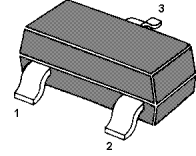
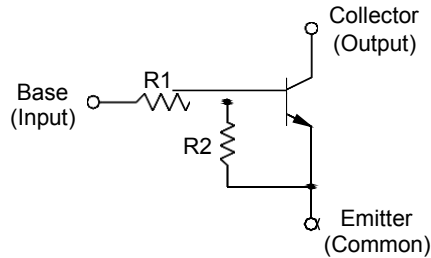


## NPN Silicon Epitaxial Planar Transistor

for switching and interface circuit and drive  
circuit applications



1.Base 2.Emitter 3.Collector  
SOT-23 Plastic Package

### Features

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process

### Resistor Values

Type	Marking	R1 (KΩ)	R2 (KΩ)
MMBTRC101SS	NA	4.7	4.7
MMBTRC102SS	NB	10	10
MMBTRC103SS	NC	22	22
MMBTRC104SS	ND	47	47
MMBTRC105SS	NF	2.2	47
MMBTRC106SS	NE	4.7	47

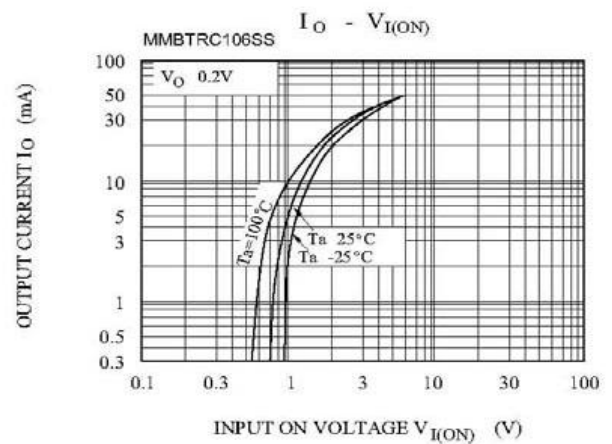
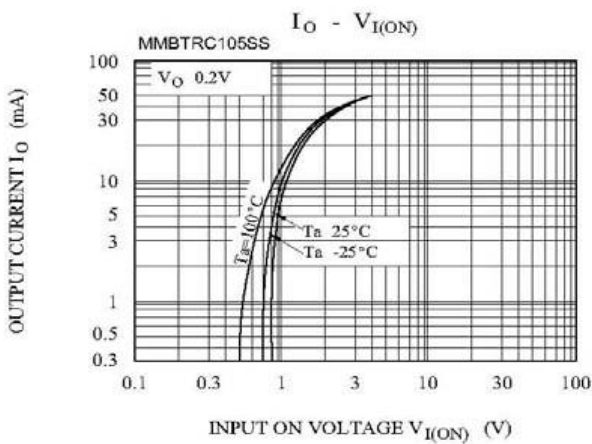
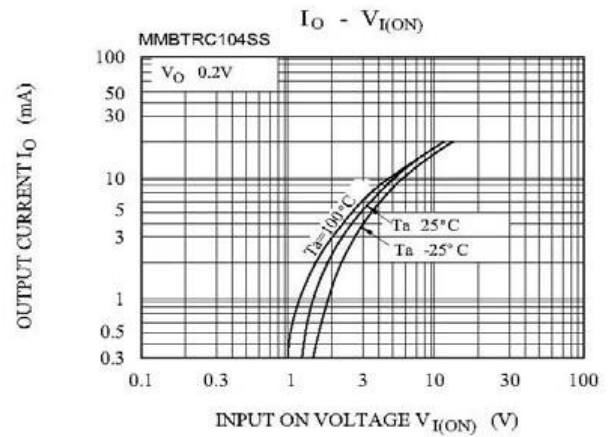
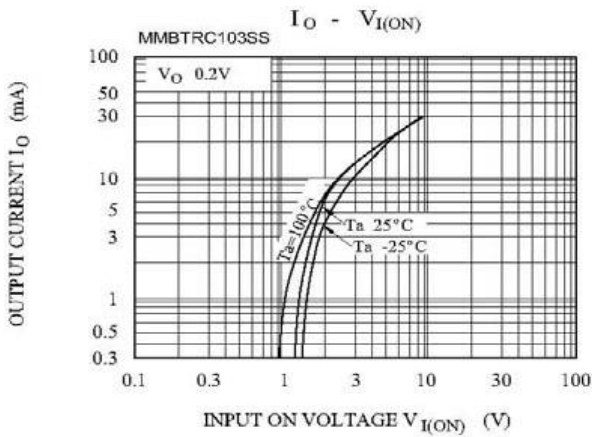
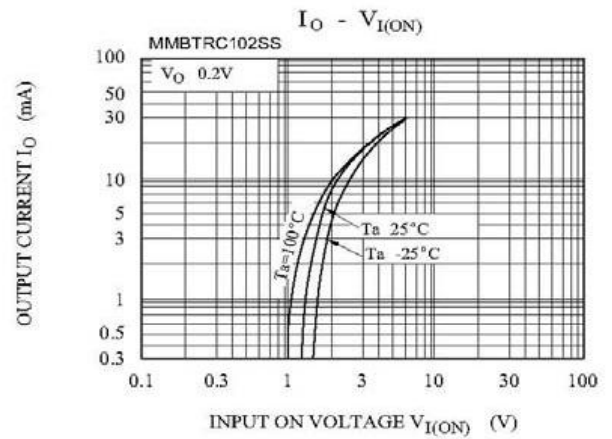
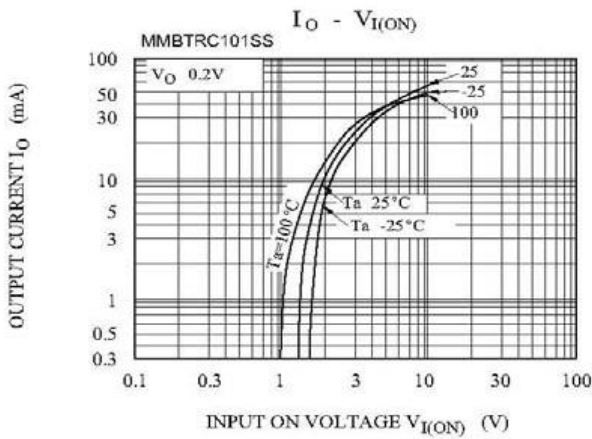
### Absolute Maximum Ratings (T<sub>a</sub> = 25 °C)

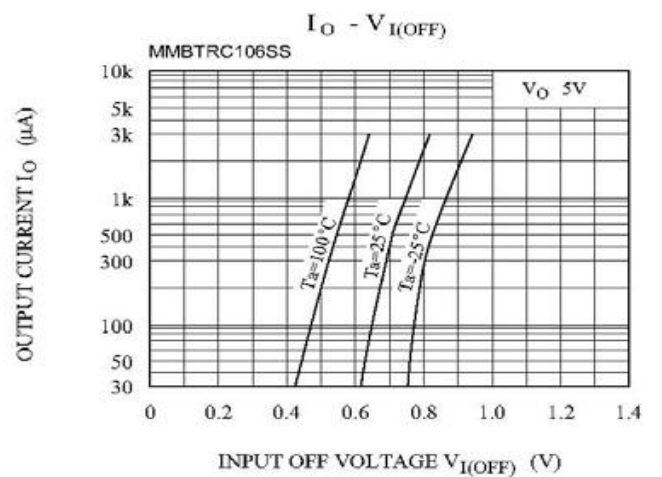
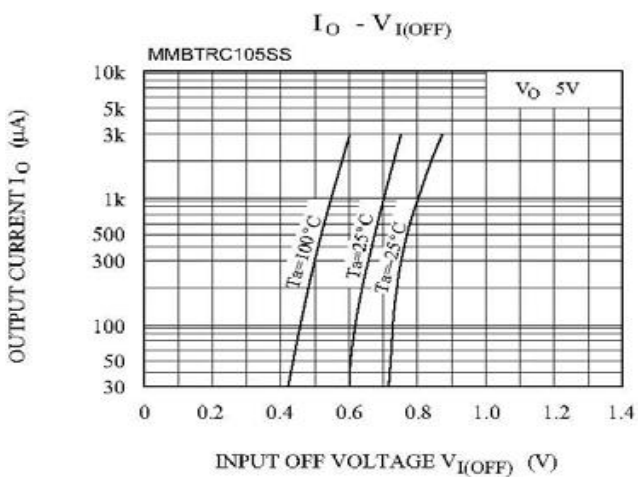
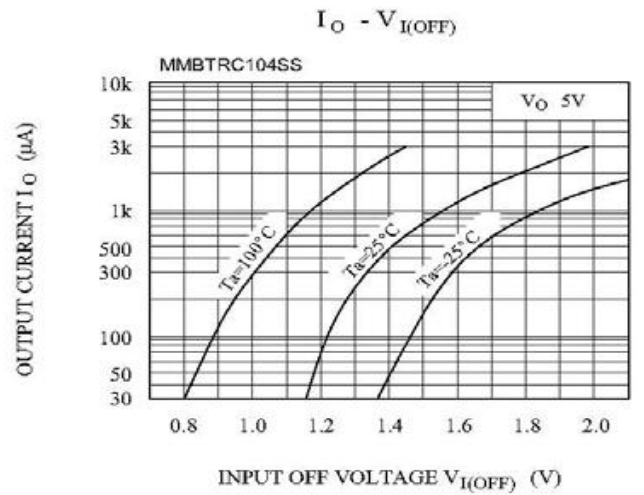
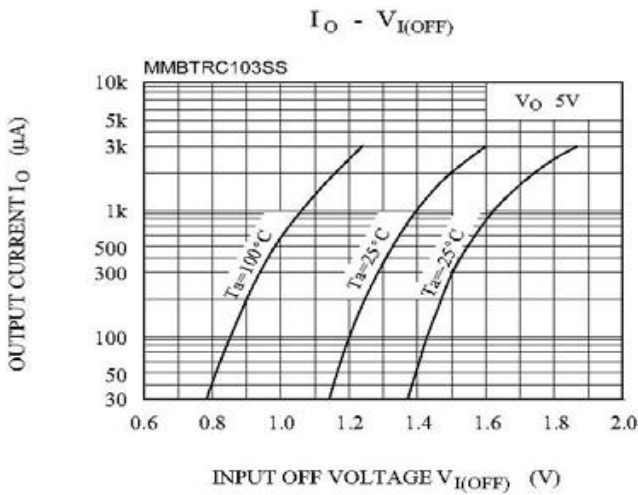
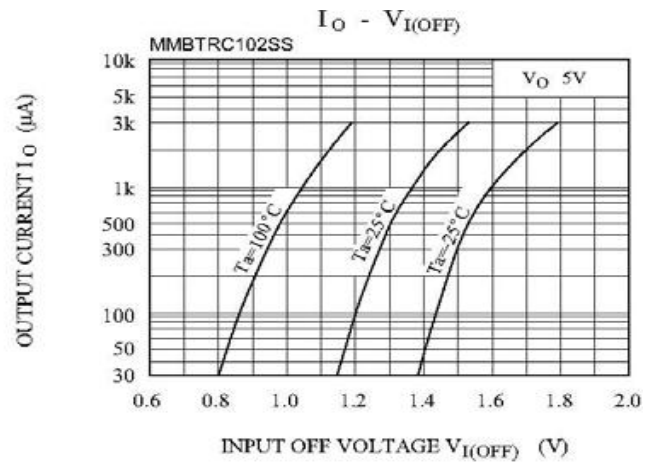
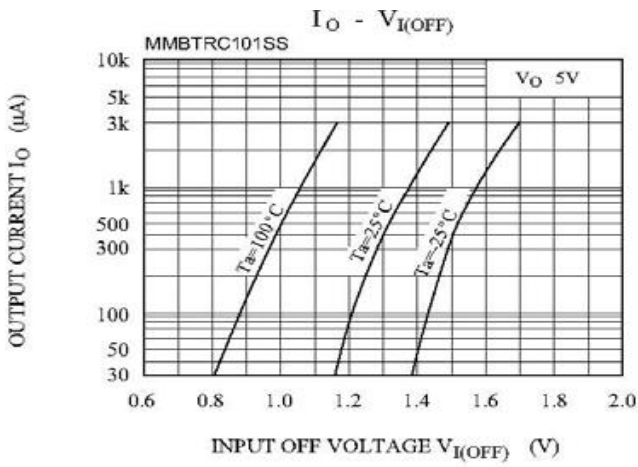
Parameter		Symbol	Value	Unit
Output Voltage		V <sub>O</sub>	50	V
Input Voltage	MMBTRC101SS	V <sub>I</sub>	20, -10	V
	MMBTRC102SS		30, -10	
	MMBTRC103SS		40, -10	
	MMBTRC104SS		40, -10	
	MMBTRC105SS		12, -5	
	MMBTRC106SS		20, -5	
Output Current		I <sub>O</sub>	100	mA
Total Power Dissipation		P <sub>tot</sub>	200	mW
Junction Temperature		T <sub>j</sub>	150	°C
Storage Temperature Range		T <sub>stg</sub>	- 55 to + 150	°C

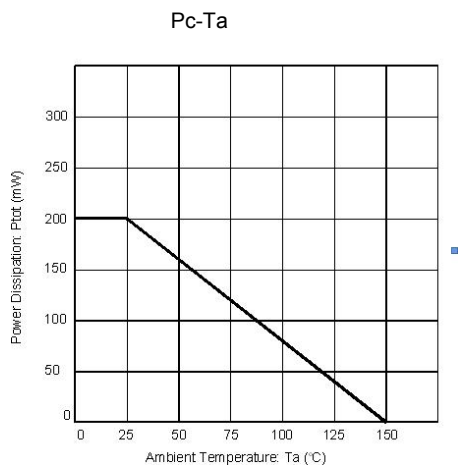
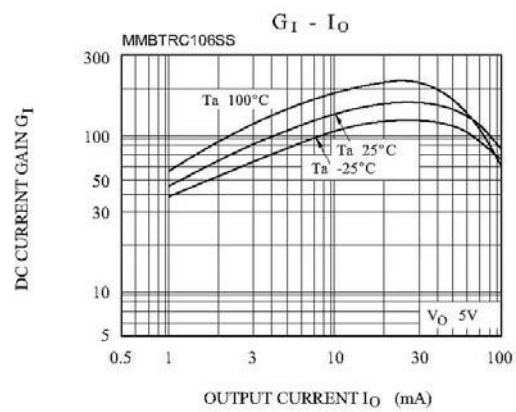
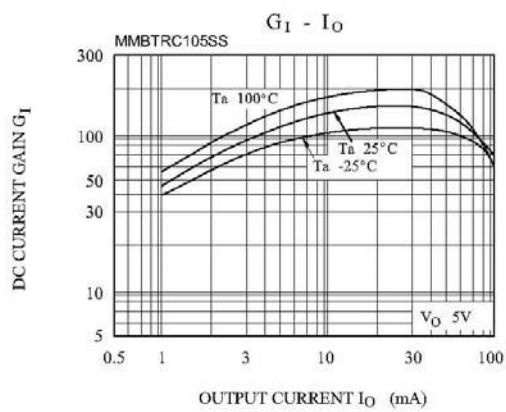
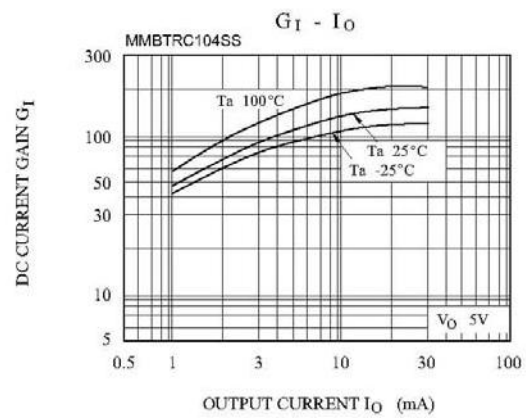
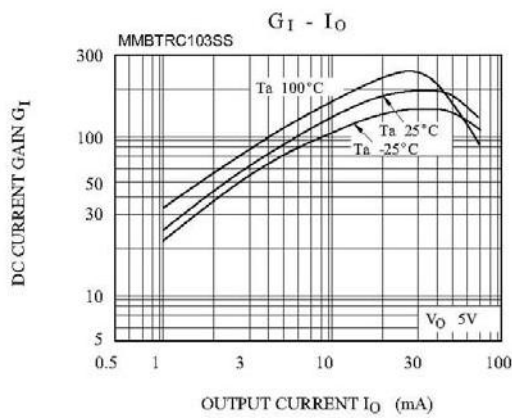
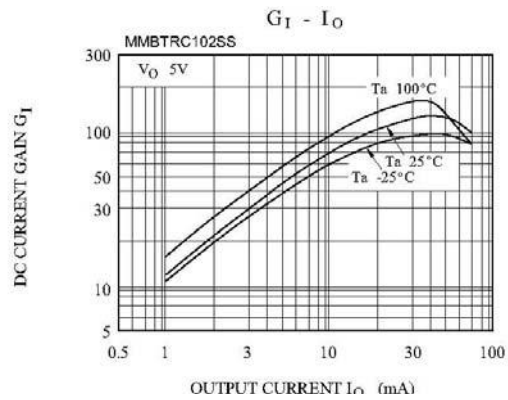
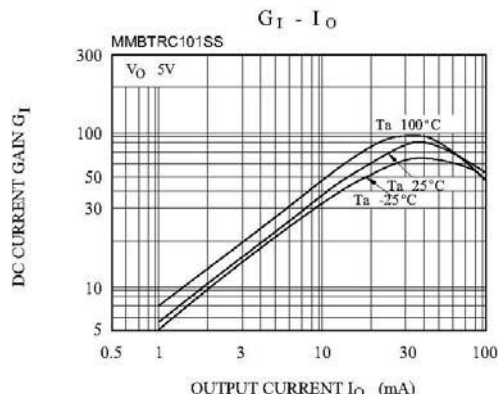
**Characteristics at  $T_a = 25\text{ }^\circ\text{C}$** 

Parameter	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain at $V_o = 5\text{ V}$ , $I_o = 10\text{ mA}$	MMBTRC101SS MMBTRC102SS MMBTRC103SS MMBTRC104SS MMBTRC105SS MMBTRC106SS	$G_i$	30 50 70 80 80 80	- - - - - -	- - - - - -	- - - - - -
Output Cutoff Current at $V_o = 50\text{ V}$		$I_{O(OFF)}$	-	-	500	nA
Input Current at $V_i = 5\text{ V}$	MMBTRC101SS MMBTRC102SS MMBTRC103SS MMBTRC104SS MMBTRC105SS MMBTRC106SS	$I_i$	- - - - - -	- - - - - -	1.8 0.88 0.36 0.18 3.6 1.8	mA
Output Voltage at $I_o = 10\text{ mA}$ , $I_i = 0.5\text{ mA}$		$V_{O(ON)}$	-	-	0.3	V
Input Voltage (ON) at $V_o = 0.2\text{ V}$ , $I_o = 5\text{ mA}$	MMBTRC101SS MMBTRC102SS MMBTRC103SS MMBTRC104SS MMBTRC105SS MMBTRC106SS	$V_{I(ON)}$	- - - - - -	- - - - - -	2 2.4 3 5 1.1 1.3	V
Input Voltage (OFF) at $V_o = 5\text{ V}$ , $I_o = 0.1\text{ mA}$	MMBTRC101SS~104SS MMBTRC105SS~106SS	$V_{I(OFF)}$	1 0.5	- -	- -	V
Transition Frequency at $V_o = 10\text{ V}$ , $I_o = 5\text{ mA}$		$f_T^{1)}$	-	200	-	MHz

1) Characteristic of transistor only.

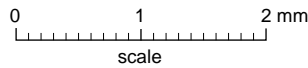
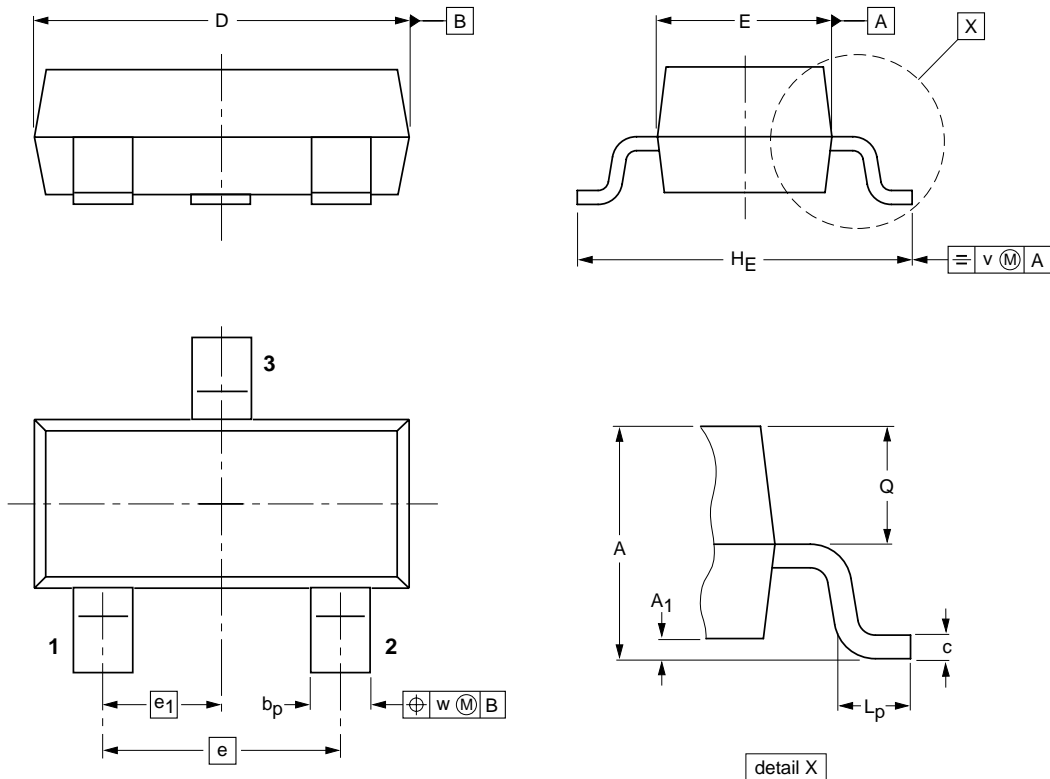






**Package Outline**

**SOT-23**



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

**Summary of Packing Options**

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1

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