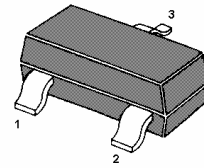


# MMBT9014

## NPN Silicon Epitaxial Planar Transistor

for switching and AF amplifier applications

As complementary types the PNP transistor MMBT9015 is recommended.



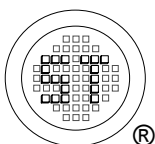
1.BASE 2.EMITTER 3.COLLECTOR  
SOT-23 Plastic Package

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	50	V
Collector Emitter Voltage	$V_{CEO}$	45	V
Emitter Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	100	mA
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.	Max.	Unit	
DC Current Gain at $V_{CE} = 5\text{ V}$ , $I_C = 1\text{ mA}$	MMBT9014B	$h_{FE}$	110	220	-
	MMBT9014C	$h_{FE}$	200	450	-
	MMBT9014D	$h_{FE}$	420	800	-
Collector Cutoff Current at $V_{CB} = 50\text{ V}$	$I_{CBO}$	-	50	nA	
Emitter Cutoff Current at $V_{EB} = 5\text{ V}$	$I_{EBO}$	-	50	nA	
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	50	-	V	
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	45	-	V	
Emitter Base Breakdown Voltage at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	5	-	V	
Collector Emitter Saturation Voltage at $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{CE(sat)}$	-	0.6	V	
Base Emitter Saturation Voltage at $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{BE(sat)}$	-	1	V	
Gain Bandwidth Product at $V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$	$f_T$	100	-	MHz	
Output Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{OB}$	-	6	pF	
Noise Figure at $V_{CE} = 5\text{ V}$ , $I_C = 200\text{ }\mu\text{A}$ , $f = 1\text{ KHz}$ , $R_G = 2\text{ K}\Omega$	NF	-	10	dB	



**SEMTECH ELECTRONICS LTD.**

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ISO/TS 16949 : 2002 Certificate No. 05103  
ISO 14001:2004 Certificate No. 7116  
ISO 9001:2000 Certificate No. 0506098

Dated : 13/08/2007

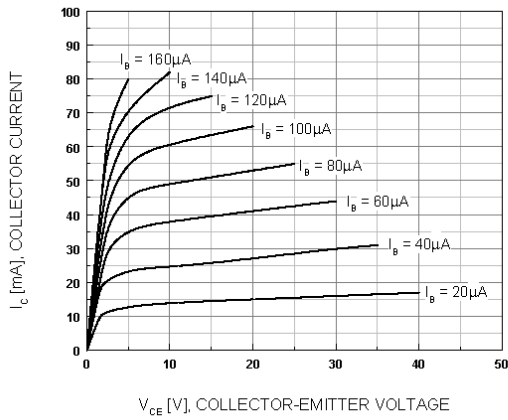


Figure 1. Static Characteristic

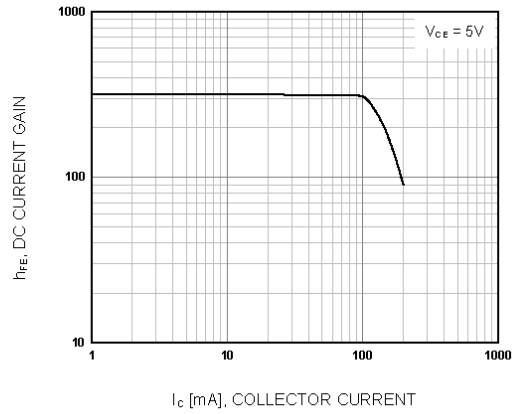


Figure 2. DC current Gain

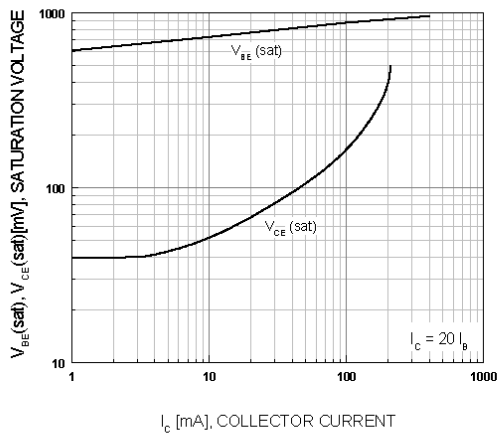


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

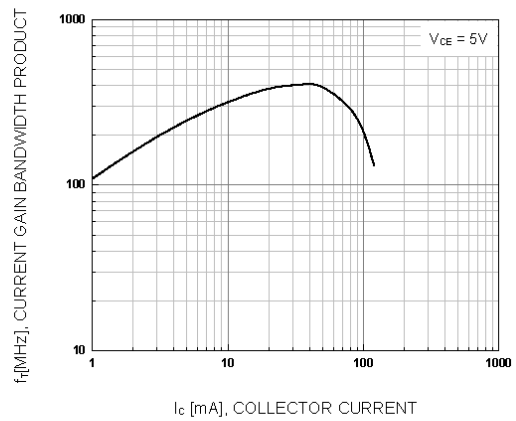
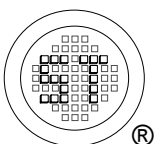


Figure 4. Current Gain Bandwidth Product



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