ANDAR, SALA 24 SAÚDE - SÃO PAULO-SP 04035-001 BRAZIL

Tel: +55-11-5574-7949

Fax: +55-11-5572-0052

#### **TAITRON COMPONENTS INCORPORATED, SHANGHAI REPRESENTATIVE OFFICE**

METROBANK PLAZA, 1160 WEST YAN' AN ROAD, SUITE 1503, SHANGHAI, 200052, CHINA

Tel: +86-21-5424-9942

Fax: +86-21-5424-9931