



## MMBT8110

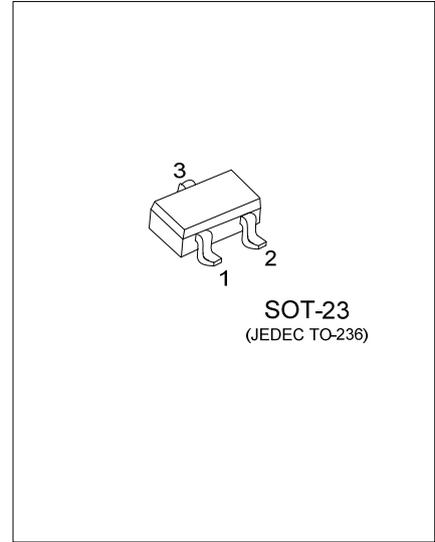
Preliminary

**NPN SILICON TRANSISTOR**

### 120V, 1.0A NPN LOW $V_{CE(SAT)}$ TRANSISTOR

#### ■ FEATURES

- \* Silicon NPN epitaxial type
- \* Low  $V_{CE(SAT)}$  0.35V(max) @  $I_C/I_B = 500mA / 50mA$
- \* High collector current capability
- \* Excellent DC current gain characteristics



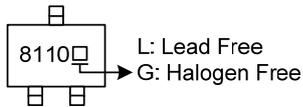
#### ■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBT8110L-x-AE3-R	MMBT8110G-x-AE3-R	SOT-23	B	E	C	Tape Reel

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

<p>MMBT8110G-x-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Rank (4) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) x: refer to Classification of <math>h_{FE}</math> (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### ■ MARKING



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

PARAMETER	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	120	V
Collector-Emitter Voltage	$V_{CEO}$	100	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current (DC)	$I_C$	1	A
Collector Current (Pulse)	$I_{CP}$	3	A
Collector Power Dissipation (Note)	$P_C$	1.25	W
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	100	$^\circ\text{C/W}$

Notes: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Collector Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=10\text{mA}, I_B=0\text{A}$	100			V
Collector Base Breakdown Voltage	$BV_{CBO}$	$I_C=0.1\text{mA}, I_E=0\text{A}$	120			V
Emitter Base Breakdown Voltage	$BV_{EBO}$	$I_C=0.1\text{mA}, I_C=0\text{A}$	6			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=120\text{V}, I_E=0\text{A}$			500	nA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=6\text{V}, I_C=0\text{A}$			500	nA
<b>ON CHARACTERISTICS</b>						
DC Current Gain (Note)	$h_{FE}$	$V_{CE}=2\text{V}, I_C=150\text{mA}$	140		330	
		$V_{CE}=5\text{V}, I_C=500\text{mA}$	100		300	
		$V_{CE}=5\text{V}, I_C=1\text{A}$	40			
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=0.1\text{A}, I_B=10\text{mA}$			120	mV
		$I_C=0.5\text{A}, I_B=50\text{mA}$			350	mV
		$I_C=1\text{A}, I_B=0.1\text{A}$			450	mV
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C=0.1\text{A}, I_B=10\text{mA}$			1.0	V
		$I_C=0.5\text{A}, I_B=50\text{mA}$			1.1	V
Transition Frequency	$f_T$	$V_{CE}=5\text{V}, I_E=-50\text{mA}$	100			MHz

Note: Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$ .

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