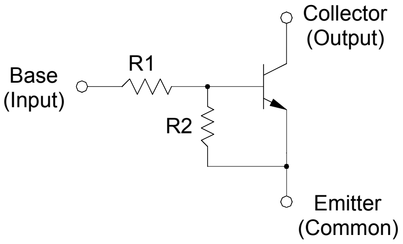
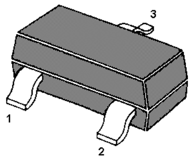
NPN Silicon Epitaxial Planar Transistor

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)
MMBTRC107SS	10	47
MMBTRC108SS	22	47
MMBTRC109SS	47	22

Absolute Maximum Ratings (T_a = 25 °C)

Parameter		Symbol	Value	Unit
Output Voltage		V_O	50	V
Input Voltage	MMBTRC107SS	V_I	30, -6	V
	MMBTRC108SS		40, -7	
	MMBTRC109SS		40, -15	
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

Characteristics at $T_a = 25$ °C

Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_O = 5$ V, $I_O = 10$ mA	MMBTRC107SS MMBTRC108SS MMBTRC109SS	G_I	80 80 70	- - -	- - -	- - -
Output Cutoff Current at $V_O = 50$ V		$I_{O(OFF)}$	-	-	500	nA
Input Current at $V_I = 5$ V	MMBTRC107SS MMBTRC108SS MMBTRC109SS	I_I	- - -	- - -	0.88 0.36 0.16	mA
Output Voltage at $I_O = 10$ mA, $I_I = 0.5$ mA		$V_{O(ON)}$	-	-	0.3	V
Input Voltage (ON) at $V_O = 0.2$ V, $I_O = 5$ mA	MMBTRC107SS MMBTRC108SS MMBTRC109SS	$V_{I(ON)}$	- - -	- - -	1.8 2.6 5.8	V
Input Voltage (OFF) at $V_O = 5$ V, $I_O = 0.1$ mA	MMBTRC107SS MMBTRC108SS MMBTRC109SS	$V_{I(OFF)}$	0.5 0.6 1.5	- - -	- - -	V
Transition Frequency at $V_O = 10$ V, $I_O = 5$ mA		f_T 1)	-	200	-	MHz

1) Characteristic of transistor only.