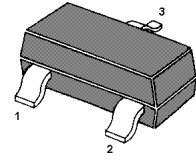
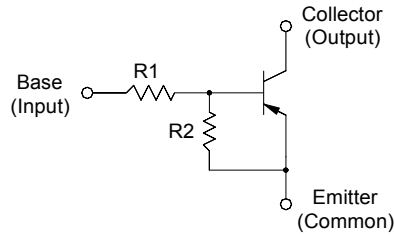


MMBTRA116SS...MMBTRA122SS PNP Silicon Epitaxial Planar Transistor

for switching, 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 And Mark

Type	R1 (KΩ)	R2 (KΩ)	Marking Code
MMBTRA116SS	1	10	YE
MMBTRA117SS	2.2	2.2	YF
MMBTRA118SS	2.2	10	YG
MMBTRA119SS	4.7	10	YH
MMBTRA120SS	10	4.7	YJ
MMBTRA121SS	47	10	YK
MMBTRA122SS	100	100	YM

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

Parameter	Symbol	Value	Unit	
Output Voltage	$-V_o$	50	V	
Input Voltage	V_i	MMBTRA116SS	- 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	$^\circ\text{C}$	
Storage Temperature Range	T_s	- 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 $-V_O = 5\text{ V}$, $-I_O = 5\text{ mA}$	MMBTRA116SS	33	-	-	-
at $-V_O = 5\text{ V}$, $-I_O = 20\text{ mA}$	MMBTRA117SS	20	-	-	-
at $-V_O = 5\text{ V}$, $-I_O = 10\text{ mA}$	MMBTRA118SS	33	-	-	-
at $-V_O = 5\text{ V}$, $-I_O = 10\text{ mA}$	MMBTRA119SS	30	-	-	-
at $-V_O = 5\text{ V}$, $-I_O = 10\text{ mA}$	MMBTRA120SS	24	-	-	-
at $-V_O = 5\text{ V}$, $-I_O = 5\text{ mA}$	MMBTRA121SS	33	-	-	-
at $-V_O = 5\text{ V}$, $-I_O = 5\text{ mA}$	MMBTRA122SS	62	-	-	-
Output Cutoff Current at $-V_O = 50\text{ V}$	$-I_{O(OFF)}$	-	-	500	nA
Input Current at $-V_I = 5\text{ V}$					
	MMBTRA116SS	-	-	7.2	mA
	MMBTRA117SS	-	-	3.8	
	MMBTRA118SS	-	-	3.8	
	MMBTRA119SS	-	-	1.8	
	MMBTRA120SS	-	-	0.88	
	MMBTRA121SS	-	-	0.16	
	MMBTRA122SS	-	-	0.15	
Output Voltage					
at $-I_O = 10\text{ mA}$, $-I_I = 0.5\text{ mA}$	MMBTRA116SS	-	-	0.3	V
at $-I_O = 10\text{ mA}$, $-I_I = 0.5\text{ mA}$	MMBTRA117SS	-	-	0.3	
at $-I_O = 10\text{ mA}$, $-I_I = 0.5\text{ mA}$	MMBTRA118SS	-	-	0.3	
at $-I_O = 10\text{ mA}$, $-I_I = 0.5\text{ mA}$	MMBTRA119SS	-	-	0.3	
at $-I_O = 10\text{ mA}$, $-I_I = 0.5\text{ mA}$	MMBTRA120SS	-	-	0.3	
at $-I_O = 10\text{ mA}$, $-I_I = 0.5\text{ mA}$	MMBTRA121SS	-	-	0.3	
at $-I_O = 5\text{ mA}$, $-I_I = 0.25\text{ mA}$	MMBTRA122SS	-	-	0.3	
Input Voltage (ON)					
at $-V_O = 0.3\text{ V}$, $-I_O = 20\text{ mA}$	MMBTRA116SS	-	-	3	V
at $-V_O = 0.3\text{ V}$, $-I_O = 20\text{ mA}$	MMBTRA117SS	-	-	3	
at $-V_O = 0.3\text{ V}$, $-I_O = 20\text{ mA}$	MMBTRA118SS	-	-	3	
at $-V_O = 0.3\text{ V}$, $-I_O = 20\text{ mA}$	MMBTRA119SS	-	-	2.5	
at $-V_O = 0.3\text{ V}$, $-I_O = 2\text{ mA}$	MMBTRA120SS	-	-	3	
at $-V_O = 0.3\text{ V}$, $-I_O = 2\text{ mA}$	MMBTRA121SS	-	-	5	
at $-V_O = 0.3\text{ V}$, $-I_O = 1\text{ mA}$	MMBTRA122SS	-	-	3	
Input Voltage (OFF)					
at $-V_{CC} = 5\text{ V}$, $-I_O = 100\text{ }\mu\text{A}$	MMBTRA116SS	0.3	-	-	V
	MMBTRA117SS	0.5	-	-	
	MMBTRA118SS	0.3	-	-	
	MMBTRA119SS	0.3	-	-	
	MMBTRA120SS	0.8	-	-	
	MMBTRA121SS	1	-	-	
	MMBTRA122SS	0.5	-	-	
Transition Frequency at $-V_O = 10\text{ V}$, $-I_O = 5\text{ mA}$	f_T ¹⁾	-	250	-	MHz

1) Characteristic of transistor only.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Input resistance	R1	MMBTRA116SS	0.7	1	1.3	k Ω
		MMBTRA117SS	1.54	2.2	2.86	k Ω
		MMBTRA118SS	1.54	2.2	2.86	k Ω
		MMBTRA119SS	3.29	4.7	6.11	k Ω
		MMBTRA120SS	7	10	13	k Ω
		MMBTRA121SS	32.9	47	61.1	k Ω
		MMBTRA122SS	70	100	130	k Ω
Resistance ratio	R2/R1	MMBTRA116SS	8	10	12	
		MMBTRA117SS	0.8	1	1.2	
		MMBTRA118SS	3.6	4.5	5.5	
		MMBTRA119SS	1.7	2.1	2.6	
		MMBTRA120SS	0.37	0.47	0.57	
		MMBTRA121SS	0.17	0.21	0.26	
		MMBTRA122SS	0.8	1.0	1.2	

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23

