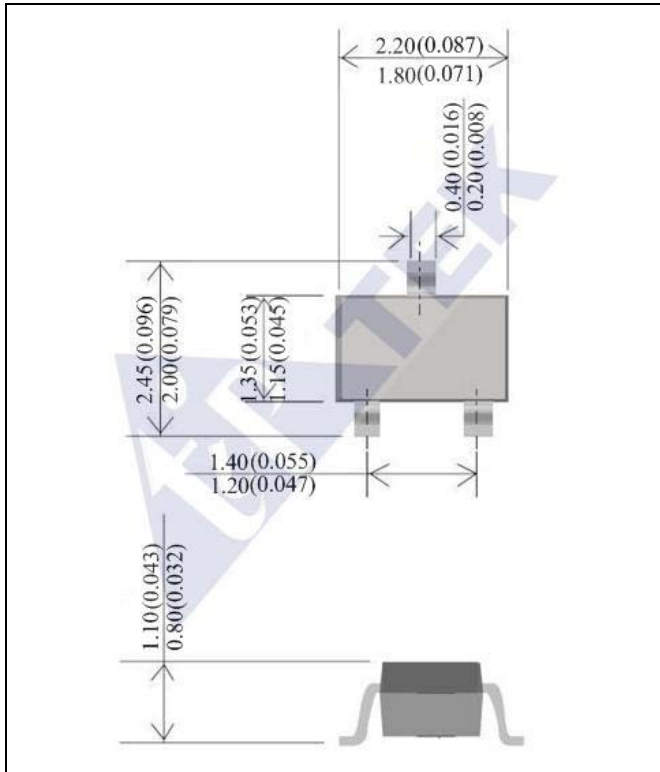


## GENERAL PURPOSE TRANSISTORS NPN Silicon



CASE : SOT-323

DIMENSIONS IN MILLIMETERS AND (INCHES)

### FEATURES

- NPN SILICON EPITAXIAL PLANAR TRANSISTOR FOR SWITCHING AND AMPLIFIER APPLICATIONS
- COLLECTOR CURRENT  $I_C = 500$  mA
- PB FREE PRODUCT ARE AVAILABLE :98.5% SN ABOVE CAN MEET ROHSENVIRONMENT SUBSTANCE DIRECTIVE REQUEST

### MECHANICAL DATA

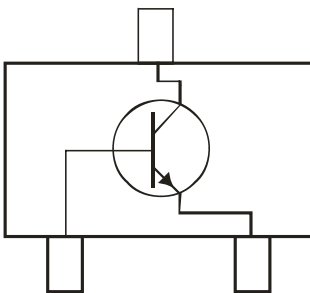
- CASE : SOT-323
- TERMINALS : SOLDERABLE PER MIL-STD-202G, METHOD 208
- APPROX. WEIGHT:0.006 GRAM
- Pb Free: MMBTA05W/MMBTA06W  
Halogen Free: MMBTA05W-H/MMBTA06W-H

### MAXIMUM RATINGS

**RATINGS AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE SPECIFIED.**

PATING	SYMBOL	MMBTA05W	MMBTA06W	UNIT
COLLECTOR - EMITTER VOLTAGE	$V_{CEO}$	60	80	V
COLLECTOR - BASE VOLTAGE	$V_{CBO}$	60	80	V
EMITTER - BASE VOLTAGE	$V_{EBO}$	4.0		V
COLLECTOR CURRENT - CONTINUOUS	$I_C$	500		mA
TOTAL DEVICE POWER DISSIPATION FR-5 BOARD @ $T_A = 25^\circ\text{C}$	$P_D$	150		mW
THERMAL RESISTANCE JUNCTION TO AMBIENT	$R_{\theta JA}$	833		$^\circ\text{C}/\text{W}$
OPERATING AND STORAGE JUNCTION TEMPERATURE RANGE	$T_J; T_{STG}$	- 55 TO +150		$^\circ\text{C}$

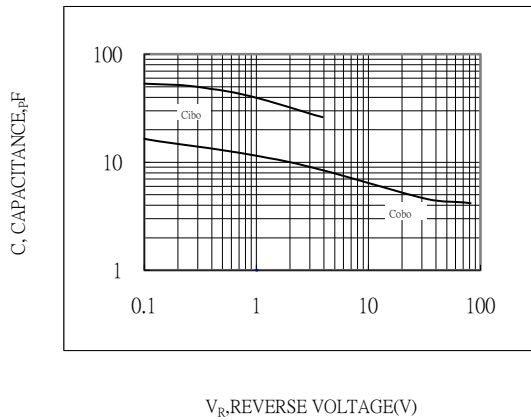
**NPN**



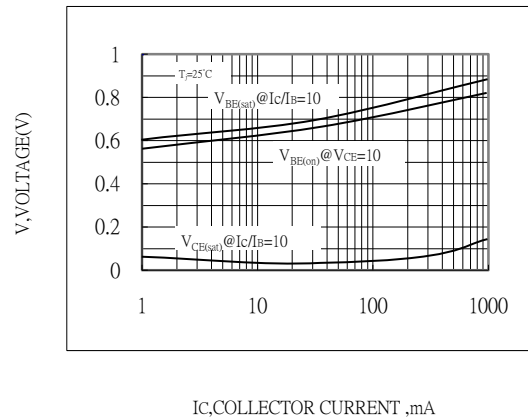
**ELECTRICAL CHARACTERISTICS**

<b>ELECTRICAL CHARACTERISTICS (A<sub>T</sub> T<sub>A</sub> =25°C UNLESS OTHERWISE NOTED)</b>					
CHARACTERISTIC		SYMBOL	MIN	MAX	UNIT
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Breakdown Voltage (Note 1) (I <sub>C</sub> = 1 mA, I <sub>B</sub> = 0)	MMBTA05W	V <sub>(BR)CEO</sub>	60	–	V
	MMBTA06W		80		
Emitter–Base Breakdown Voltage (I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0)		V <sub>(BR)EBO</sub>	4.0	–	V
Collector Cut-off Current (V <sub>CB</sub> = 200V, I <sub>E</sub> = 0)	MMBTA05W	I <sub>CBO</sub>	–	0.1	μA
	MMBTA06W				
Emitter Cut-off Current (V <sub>EB</sub> = 6V, I <sub>C</sub> = 0)		I <sub>EBO</sub>	–	0.1	μA
<b>ON CHARACTERISTICS (NOTE 1)</b>					
Dc Current Gain (I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 1.0 V) (I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1.0 V)		h <sub>FE</sub>	100	–	–
			100	–	–
Collector–Emitter Saturation Voltage (I <sub>C</sub> = 100 mA, I <sub>B</sub> = 10 mA)		V <sub>CE(Sat)</sub>	–	0.25	V
Base–Emitter Saturation Voltage (I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1.0 mA)		V <sub>BE(Sat)</sub>	–	1.2	V
<b>SMALL–SIGNAL CHARACTERISTICS</b>					
Current–Gain – Bandwidth Product (I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 2.0 V, f = 100 MHz)		f <sub>T</sub>	100	–	MHz

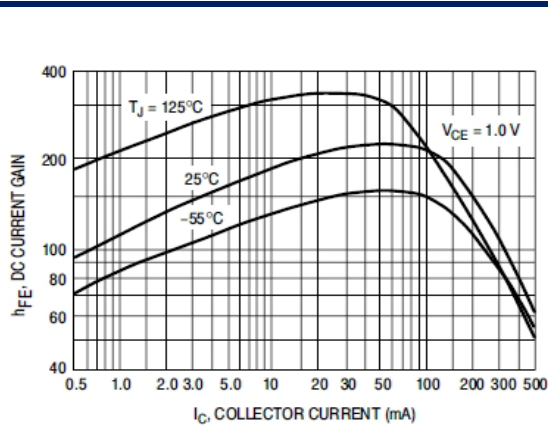
**NOTE: 1.Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2%.**



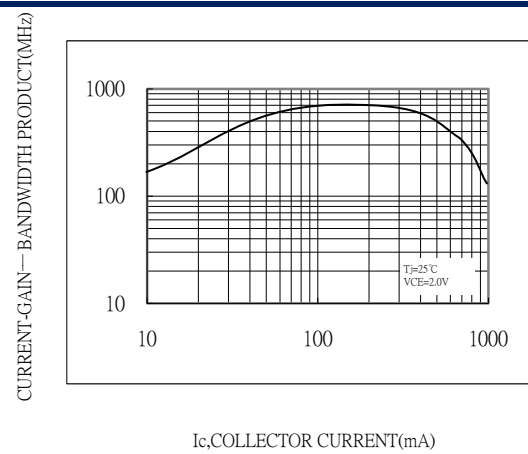
**Fig.1-CAPACITANCE**



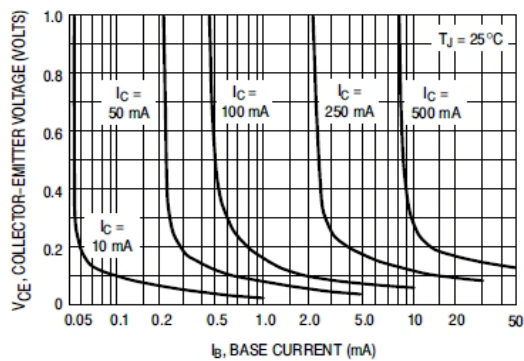
**Fig.2-"ON"VOLTAGES**



**Fig.3- DC CURRENT GAIN**



**Fig.4-CURRENT-GAIN—BANDWIDTH PRODUCT**



**Fig.5-COLLECTOR SATURATION REGION**