

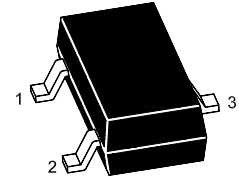


# MMBTRC116SS~MMBTRC122SS NPN Digital Transistor

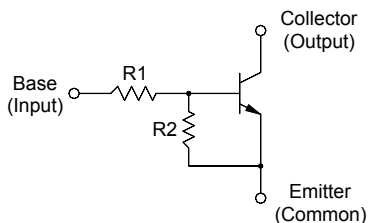
## Features

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process

SOT-23  
(TO-236)



1.Base 2.Emitter 3.Collector



## Resistor Values

Type	R1 (K $\Omega$ )	R2 (K $\Omega$ )	Marking
MMBTRC116SS	1	10	16BR
MMBTRC117SS	2.2	2.2	17BR
MMBTRC118SS	2.2	10	18BR
MMBTRC119SS	4.7	10	19BR
MMBTRC120SS	10	4.7	20BR
MMBTRC121SS	47	10	21BR
MMBTRC122SS	100	100	22BR

## Absolute Maximum Ratings (T<sub>a</sub> = 25 °C )

Parameter	Symbol	Value	Unit	
Output Voltage	V <sub>O</sub>	50	V	
Input Voltage	V <sub>I</sub>	MMBTRC116SS	10, - 5	V
		MMBTRC117SS	12, - 10	
		MMBTRC118SS	12, - 5	
		MMBTRC119SS	20, - 7	
		MMBTRC120SS	30, - 10	
		MMBTRC121SS	40, - 15	
		MMBTRC122SS	40, - 10	
Output Current	I <sub>O</sub>	100	mA	
Total Power Dissipation	P <sub>tot</sub>	200	mW	
Junction Temperature	T <sub>j</sub>	150	°C	
Storage Temperature Range	T <sub>Stg</sub>	- 55 to + 150	°C	



# MMBTRC116SS~MMBTRC122SS

## NPN Digital Transistor

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_o = 5\text{ V}$ , $I_o = 5\text{ mA}$	MMBTRC116SS	33	-	-	-
at $V_o = 5\text{ V}$ , $I_o = 20\text{ mA}$	MMBTRC117SS	20	-	-	-
at $V_o = 5\text{ V}$ , $I_o = 10\text{ mA}$	MMBTRC118SS	33	-	-	-
at $V_o = 5\text{ V}$ , $I_o = 10\text{ mA}$	MMBTRC119SS	30	-	-	-
at $V_o = 5\text{ V}$ , $I_o = 10\text{ mA}$	MMBTRC120SS	24	-	-	-
at $V_o = 5\text{ V}$ , $I_o = 5\text{ mA}$	MMBTRC121SS	33	-	-	-
at $V_o = 5\text{ V}$ , $I_o = 5\text{ mA}$	MMBTRC122SS	62	-	-	-
Output Cutoff Current at $V_o = 50\text{ V}$	$I_{O(OFF)}$	-	-	500	nA
Input Current at $V_i = 5\text{ V}$	MMBTRC116SS MMBTRC117SS MMBTRC118SS MMBTRC119SS MMBTRC120SS MMBTRC121SS MMBTRC122SS	- - - - - - -	- - - - - - -	7.2 3.8 3.8 1.8 0.88 0.16 0.15	mA
Output Voltage at $I_o = 10\text{ mA}$ , $I_i = 0.5\text{ mA}$	MMBTRC116SS MMBTRC117SS MMBTRC118SS MMBTRC119SS MMBTRC120SS MMBTRC121SS MMBTRC122SS	- - - - - - -	- - - - - - -	0.3 0.3 0.3 0.3 0.3 0.3 0.3	V
Input Voltage (ON) at $V_o = 0.3\text{ V}$ , $I_o = 20\text{ mA}$	MMBTRC116SS MMBTRC117SS MMBTRC118SS MMBTRC119SS MMBTRC120SS MMBTRC121SS MMBTRC122SS	- - - - - - -	- - - - - - -	3 3 3 2.5 3 5 3	V
Input Voltage (OFF) at $V_{CC} = 5\text{ V}$ , $I_o = 100\text{ }\mu\text{A}$	MMBTRC116SS MMBTRC117SS MMBTRC118SS MMBTRC119SS MMBTRC120SS MMBTRC121SS MMBTRC122SS	0.3 0.5 0.3 0.3 0.8 1 0.5	- - - - - - -	- - - - - - -	V
Transition Frequency at $V_o = 10\text{ V}$ , $I_o = 5\text{ mA}$	$f_T^{1)}$	-	250	-	MHz

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

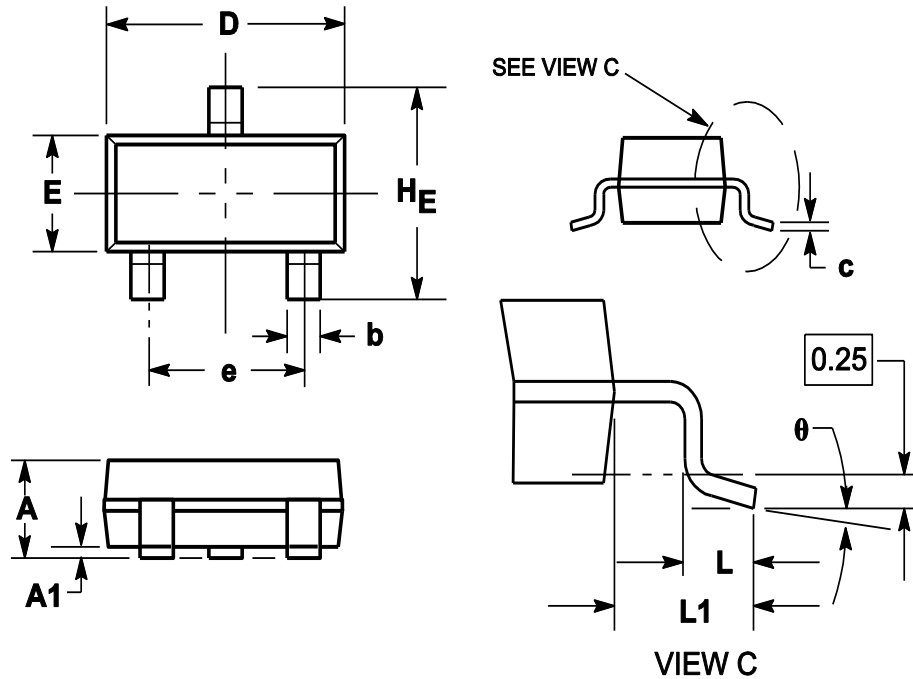


# MMBTRC116SS~MMBTRC122SS NPN Digital Transistor

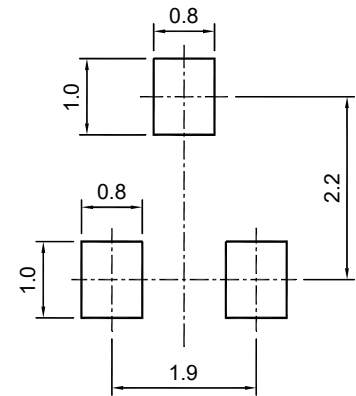
## Package Outline

SOT-23 (TO-236)

Dimensions in mm



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.900	1.025	1.150
A1	0.000	0.050	0.100
b	0.300	0.400	0.500
c	0.080	0.115	0.150
D	2.800	2.900	3.000
E	1.200	1.300	1.400
HE	2.250	2.400	2.550
e	1.800	1.900	2.000
L1	0.550REF		
L	0.300		0.500
$\theta$	0°		8°



SOT-23 (TO-236)

**Recommended soldering pad**

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Bipolar Transistors - Pre-Biased](#) category:*

*Click to view products by [Pingjingsemi](#) manufacturer:*

Other Similar products are found below :

[RN1607\(TE85L,F\)](#) [DRC9A14E0L](#) [DTA124GKAT146](#) [DTA144WETL](#) [DTA144WKAT146](#) [DTC113EET1G](#) [DTC115TETL](#)  
[DTC115TKAT146](#) [DTC124TETL](#) [DTC144VUAT106](#) [MUN5241T1G](#) [BCR158WH6327XTSA1](#) [NSBA114TDP6T5G](#) [NSBA123EF3T5G](#)  
[NSBA143TF3T5G](#) [NSBA144TF3T5G](#) [NSBC113EF3T5G](#) [NSBC124XF3T5G](#) [SMUN5330DW1T1G](#) [SSVMUN5312DW1T2G](#)  
[RN1303\(TE85L,F\)](#) [RN1306\(TE85L,F\)](#) [RN4605\(TE85L,F\)](#) [TTEPROTOTYPE79](#) [EMH15T2R](#) [SMUN2214T3G](#) [SMUN5335DW1T1G](#)  
[NSBC143ZPDP6T5G](#) [NSVDTA143ZET1G](#) [NSVDTC143ZET1G](#) [NSVMUN5113DW1T3G](#) [SMUN2214T1G](#) [FMA7AT148](#) [DTC114EUA-TP](#)  
[SMUN5237DW1T1G](#) [SMUN5213DW1T1G](#) [SMUN5114DW1T1G](#) [SMUN2111T1G](#) [DTC124ECA-TP](#) [DTC123TM3T5G](#) [DTA114ECA-TP](#)  
[DTA113EM3T5G](#) [DTC113EM3T5G](#) [NSVMUN5135DW1T1G](#) [NSVMUN2237T1G](#) [NSVDTC143ZM3T5G](#) [SMUN5335DW1T2G](#)  
[SMUN5216DW1T1G](#) [NSVMUN5316DW1T1G](#) [NSVMUN5215DW1T1G](#)