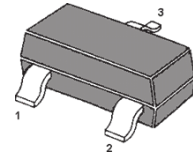
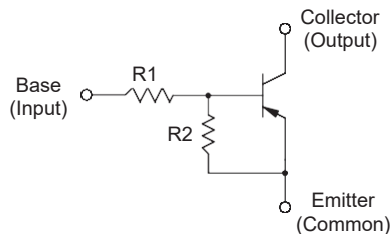


## MMBTRA101SS...MMBTRA106SS PNP Silicon Epitaxial Planar Transistor

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

### Resistor Values

Type	R1 (KΩ)	R2 (KΩ)	Marking Code
MMBTRA101SS	4.7	4.7	RK
MMBTRA102SS	10	10	RM
MMBTRA103SS	22	22	RN
MMBTRA104SS	47	47	RP
MMBTRA105SS	2.2	47	RR
MMBTRA106SS	4.7	47	RX

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

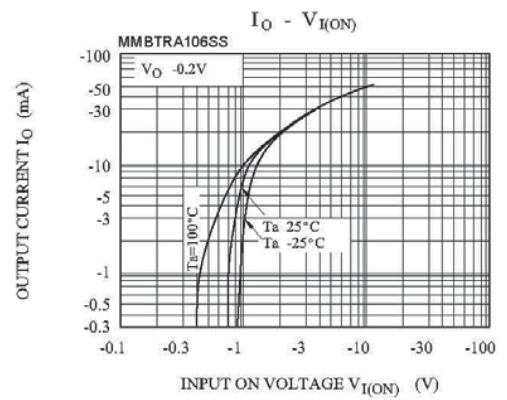
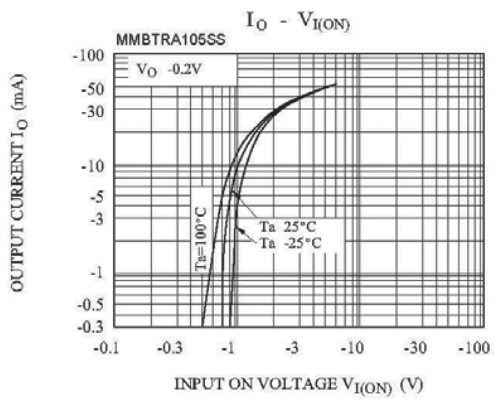
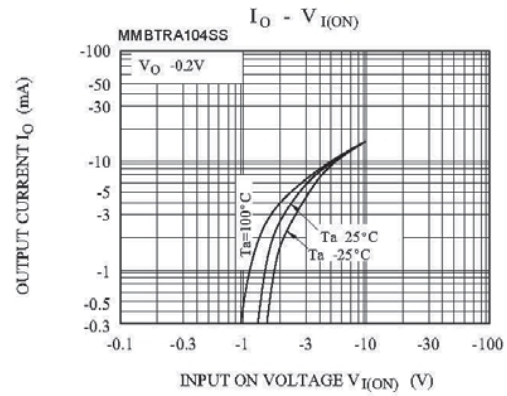
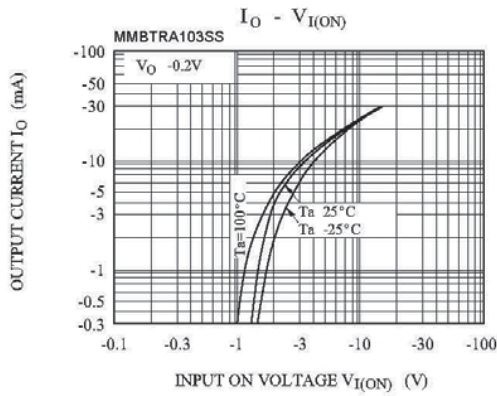
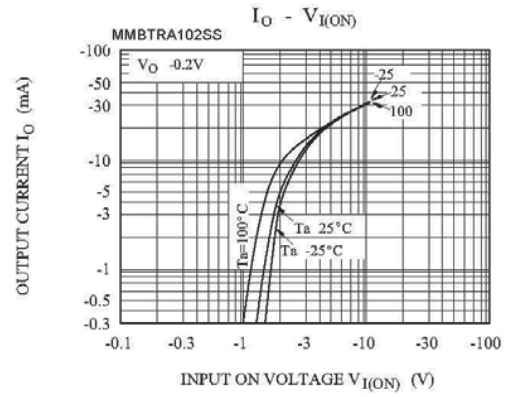
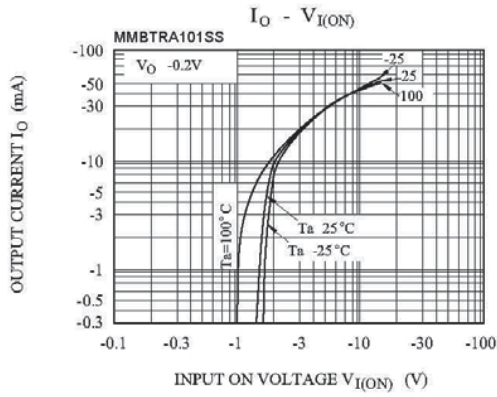
Parameter		Symbol	Value	Unit
Output Voltage		$-V_o$	50	V
Input Voltage	MMBTRA101SS	$-V_i$	20, -10	V
	MMBTRA102SS		30, -10	
	MMBTRA103SS		40, -10	
	MMBTRA104SS		40, -10	
	MMBTRA105SS		12, -5	
	MMBTRA106SS		20, -5	
Output Current		$-I_o$	100	mA
Total Power Dissipation		$P_{tot}$	200	mW
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

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

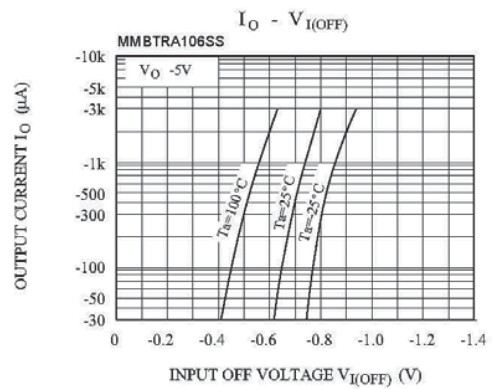
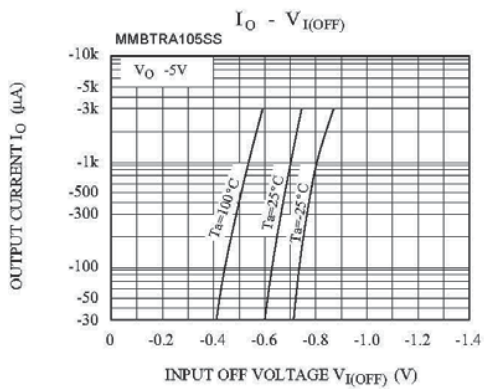
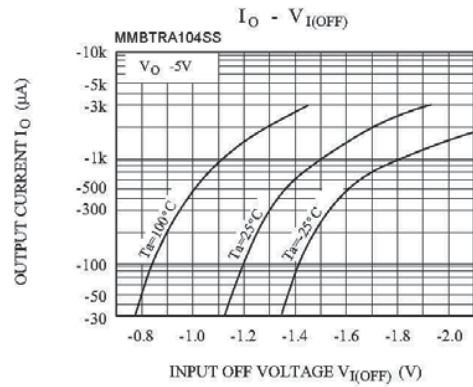
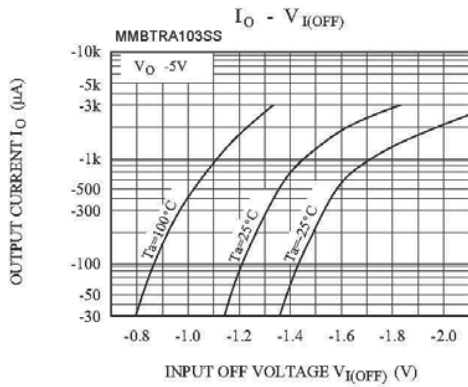
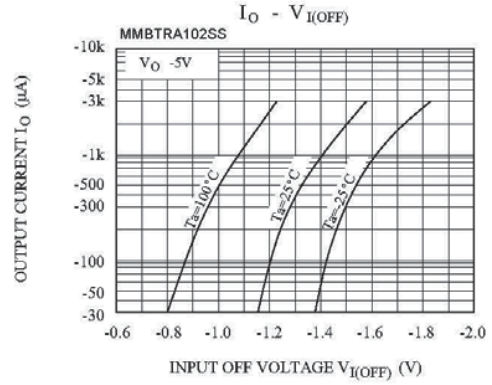
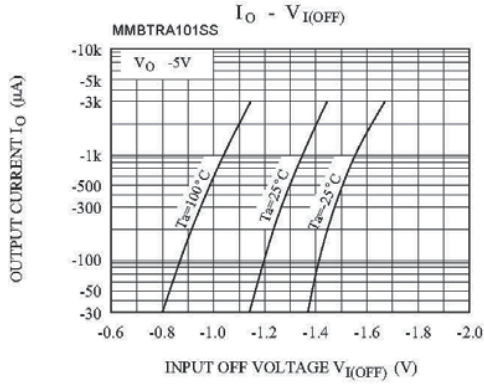
Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_O = 5\text{ V}$ , $-I_O = 10\text{ mA}$	MMBTRA101SS MMBTRA102SS MMBTRA103SS MMBTRA104SS MMBTRA105SS MMBTRA106SS $G_I$	30 50 70 80 80 80	- - - - - -	- - - - - -	- - - - - -
Output Cutoff Current at $-V_O = 50\text{ V}$	$-I_{O(OFF)}$	-	-	500	nA
Input Current at $-V_I = 5\text{ V}$	MMBTRA101SS MMBTRA102SS MMBTRA103SS MMBTRA104SS MMBTRA105SS MMBTRA106SS $-I_I$	- - - - - -	- - - - - -	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 $-V_O = 0.2\text{ V}$ , $-I_O = 5\text{ mA}$	MMBTRA101SS MMBTRA102SS MMBTRA103SS MMBTRA104SS MMBTRA105SS MMBTRA106SS $-V_{I(ON)}$	- - - - - -	- - - - - -	2 2.4 3 5 1.1 1.3	V
Input Voltage (OFF) at $-V_O = 5\text{ V}$ , $-I_O = 0.1\text{ mA}$	MMBTRA101SS~104SS MMBTRA105SS~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

<sup>1)</sup> Characteristic of transistor only.

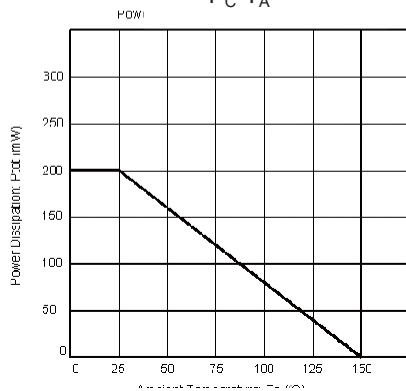
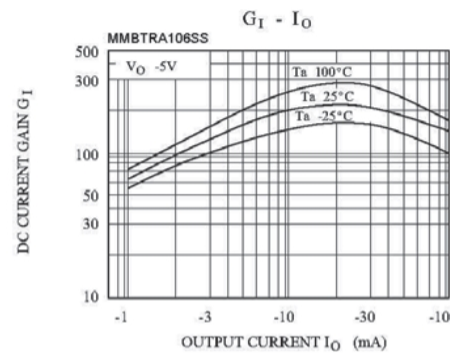
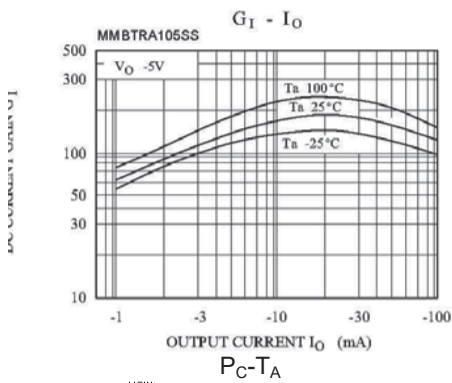
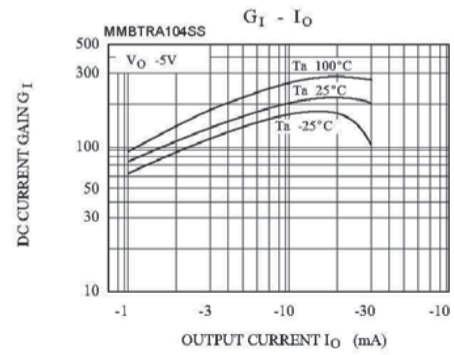
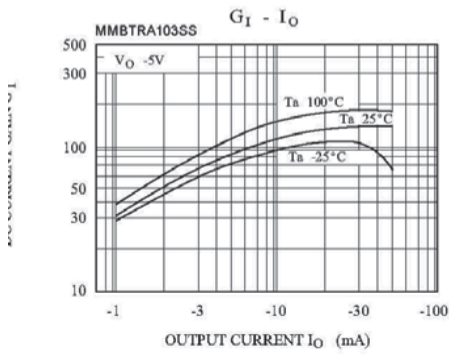
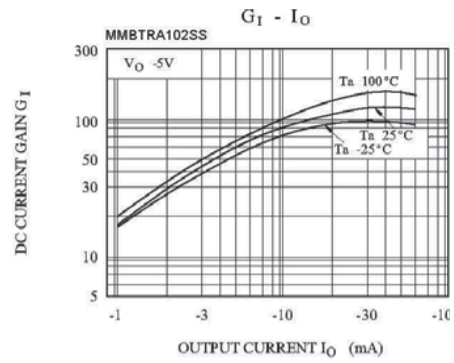
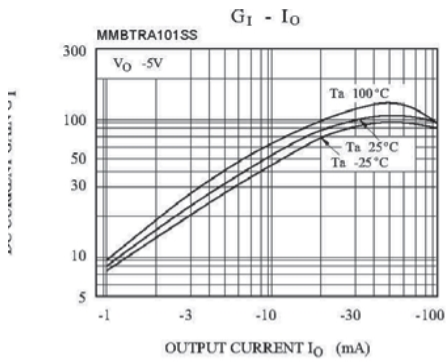
## Typical Characteristics



Typical Characteristics



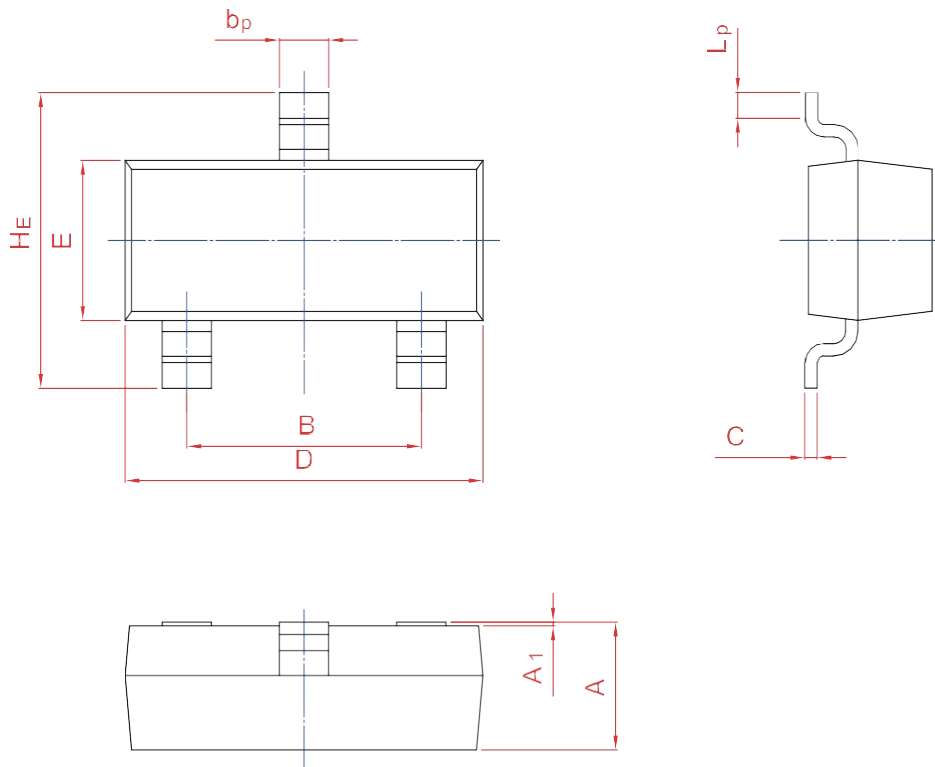
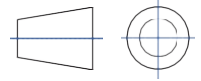
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20