MMBTRC241SS THRU MMBTRC246SS SOT-23

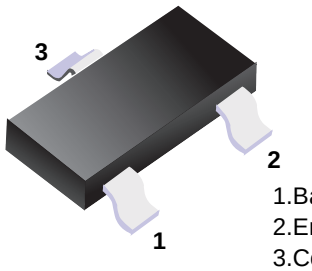
NPN Silicon Epitaxial Planar Digital Transistors

Features

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

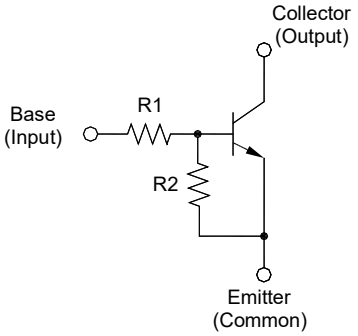
Applications

- For high current switching, interface circuit and driver circuit



1.Base
2.Emitter
3.Collector

SOT-23



Marking Code	
MMBTRC241SS	**N.Q**
MMBTRC242SS	**YP**
MMBTRC243SS	**HP**
MMBTRC244SS	**HN**
MMBTRC245SS	**N.U**
MMBTRC246SS	**N.V**

Resistor Values

Type	R1 (KΩ)	R2 (KΩ)	Type	R1 (KΩ)	R2 (KΩ)
MMBTRC241SS	1	1	MMBTRC244SS	10	10
MMBTRC242SS	2.2	2.2	MMBTRC245SS	1	10
MMBTRC243SS	4.7	4.7	MMBTRC246SS	2.2	10

Absolute Maximum Ratings （T_A = 25 °C）

Parameter		Symbol	Value	Unit
Collector Base Voltage		V_{CBO}	50	V
Collector Emitter Voltage		V_{CEO}	50	V
Input Voltage	MMBTRC241SS	V_{IN}	10, -10	V
	MMBTRC242SS		12, -10	
	MMBTRC243SS		20, -10	
	MMBTRC244SS		30, -10	
	MMBTRC245SS		10, -5	
	MMBTRC246SS		12, -6	
Collector Current		I_C	300	mA
Total Power Dissipation		P_{tot}	200	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	- 55 to + 150	°C
Thermal Resistance from Junction to Ambient [1]		$R_{\theta JA}$	625	°C/W

[1] Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Characteristics at T_A = 25 °C

Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 5 V, I_C = 50 mA	MMBTRC241SS	h_{FE}	33	-	-	-
	MMBTRC242SS		39	-	-	-
	MMBTRC243SS		47	-	-	-
	MMBTRC244SS		56	-	-	-
	MMBTRC245SS		56	-	-	-
	MMBTRC246SS		56	-	-	-
Collector Emitter Cutoff Current at V_{CE} = 30 V		I_{CEO}	-	-	10	μA
Emitter Base Cutoff Current at V_{EB} = 5 V	MMBTRC241SS	I_{EBO}	-	-	7.2	mA
	MMBTRC242SS		-	-	3.8	
	MMBTRC243SS		-	-	1.8	
	MMBTRC244SS		-	-	0.88	
	MMBTRC245SS		-	-	7.2	
	MMBTRC246SS		-	-	3.6	
Collector Base Breakdown Voltage at I_C = 100 μA		$V_{(BR)CBO}$	50	-	-	V
Collector Emitter Breakdown Voltage at I_C = 1 mA		$V_{(BR)CEO}$	50	-	-	V
Collector Emitter Saturation Voltage at I_C = 10 mA, I_B = 0.5 mA		$V_{CE(sat)}$	-	-	0.3	V
Input Voltage (ON) at V_{CE} = 0.3 V, I_C = 20 mA	MMBTRC241SS	$V_{I(ON)}$	-	-	3	V
	MMBTRC242SS		-	-	3	
	MMBTRC243SS		-	-	3	
	MMBTRC244SS		-	-	3	
	MMBTRC245SS		-	-	3	
	MMBTRC246SS		-	-	2	
Input Voltage (OFF) at V_{CE} = 5 V, I_C = 0.1 mA	MMBTRC241SS~244SS	$V_{I(OFF)}$	0.5	-	-	V
	MMBTRC245SS~246SS		0.3	-	-	
Transition Frequency at V_{CE} = 10 V, I_C = 5 mA, f = 100 MHz		f_T [1)]	-	200	-	MHz
Input Resistance	MMBTRC241SS	R1	- 30%	1	+ 30%	KΩ
	MMBTRC242SS			2.2		
	MMBTRC243SS			4.7		
	MMBTRC244SS			10		
	MMBTRC245SS			1		
	MMBTRC246SS			2.2		
Resistance Ratio	MMBTRC241SS~244SS	R2/R1	0.8	1	1.2	-
	MMBTRC245SS~246SS		8	10	12	-
			3.6	4.5	5.5	-

[1)] Characteristic of transistor only.

Electrical Characteristics Curves:MMBTRC243SS

Fig. 1 Collector Current vs. $V_{I(ON)}$

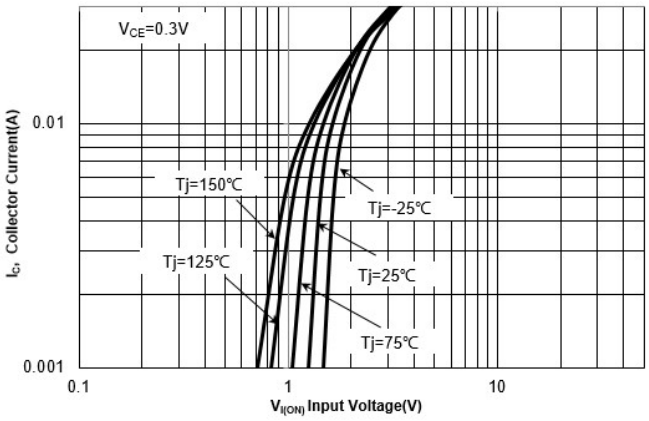


Fig. 2 Collector Current vs. $V_{I(OFF)}$

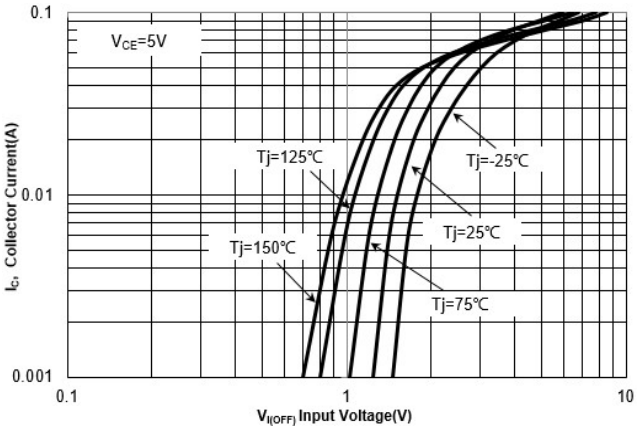


Fig. 3 DC Current Gain vs. Collector Current

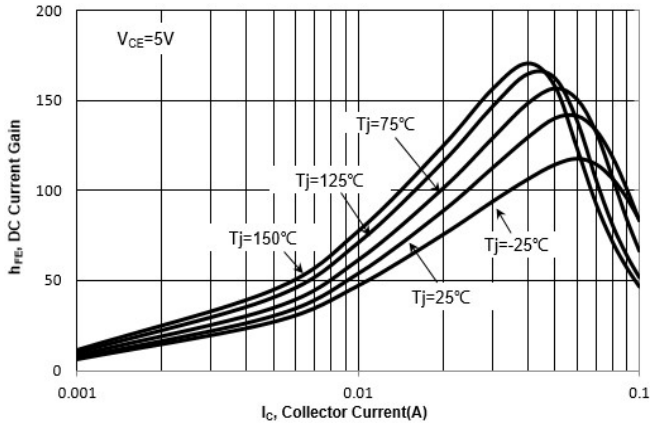
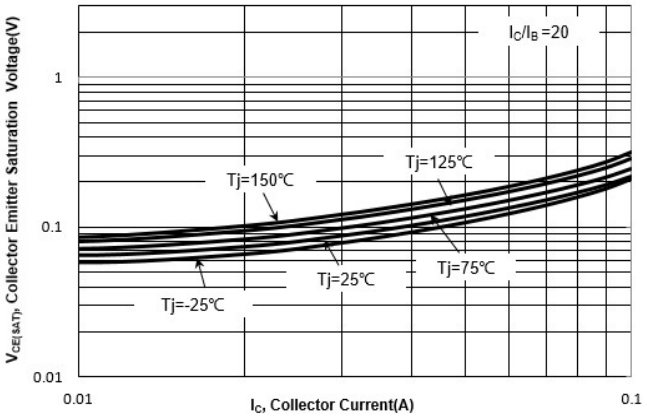


Fig. 4 V_{CESAT} vs. Collector Current



Electrical Characteristics Curves:MMBTRC244SS

Fig. 1 Collector Current vs. $V_{I(ON)}$

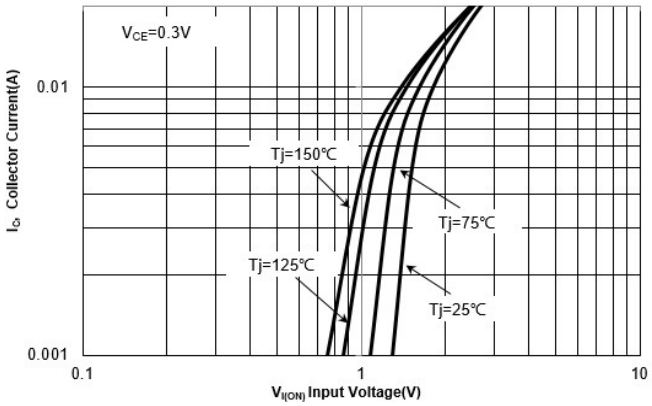
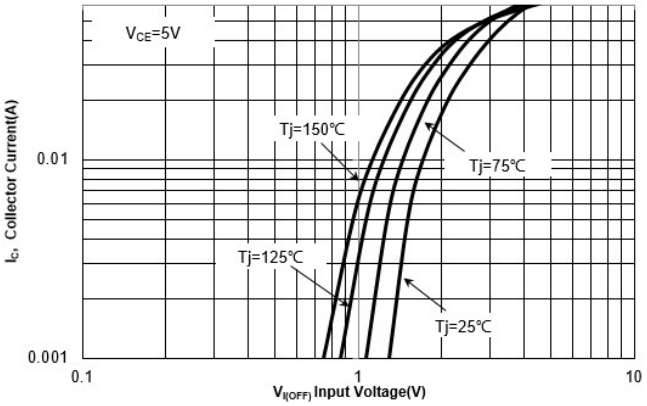


Fig. 2 Collector Current vs. $V_{I(OFF)}$



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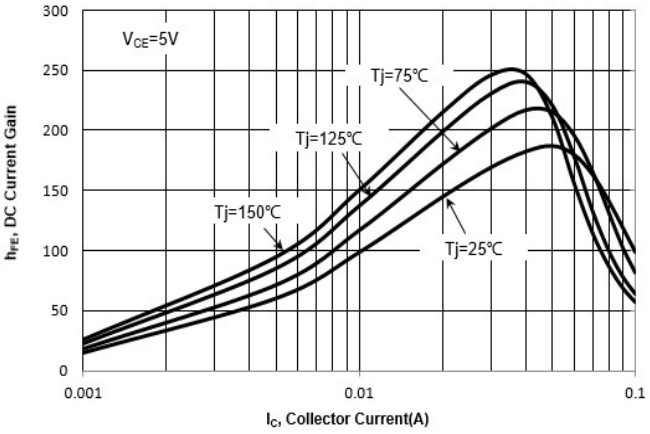

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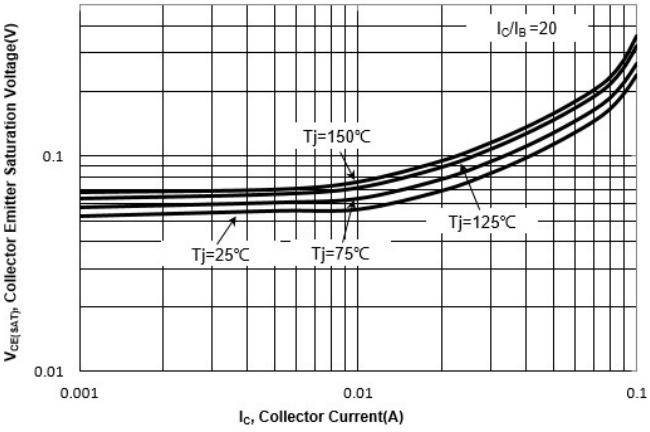


Electrical Characteristics Curves:MMBTRC245SS

Fig. 1 Collector Current vs. $V_{I(ON)}$

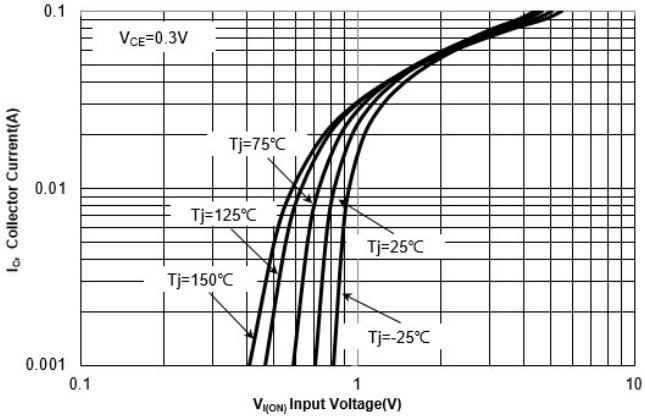


Fig. 2 Collector Current vs. $V_{I(OFF)}$

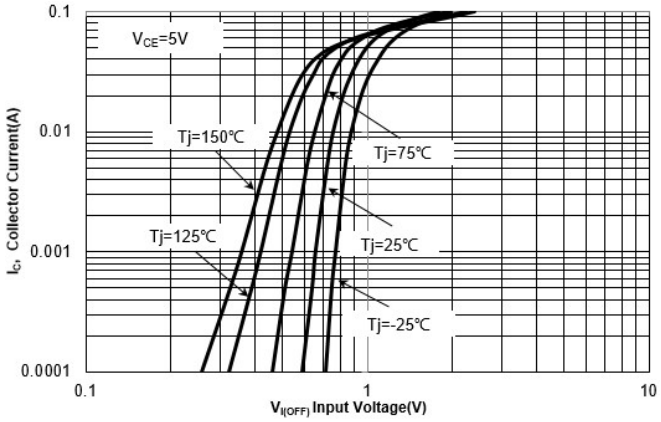


Fig. 3 DC Current Gain vs. Collector Current

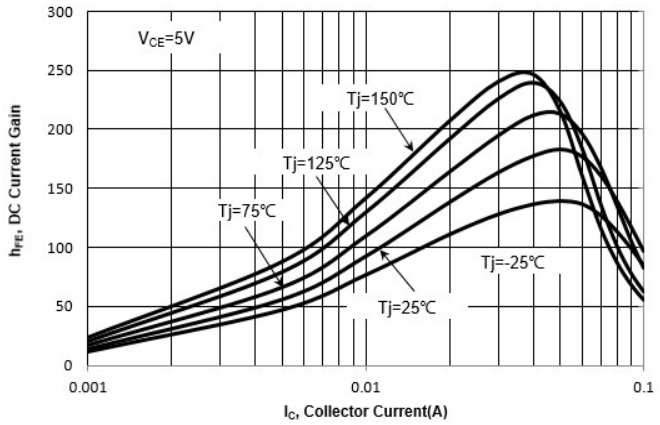
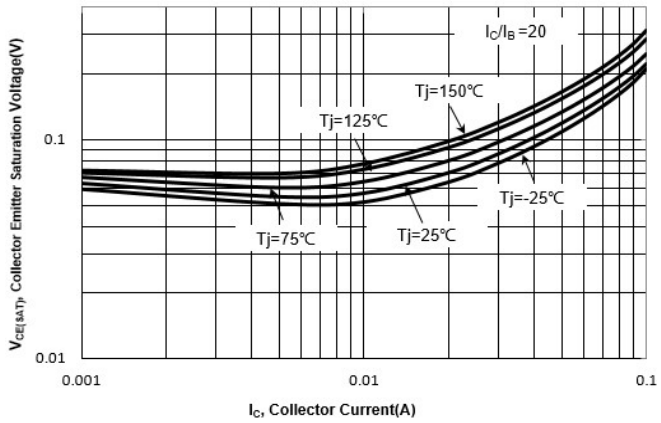


Fig. 4 V_{CESAT} vs. Collector Current



Electrical Characteristics Curves:MMBTRC246SS

Fig. 1 Collector Current vs. $V_{I(ON)}$

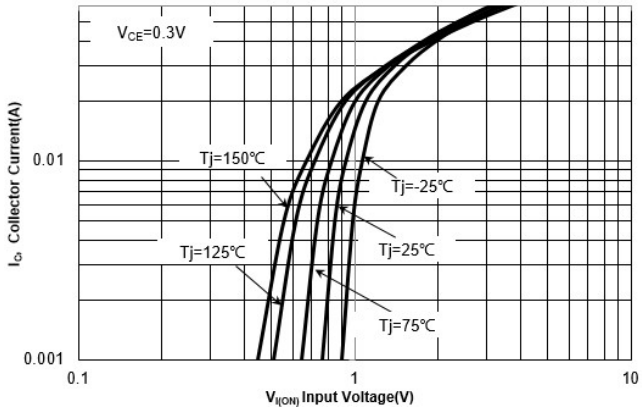
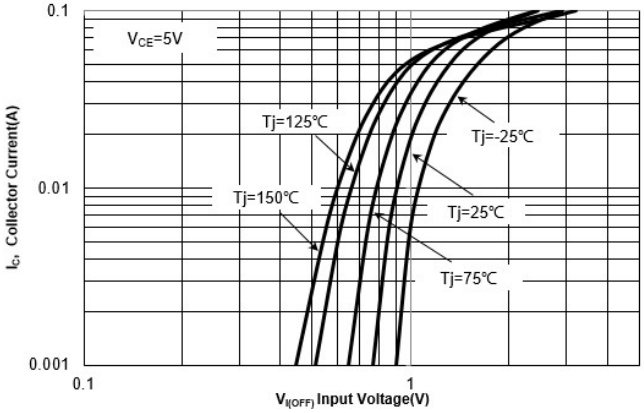


Fig. 2 Collector Current vs. $V_{I(OFF)}$



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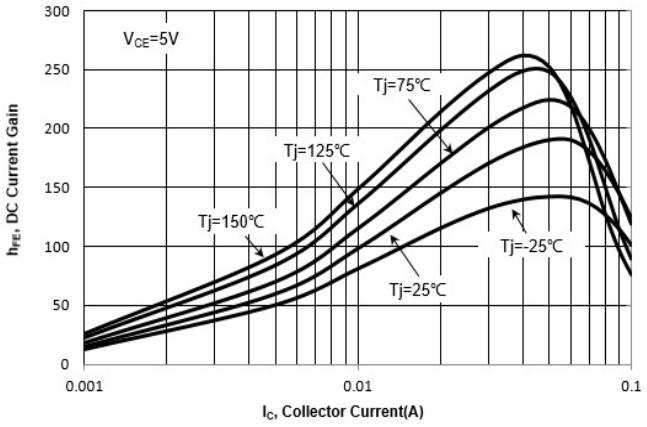
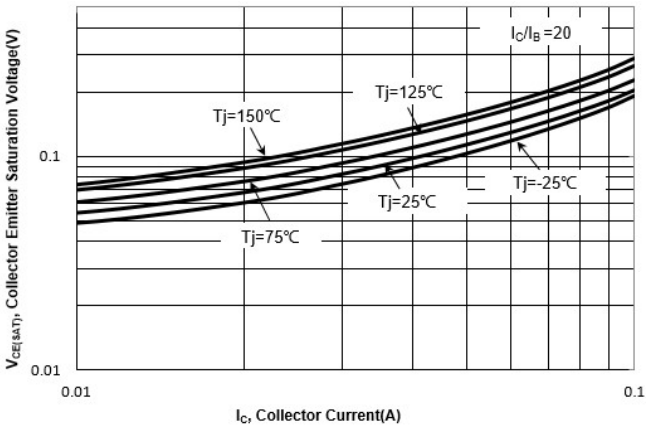


Fig. 4 V_{CESAT} vs. Collector Current

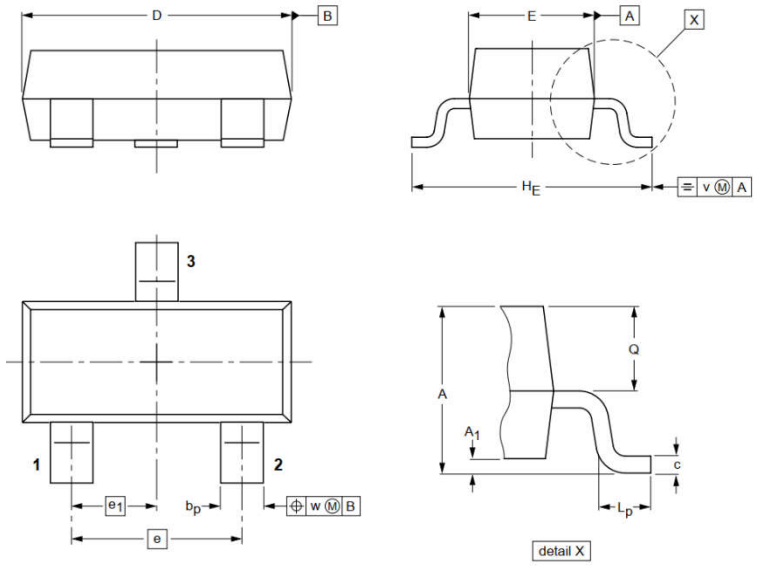


Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

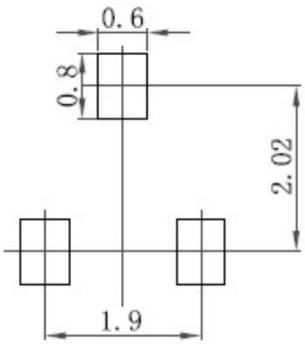
Package Dimensions

SOT-23



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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