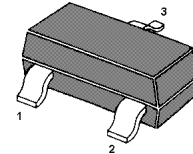
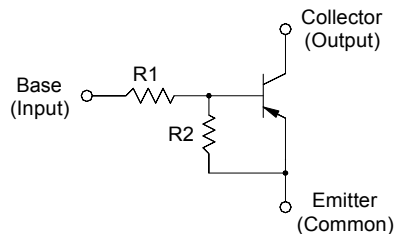


MMBTRA101SS...MMBTRA106SS PNP Silicon Epitaxial Planar Transistor

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 ($T_a = 25\text{ }^\circ\text{C}$)

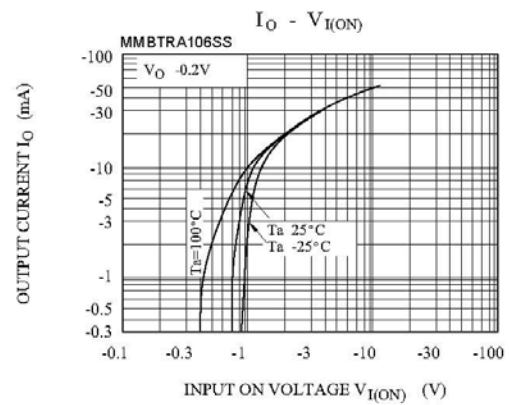
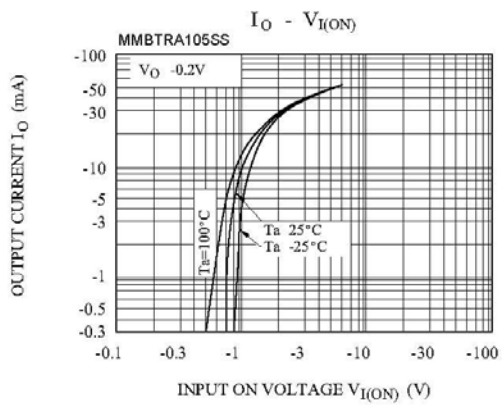
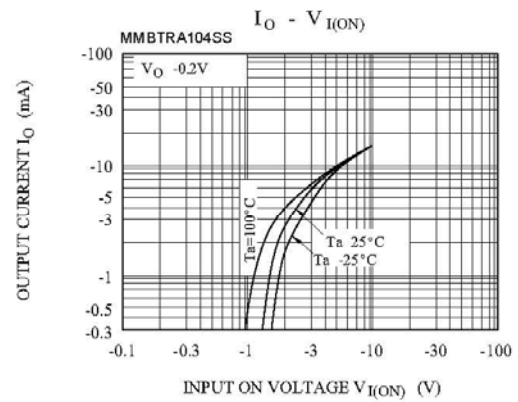
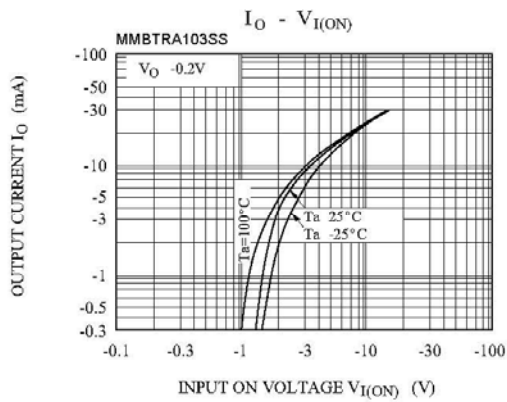
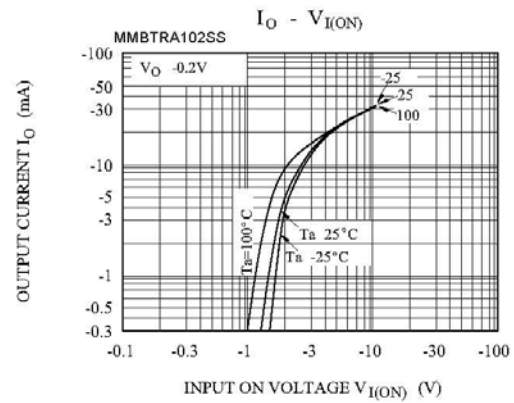
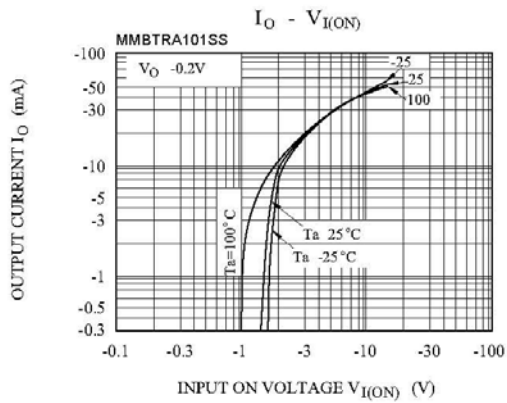
Parameter		Symbol	Value	Unit
Output Voltage		$-V_o$	50	V
Input Voltage	MMBTRA101SS	$-V_i$	20, -10	V
	MMBTRA102SS		30, -10	
	MMBTRA103SS		40, -10	
	MMBTRA104SS		40, -10	
	MMBTRA105SS		12, -5	
	MMBTRA106SS		20, -5	
Output Current		$-I_o$	100	mA
Total Power Dissipation		P_{tot}	200	mW
Junction Temperature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

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

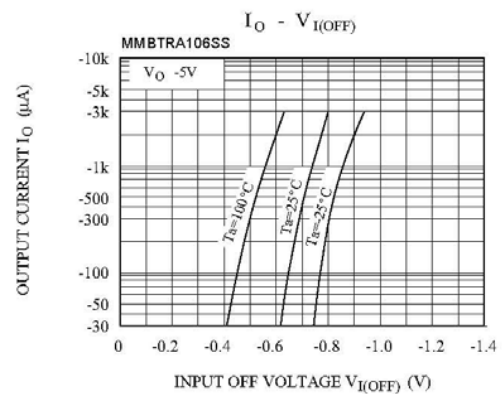
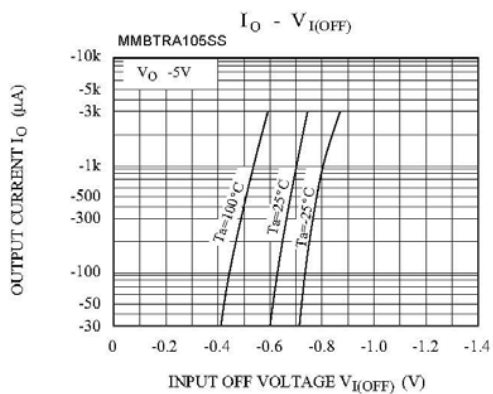
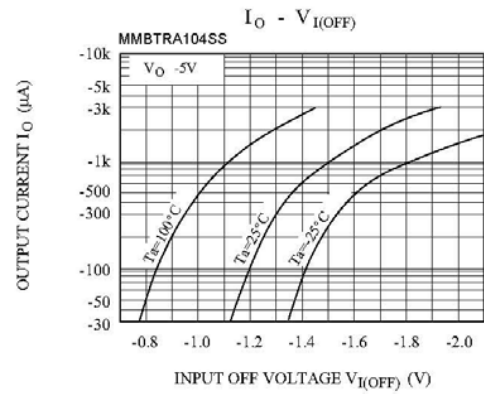
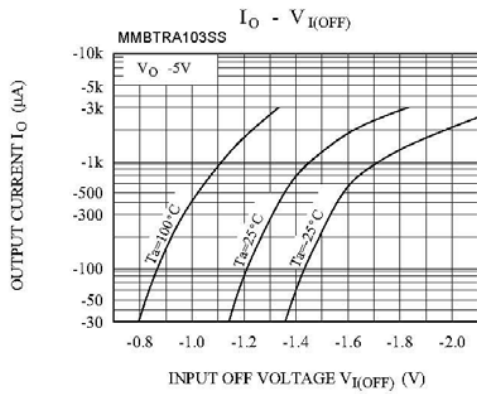
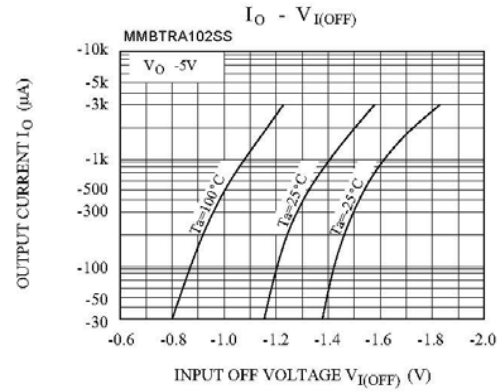
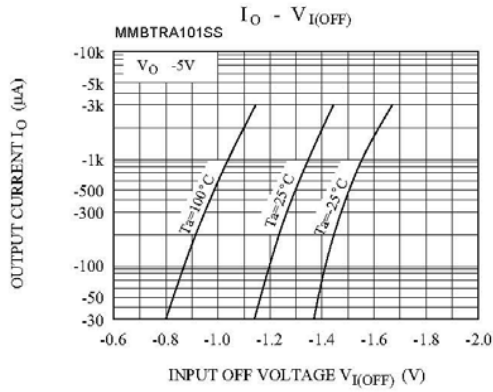
Parameter	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain at $-V_O = 5\text{ V}$, $-I_O = 10\text{ mA}$	MMBTRA101SS MMBTRA102SS MMBTRA103SS MMBTRA104SS MMBTRA105SS MMBTRA106SS	G_I	30 50 70 80 80 80	- - - - - -	- - - - - -	- - - - - -
Output Cutoff Current at $-V_O = 50\text{ V}$		$-I_{O(OFF)}$	-	-	500	nA
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) Input Voltage (ON)	MMBTRA101SS MMBTRA102SS MMBTRA103SS MMBTRA104SS MMBTRA105SS MMBTRA106SS	$-V_{I(ON)}$	- - - - - -	- - - - - -	2 2.4 3 5 1.1 1.3	V
Input Resistance	MMBTRA101SS MMBTRA102SS MMBTRA103SS MMBTRA104SS MMBTRA105SS MMBTRA106SS	R1	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 Ω k Ω k Ω k Ω k Ω k Ω
Resistance ratio	MMBTRA101SS MMBTRA102SS MMBTRA103SS MMBTRA104SS MMBTRA105SS MMBTRA106SS	R2/R1	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 $-V_O = 5\text{ V}$, $-I_O = 0.1\text{ mA}$	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

1) Characteristic of transistor only.

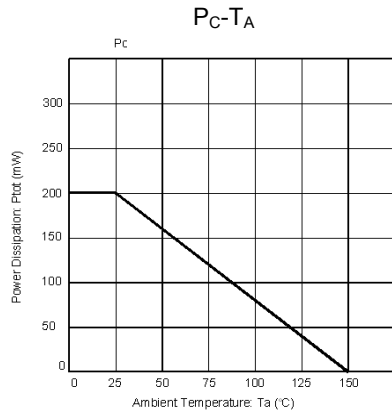
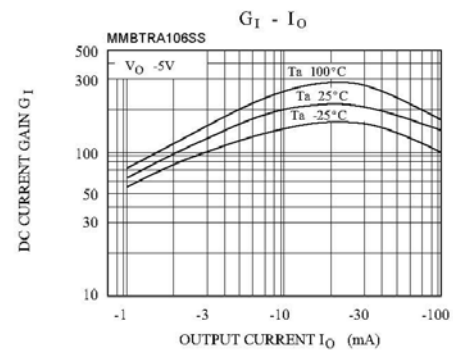
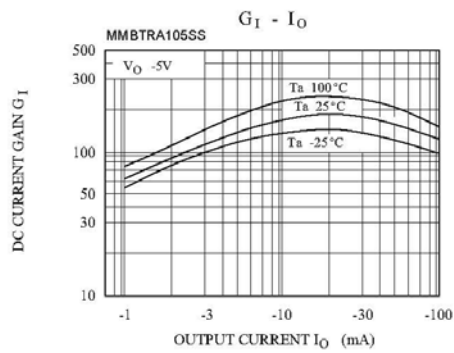
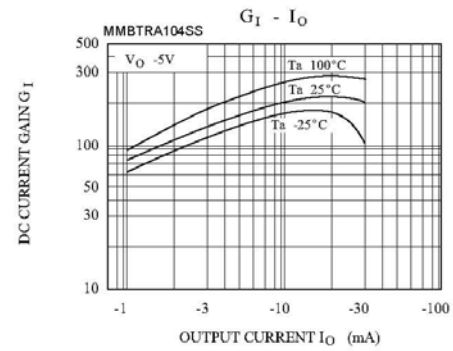
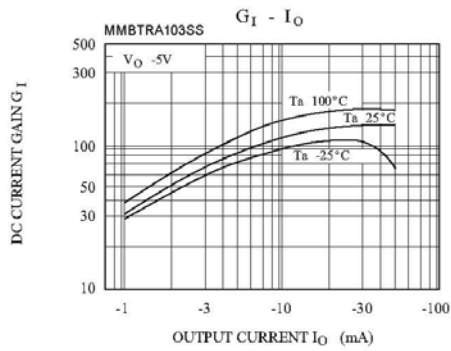
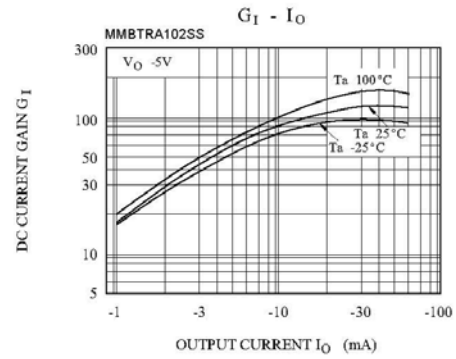
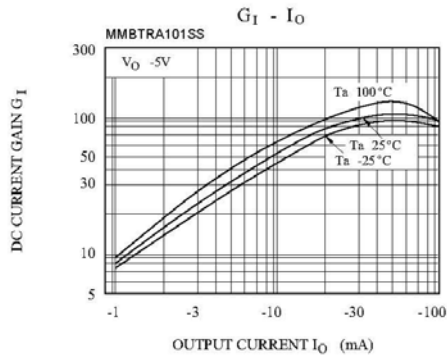
Typical Characteristics



Typical Characteristics



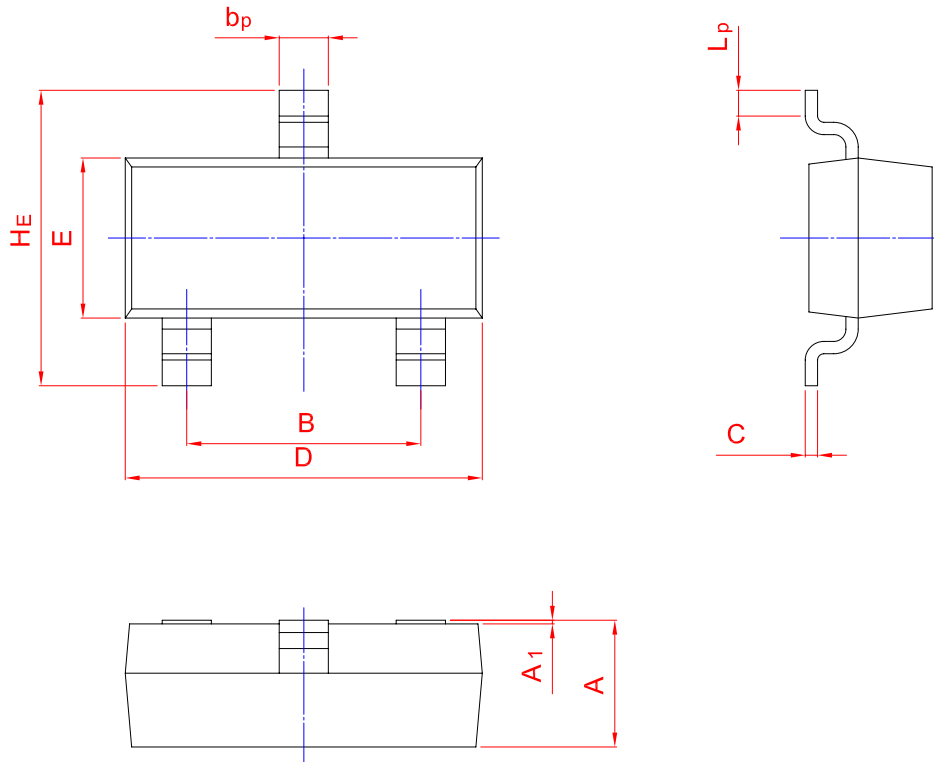
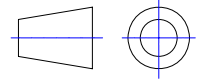
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	Hε	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