



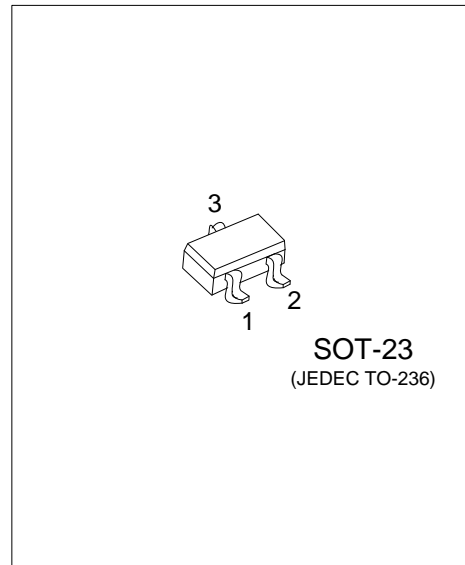
# MMBT9015

## PNP SILICON TRANSISTOR

PRE-AMPLIFIER, LOW LEVEL  
& LOW NOISE

■ FEATURES

- \*High total power dissipation. (450mW)
- \*Excellent  $h_{FE}$  linearity.
- \*Complementary to UTC MMBT9014



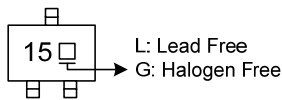
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBT9015L-x-AE3-R	MMBT9015G-x-AE3-R	SOT-23	B	E	C	Tape Reel

Note: Pin Assignment: B: Base E: Emitter C: Collector

<p>MMBT9015G-x-AE3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23</p> <p>(3) x: refer to Classification of <math>h_{FE1}</math></p> <p>(4) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



# MMBT9015

## PNP SILICON TRANSISTOR

### ■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	$V_{CEO}$	-45	V
Collector-Base Voltage	$V_{CBO}$	-50	V
Emitter Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-100	mA
Collector dissipation	$P_C$	225	mW
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Emitter Voltage	$V_{CEO}$	$I_C=-100\mu\text{A}$ , $I_E=0$	-50			V
Collector-Base Voltage	$V_{CBO}$	$I_C=-1\text{mA}$ , $I_B=0$	-45			V
Emitter Base Voltage	$V_{EBO}$	$I_E=-100\mu\text{A}$ , $I_C=0$	-5			V
Collector cutoff current	$I_{CBO}$	$V_{CB}=-50\text{V}$ , $I_E=0$			-50	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-5\text{V}$ , $I_C=0$			-100	nA
DC Current Gain	$h_{FE}$	$V_{CE}=-5\text{V}$ , $I_C=-1\text{mA}$	60	200	600	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=-100\text{mA}$ , $I_B=-5\text{mA}$		-0.2	-0.7	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=-100\text{mA}$ , $I_B=-5\text{mA}$		-0.82	-1.0	V
Base-emitter on voltage	$V_{BE(ON)}$	$V_{CE}=-5\text{V}$ , $I_C=-2\text{mA}$	-0.6	-0.65	-0.75	V
Current-Gain-Bandwidth Product	$f_T$	$V_{CE}=-5\text{V}$ , $I_C=-10\text{mA}$	100	190		MHz
Output Capacitance	$C_{OB}$	$V_{CB}=-10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$		4.5	7.0	pF
Noise Figure	NF	$V_{CE}=-5\text{V}$ , $I_C=-0.2\text{mA}$ , $f=1\text{KHz}$ , $R_S=-1\text{K}\Omega$		0.7	10	dB

### ■ CLASSIFICATION OF $h_{FE}$

RANK	A	B	C
RANGE	60-150	100-300	200-600

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