

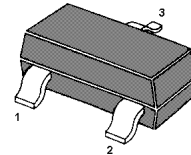
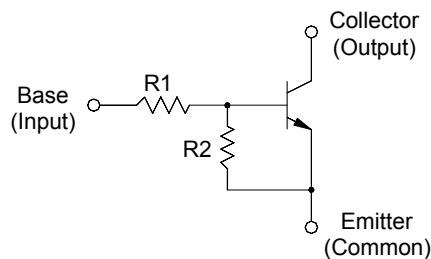
## MMBTRC101SS...MMBTRC106SS

### NPN Silicon Epitaxial Planar Transistor

for switching and interface circuit and drive circuit applications

#### Features

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



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

#### Resistor Values

Type	R1 (KΩ)	R2 (KΩ)	Marking Code
MMBTRC101SS	4.7	4.7	HP
MMBTRC102SS	10	10	HN
MMBTRC103SS	22	22	HR
MMBTRC104SS	47	47	HX
MMBTRC105SS	2.2	47	HY
MMBTRC106SS	4.7	47	HZ

#### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

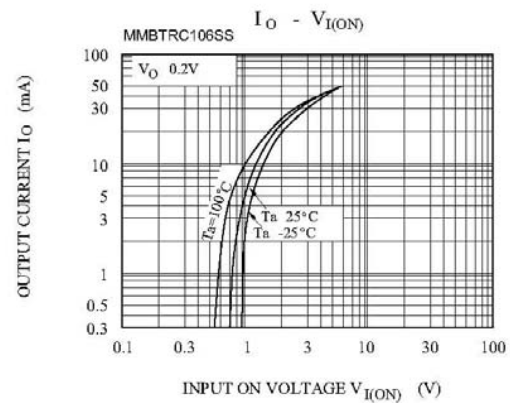
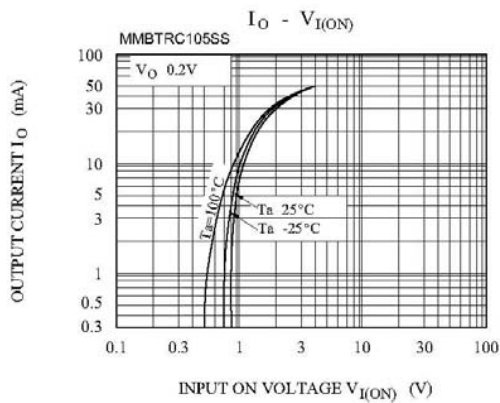
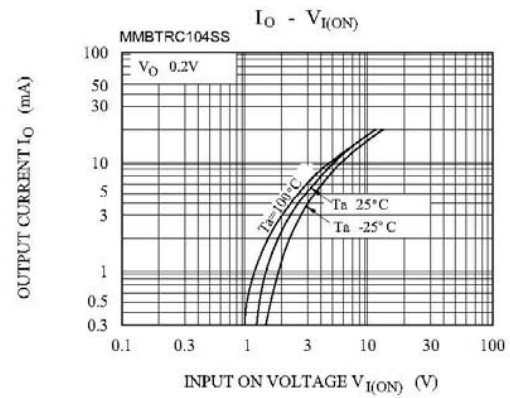
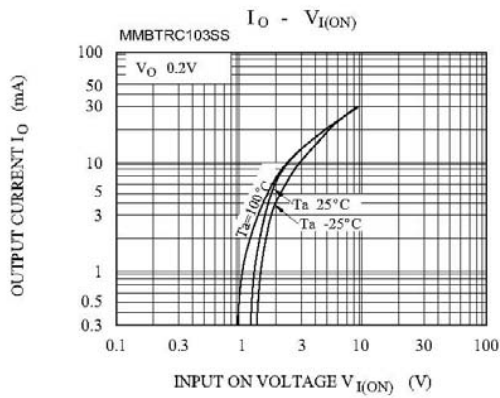
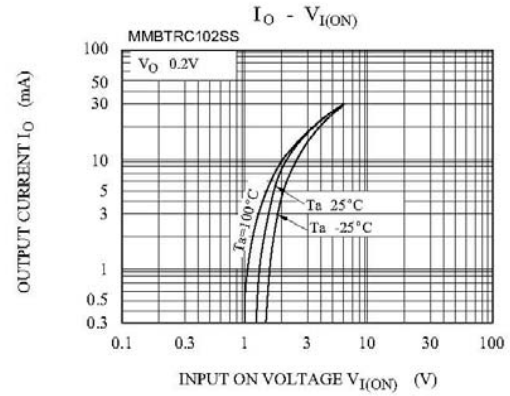
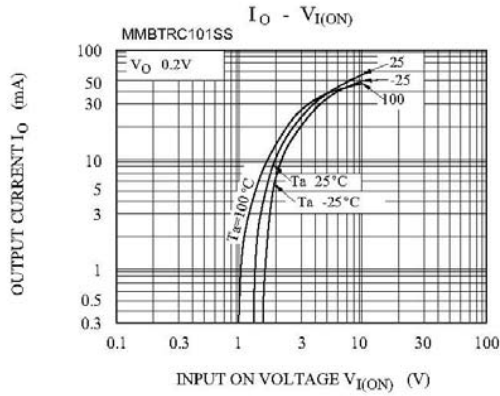
Parameter		Symbol	Value	Unit
Output Voltage		$V_o$	50	V
Input Voltage	MMBTRC101SS	$V_i$	20, -10	V
	MMBTRC102SS		30, -10	
	MMBTRC103SS		40, -10	
	MMBTRC104SS		40, -10	
	MMBTRC105SS		12, -5	
	MMBTRC106SS		20, -5	
Output Current		$I_o$	100	mA
Total Power Dissipation		$P_{tot}$	200	mW
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

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

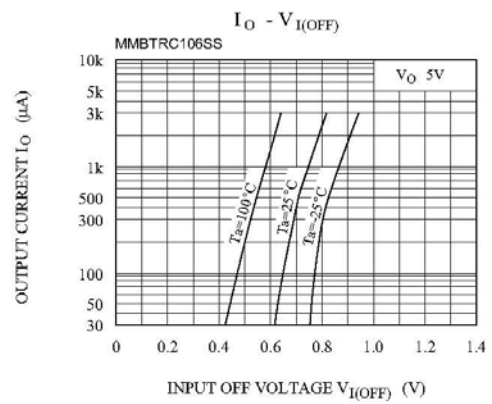
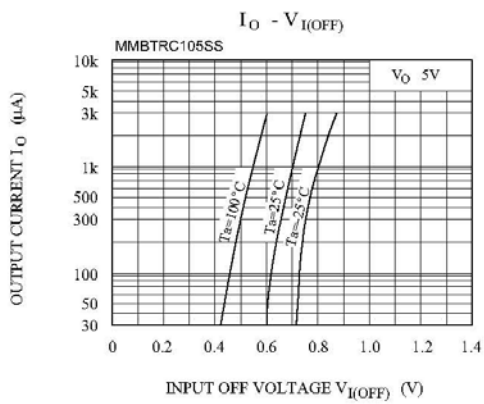
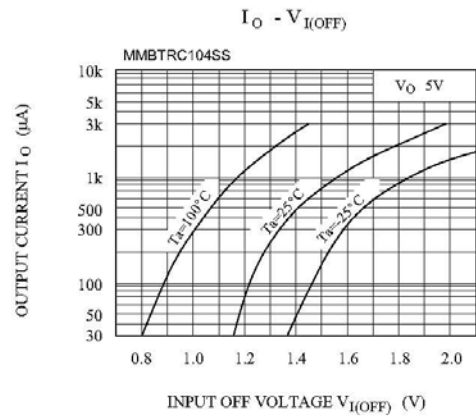
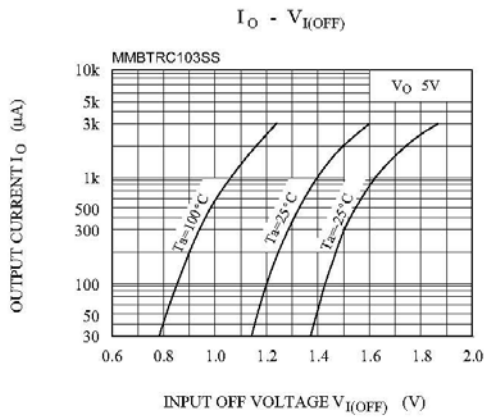
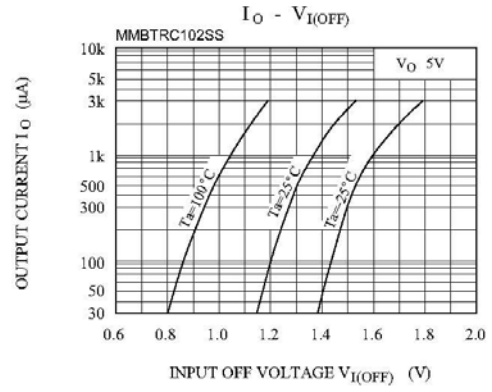
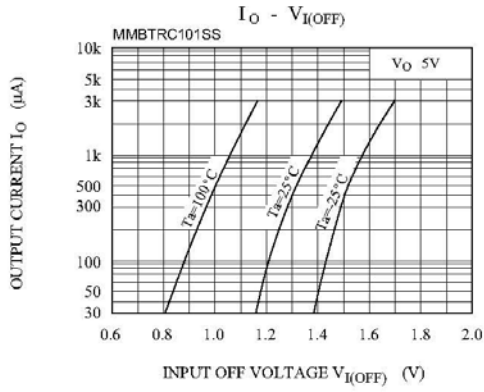
Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_o = 5\text{ V}$ , $I_o = 10\text{ mA}$	MMBTRC101SS MMBTRC102SS MMBTRC103SS MMBTRC104SS MMBTRC105SS MMBTRC106SS	30 50 70 80 80 80	- - - - - -	- - - - - -	- - - - - -
Output Cutoff Current at $V_o = 50\text{ V}$	$I_{O(OFF)}$	-	-	500	nA
Input Current at $V_i = 5\text{ V}$	MMBTRC101SS MMBTRC102SS MMBTRC103SS MMBTRC104SS MMBTRC105SS MMBTRC106SS	- - - - - -	- - - - - -	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	- - - - - -	- - - - - -	2 2.4 3 5 1.1 1.3	V
Input Resistance	MMBTRC101SS MMBTRC102SS MMBTRC103SS MMBTRC104SS MMBTRC105SS MMBTRC106SS	3.29 7 15.4 32.9 1.54 3.29	4.7 10 22 47 2.2 4.7	6.11 13 28.6 61.1 2.86 6.11	k $\Omega$
Resistance ratio	MMBTRC101SS MMBTRC102SS MMBTRC103SS MMBTRC104SS MMBTRC105SS MMBTRC106SS	0.8 0.8 0.8 0.8 17 8	1 1 1 1 21 10	1.2 1.2 1.2 1.2 26 12	
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.

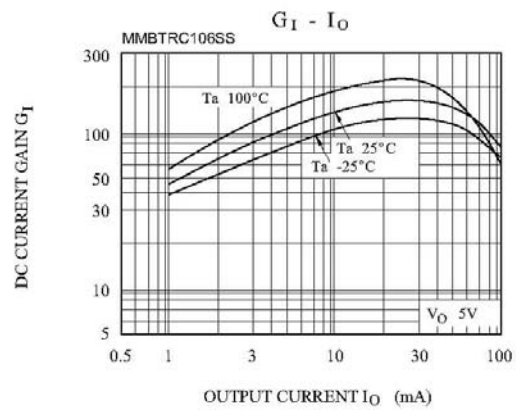
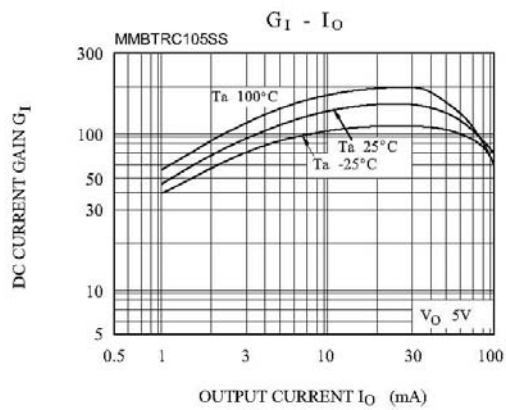
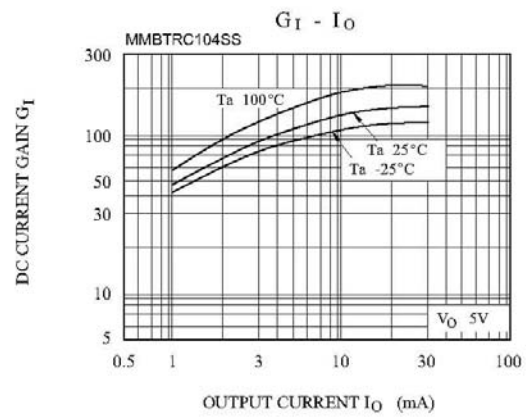
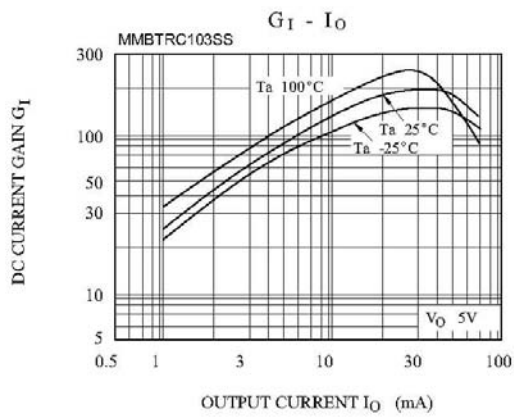
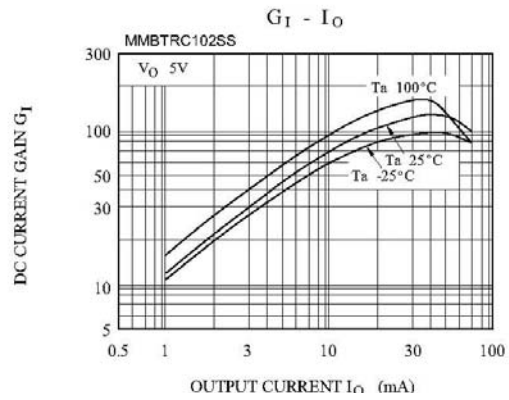
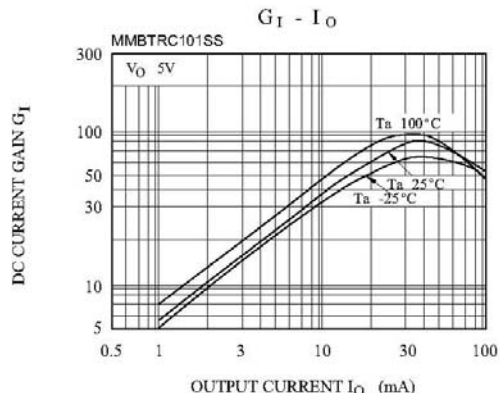
## Typical Characteristics



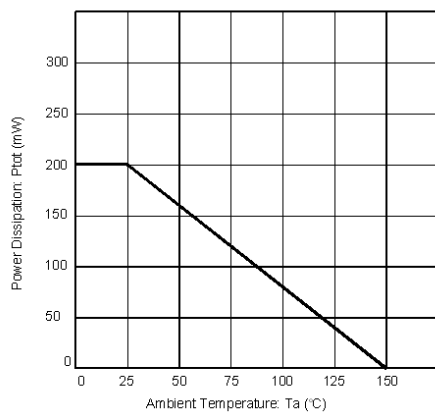
## Typical Characteristics



## Typical Characteristics



### Pc-Ta



## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23

