

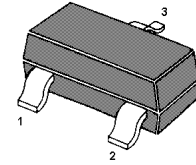
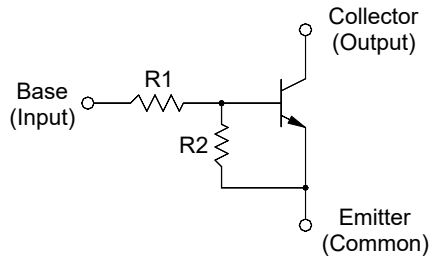
MMBTRC101SS~MMBTRC106SS

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



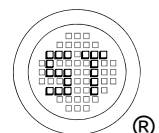
1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

Resistor Values

Type	R1 (K Ω)	R2 (K Ω)
MMBTRC101SS	4.7	4.7
MMBTRC102SS	10	10
MMBTRC103SS	22	22
MMBTRC104SS	47	47
MMBTRC105SS	2.2	47
MMBTRC106SS	4.7	47

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

Parameter		Symbol	Value	Unit
Output Voltage		V_o	50	V
Input Voltage	MMBTRC101SS	V_i	20, -10	V
	MMBTRC102SS		30, -10	
	MMBTRC103SS		40, -10	
	MMBTRC104SS		40, -10	
	MMBTRC105SS		12, -5	
	MMBTRC106SS		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	$^\circ\text{C}$

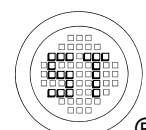


MMBTRC101SS~MMBTRC106SS

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_o = 5\text{ V}$, $I_o = 10\text{ mA}$	G _I	30	-	-	-
MMBTRC101SS		50	-	-	-
MMBTRC102SS		70	-	-	-
MMBTRC103SS		80	-	-	-
MMBTRC104SS		80	-	-	-
MMBTRC105SS		80	-	-	-
MMBTRC106SS					
Output Cutoff Current at $V_o = 50\text{ V}$	$I_{O(OFF)}$	-	-	500	nA
Input Current at $V_i = 5\text{ V}$	I _I	-	-	1.8	mA
MMBTRC101SS		-	-	0.88	
MMBTRC102SS		-	-	0.36	
MMBTRC103SS		-	-	0.18	
MMBTRC104SS		-	-	3.6	
MMBTRC105SS		-	-	1.8	
MMBTRC106SS					
Output Voltage at $I_o = 10\text{ mA}$, $I_i = 0.5\text{ mA}$	$V_{O(ON)}$	-	-	0.3	V
Input Voltage (ON) at $V_o = 0.2\text{ V}$, $I_o = 5\text{ mA}$	$V_{I(ON)}$	-	-	2	V
MMBTRC101SS		-	-	2.4	
MMBTRC102SS		-	-	3	
MMBTRC103SS		-	-	5	
MMBTRC104SS		-	-	1.1	
MMBTRC105SS		-	-	1.3	
MMBTRC106SS					
Input Voltage (OFF) at $V_o = 5\text{ V}$, $I_o = 0.1\text{ mA}$	$V_{I(OFF)}$	1	-	-	V
MMBTRC101SS~104SS		0.5	-	-	
MMBTRC105SS~106SS					
Transition Frequency at $V_o = 10\text{ V}$, $I_o = 5\text{ mA}$	f_T ¹⁾	-	200	-	MHz

¹⁾ Characteristic of transistor only.



MMBTRC101SS~MMBTRC106SS

Electrical Characteristics Curves (MMBTRC104SS)

Fig 1. Output Current Vs. Input Voltage

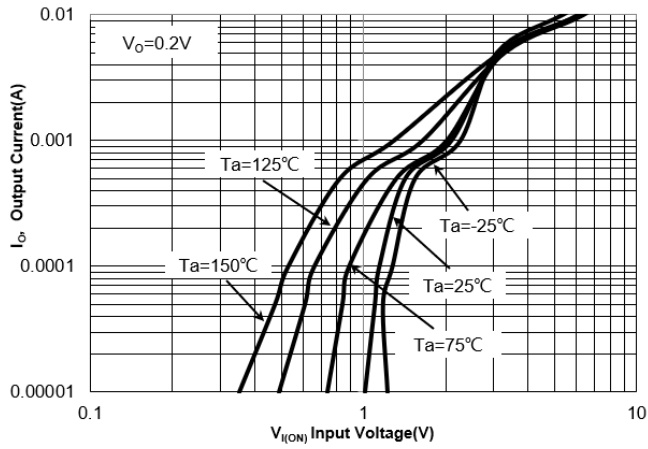


Fig 2. Output Current Vs. Input Voltage

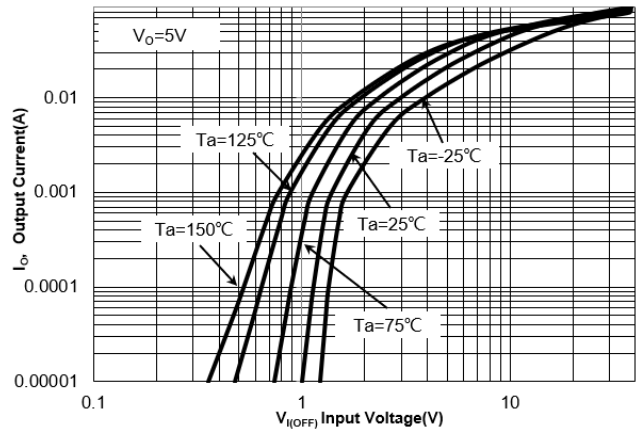


Fig 3. DC Current Gain Vs. Output Current

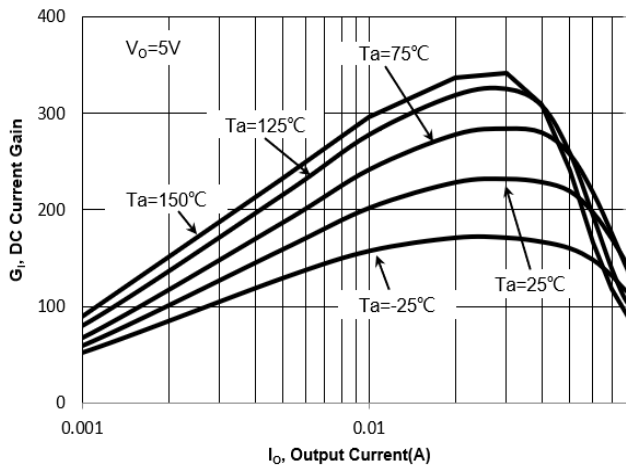


Fig 4. Output Voltage Vs. Output Current

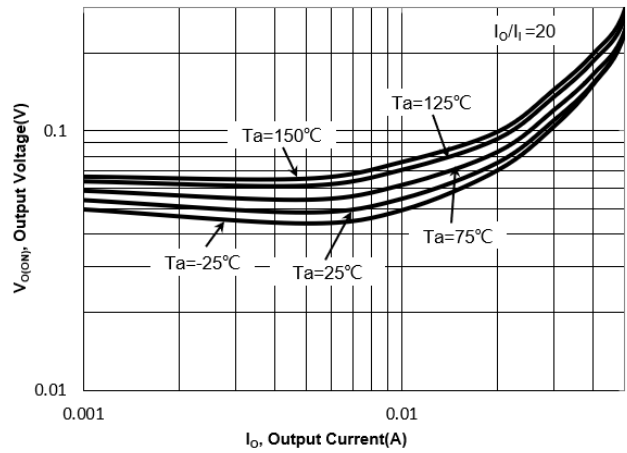
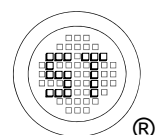
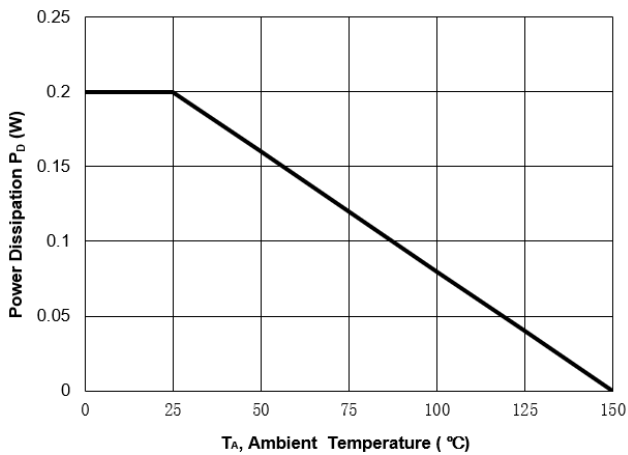


Fig 5. Power Derating Curve

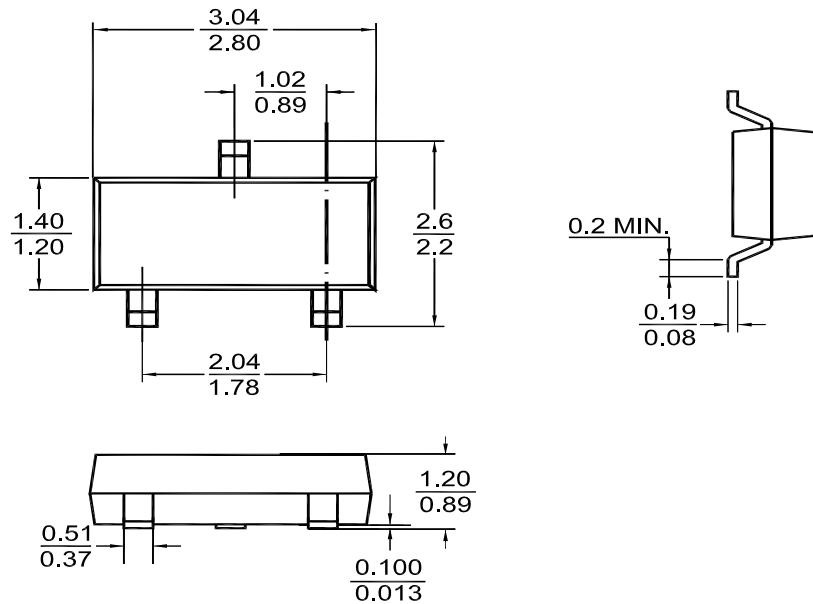


MMBTRC101SS...MMBTRC106SS

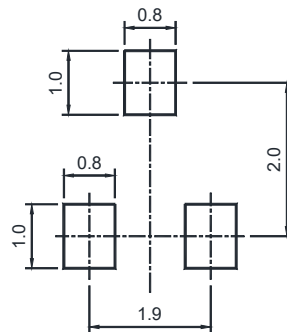
PACKAGE OUTLINE

Plastic surface mounted package (Dimensions in mm)

SOT-23



Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-23	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

"**" = Part No.

MMBTRC101SS:HP MMBTRC102SS:HN

MMBTRC103SS:HR MMBTRC104SS:HX

MMBTRC105SS:HY MMBTRC106SS:HZ

"YM" = Date Code Marking

"Y" = Year

"M" = Month

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