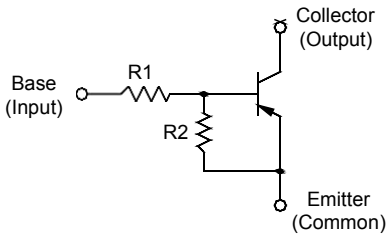
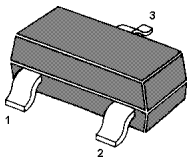
PNP Silicon Epitaxial Planar Transistor

for switching, 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	R1 (KΩ)	R2 (KΩ)	Marking
MMBTRA116SS	1	10	16BT
MMBTRA117SS	2.2	2.2	17BT
MMBTRA118SS	2.2	10	18BT
MMBTRA119SS	4.7	10	19BT
MMBTRA120SS	10	4.7	20BT
MMBTRA121SS	47	10	21BT
MMBTRA122SS	100	100	22BT

Absolute Maximum Ratings (T_a = 25 °C)

Parameter		Symbol	Value	Unit
Output Voltage		$-V_O$	50	V
Input Voltage	MMBTRA116SS	V_I	- 10, 5	V
	MMBTRA117SS		- 12, 10	
	MMBTRA118SS		- 12, 5	
	MMBTRA119SS		- 20, 7	
	MMBTRA120SS		- 30, 10	
	MMBTRA121SS		- 40, 15	
	MMBTRA122SS		- 40, 10	
Output Current		$-I_O$	100	mA
Total Power Dissipation		P_{tot}	200	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_S	- 55 to + 150	°C

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Characteristics at T_a = 25 °C

Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain						
at $-V_O$ = 5 V, $-I_O$ = 5 mA	MMBTRA116SS	G_I	33	-	-	-
at $-V_O$ = 5 V, $-I_O$ = 20 mA	MMBTRA117SS		20	-	-	-
at $-V_O$ = 5 V, $-I_O$ = 10 mA	MMBTRA118SS		33	-	-	-
at $-V_O$ = 5 V, $-I_O$ = 10 mA	MMBTRA119SS		30	-	-	-
at $-V_O$ = 5 V, $-I_O$ = 10 mA	MMBTRA120SS		24	-	-	-
at $-V_O$ = 5 V, $-I_O$ = 5 mA	MMBTRA121SS		33	-	-	-
at $-V_O$ = 5 V, $-I_O$ = 5 mA	MMBTRA122SS		62	-	-	-
Output Cutoff Current at $-V_O$ = 50 V		$-I_{O(OFF)}$	-	-	500	nA
Input Current at $-V_I$ = 5 V	MMBTRA116SS	$-I_I$	-	-	7.2	mA
	MMBTRA117SS		-	-	3.8	
	MMBTRA118SS		-	-	3.8	
	MMBTRA119SS		-	-	1.8	
	MMBTRA120SS		-	-	0.88	
	MMBTRA121SS		-	-	0.16	
	MMBTRA122SS		-	-	0.15	
Output Voltage						
at $-I_O$ = 10 mA, $-I_I$ = 0.5 mA	MMBTRA116SS	$-V_{O(ON)}$	-	-	0.3	V
at $-I_O$ = 10 mA, $-I_I$ = 0.5 mA	MMBTRA117SS		-	-	0.3	
at $-I_O$ = 10 mA, $-I_I$ = 0.5 mA	MMBTRA118SS		-	-	0.3	
at $-I_O$ = 10 mA, $-I_I$ = 0.5 mA	MMBTRA119SS		-	-	0.3	
at $-I_O$ = 10 mA, $-I_I$ = 0.5 mA	MMBTRA120SS		-	-	0.3	
at $-I_O$ = 10 mA, $-I_I$ = 0.5 mA	MMBTRA121SS		-	-	0.3	
at $-I_O$ = 5 mA, $-I_I$ = 0.25mA	MMBTRA122SS		-	-	0.3	
Input Voltage (ON)						
at $-V_O$ = 0.3 V, $-I_O$ = 20 mA	MMBTRA116SS	$-V_{I(ON)}$	-	-	3	V
at $-V_O$ = 0.3 V, $-I_O$ = 20 mA	MMBTRA117SS		-	-	3	
at $-V_O$ = 0.3 V, $-I_O$ = 20 mA	MMBTRA118SS		-	-	3	
at $-V_O$ = 0.3 V, $-I_O$ = 20 mA	MMBTRA119SS		-	-	2.5	
at $-V_O$ = 0.3 V, $-I_O$ = 2 mA	MMBTRA120SS		-	-	3	
at $-V_O$ = 0.3 V, $-I_O$ = 2 mA	MMBTRA121SS		-	-	5	
at $-V_O$ = 0.3 V, $-I_O$ = 1mA	MMBTRA122SS		-	-	3	
Input Voltage (OFF)						
at $-V_{CC}$ = 5 V, $-I_O$ = 100 µA	MMBTRA116SS	$-V_{I(OFF)}$	0.3	-	-	V
	MMBTRA117SS		0.5	-	-	
	MMBTRA118SS		0.3	-	-	
	MMBTRA119SS		0.3	-	-	
	MMBTRA120SS		0.8	-	-	
	MMBTRA121SS		1	-	-	
	MMBTRA122SS		0.5	-	-	
Transition Frequency at $-V_O$ = 10 V, $-I_O$ = 5 mA		f_T [1]	-	250	-	MHz

1) Characteristic of transistor only.

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