



# WBFBP-03B Plastic-Encapsulate Transistors

## S9014M TRANSISTOR

### DESCRIPTION

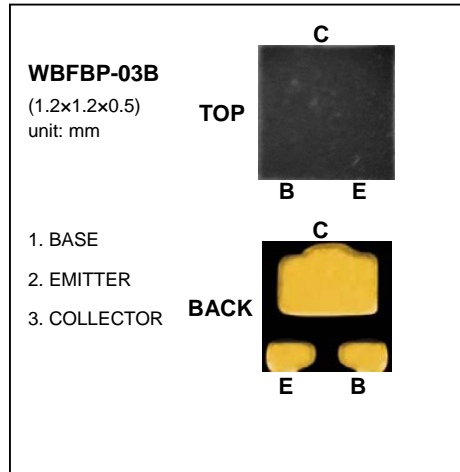
NPN Epitaxial Silicon Transistor

### FEATURES

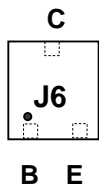
High  $h_{FE}$  and good linearity  
Complementary to S9015M

### APPLICATION

Pre-Amplifier, Low Level & Low Noise  
For portable equipment:(i.e. Mobile phone,MP3, MD,CD-ROM, DVD-ROM,Note book PC, etc.)



### MARKING: J6



### MAXIMUM RATINGS $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CB0}$	Collector-Base Voltage	50	V
$V_{CEO}$	Collector-Emitter Voltage	45	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current -Continuous	0.1	A
$P_C$	Collector Dissipation	0.15	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS( $T_A=25^\circ\text{C}$ unless otherwise specified)

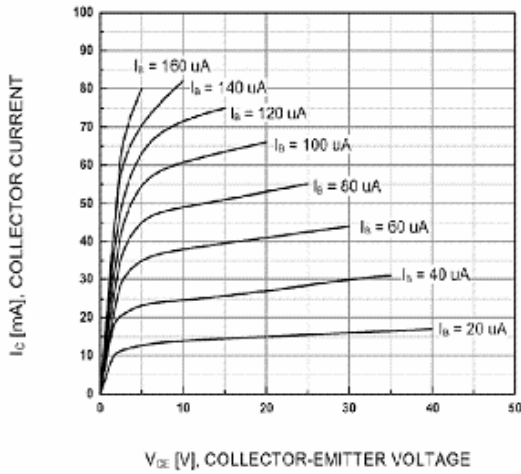
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\ \mu\text{A}, I_E=0$	50			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=0.1\text{mA}, I_B=0$	45			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\ \mu\text{A}, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=50\text{V}, I_E=0$			0.1	$\mu\text{A}$
Collector cut-off current	$I_{CEO}$	$V_{CE}=35\text{V}, I_B=0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC current gain	$h_{FE}$	$V_{CE}=5\text{V}, I_C=1\text{mA}$	200		1000	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=100\text{mA}, I_B=5\text{mA}$			0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=100\text{mA}, I_B=5\text{mA}$			1	V
Transition frequency	$f_T$	$V_{CE}=5\text{V}, I_C=10\text{mA}$	150			MHz
Collector output capacitance	$C_{ob0}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$			3.5	pF
Noise figure	NF	$V_{CE}=5\text{V}, I_C=0.2\text{mA}$			6	dB

### CLASSIFICATION OF $h_{FE}$

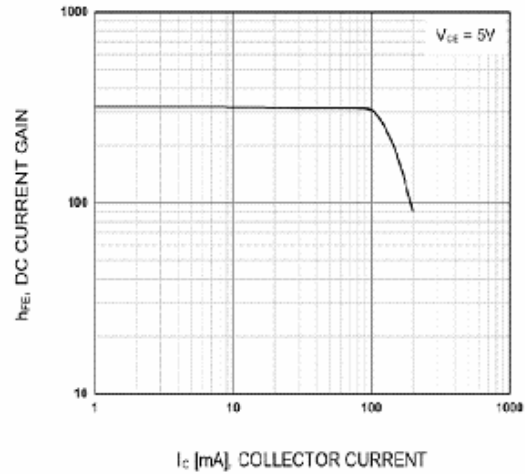
Rank	L	H
Range	200-450	450-1000

## Typical Characteristics

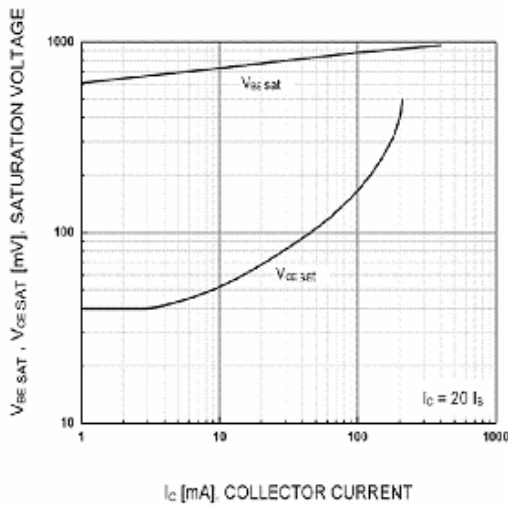
**S9014M**



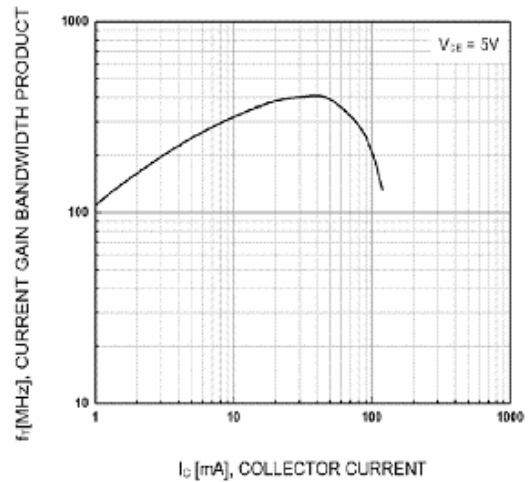
**Static Characteristic**



**DC current Gain**

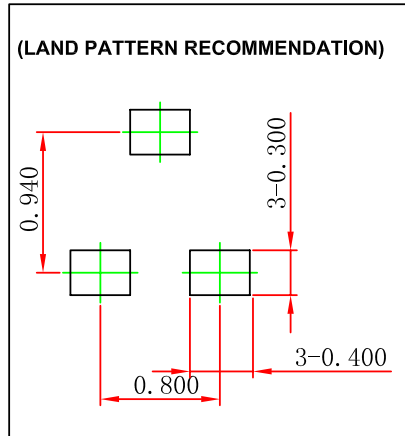
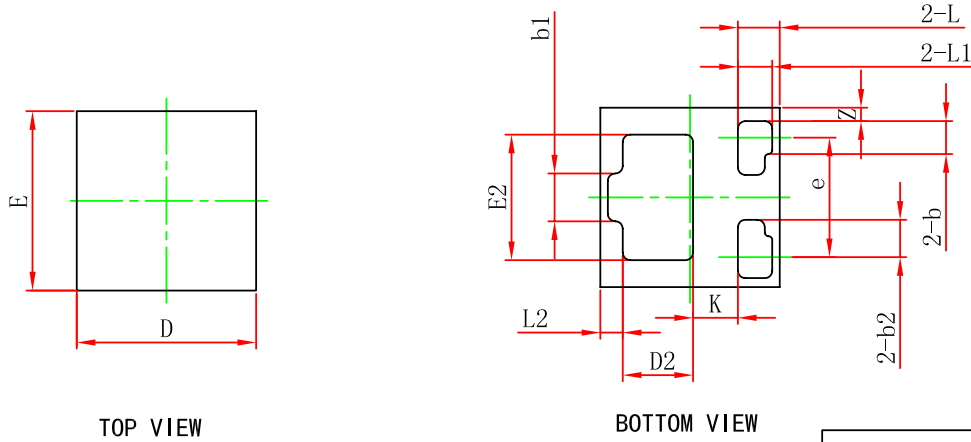


**Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage**



**Current Gain Bandwidth Product**

## WBFBP-03B(1.2×1.2×0.5) PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.010	0.090	0.000	0.004
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
b2	0.250 REF.		0.010 REF.	
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
D2	0.470 REF.		0.002 REF.	
E2	0.810 REF.		0.032 REF.	
e	0.800 TYP.		0.032 TYP.	
L	0.280 REF.		0.011 REF.	
L1	0.230 REF.		0.009 REF.	
L2	0.150 REF.		0.006 REF.	
k	0.300 REF.		0.012 REF.	
z	0.090 REF.		0.004 REF.	

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