



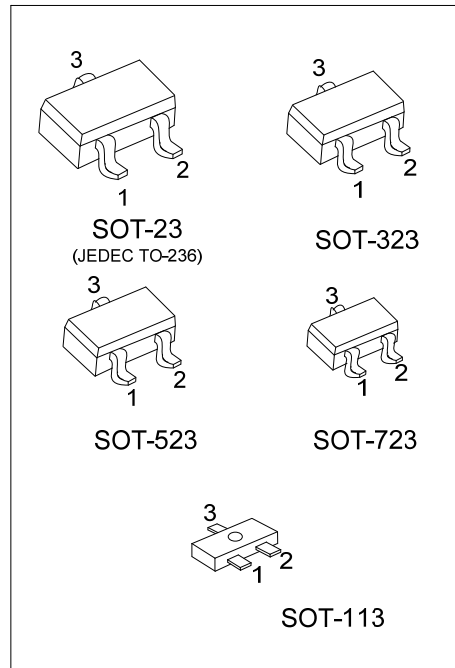
MMBT1815

NPN SILICON TRANSISTOR

HIGH FREQUENCY NPN AMPLIFIER TRANSISTOR

■ FEATURES

- * Collector-Emitter Voltage: $BV_{CEO}=50V$
- * Collector Current up to 150mA
- * High h_{FE} Linearity
- * Complement to MMBT1015



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBT1815L-x-AC3-R	MMBT1815G-x-AC3-R	SOT-113	B	E	C	Tape Reel
MMBT1815L-x-AE3-R	MMBT1815G-x-AE3-R	SOT-23	B	E	C	Tape Reel
MMBT1815L-x-AL3-R	MMBT1815G-x-AL3-R	SOT-323	B	E	C	Tape Reel
MMBT1815L-x-AN3-R	MMBT1815G-x-AN3-R	SOT-523	B	E	C	Tape Reel
MMBT1815L-x-AQ3-R	MMBT1815G-x-AQ3-R	SOT-723	B	E	C	Tape Reel

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

<p>MMBT1815G-x-AC3-R</p> <p>(1) Packing Type (2) Package Type (3) Rank (4) Green Package</p>	<p>(1) R: Tape Reel (2) AC3: SOT-113, AE3: SOT-23, AL3: SOT-323, AN3: SOT-523, AQ3: SOT-723 (3) x: refer to Classification of h_{FE1} (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

PACKAGE	MARKING		
SOT-23	Y	GR	BL
SOT-113 / SOT-323 / SOT-523		SOT-723	

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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V_{CBO}	60	V
Collector-Emitter Voltage		V_{CEO}	50	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Dissipation ($T_A=25^\circ\text{C}$)	SOT-23	P_C	250	mW
	SOT-523/SOT-113/SOT-323		200	
	SOT-723		190	
Collector Current		I_C	150	mA
Base Current		I_B	50	mA
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)

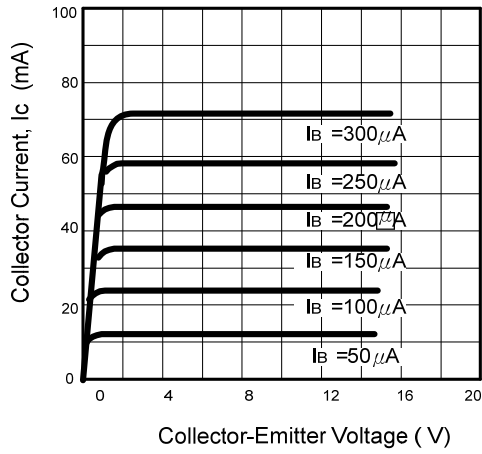
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = 100\mu\text{A}, I_E = 0$	50			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 10\text{mA}, I_B = 0$	50			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = 10\mu\text{A}, I_C = 0$	5			V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 100\text{mA}, I_B = 10\text{mA}$		0.1	0.25	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 100\text{mA}, I_B = 10\text{mA}$			1.0	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$			100	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$			100	nA
DC Current Gain	h_{FE1}	$V_{CE} = 6\text{V}, I_C = 2\text{mA}$	120		700	
	h_{FE2}	$V_{CE} = 6\text{V}, I_C = 150\text{mA}$	25			
Transition Frequency	f_T	$V_{CE} = 10\text{V}, I_C = 50\text{mA}$	80			MHz
Output Capacitance	C_{OB}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		2.0	3.0	pF
Noise Figure	NF	$I_C = 0.1\text{mA}, V_{CE} = 6\text{V}$ $R_G = 10\text{k}\Omega, f = 100\text{Hz}$		1.0	1.0	dB

■ CLASSIFICATION OF h_{FE1}

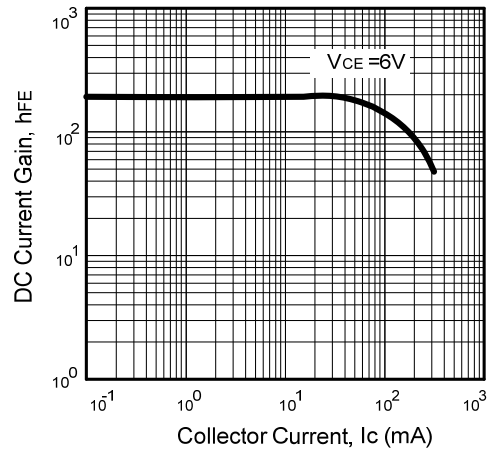
RANK	Y	GR	BL
RANGE	120-240	200-400	350-700

TYPICAL CHARACTERISTICS

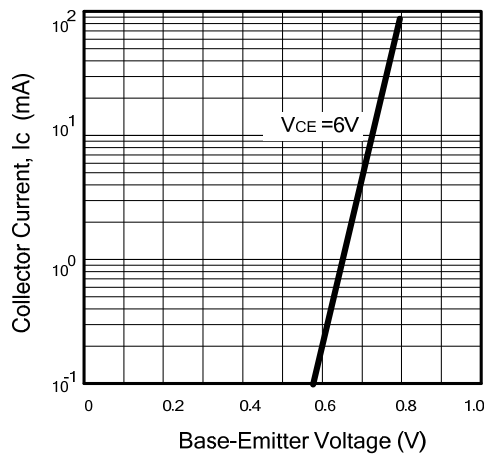
Static Characteristics



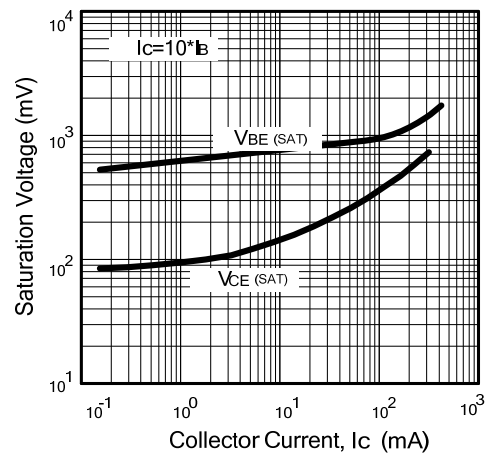
DC Current Gain



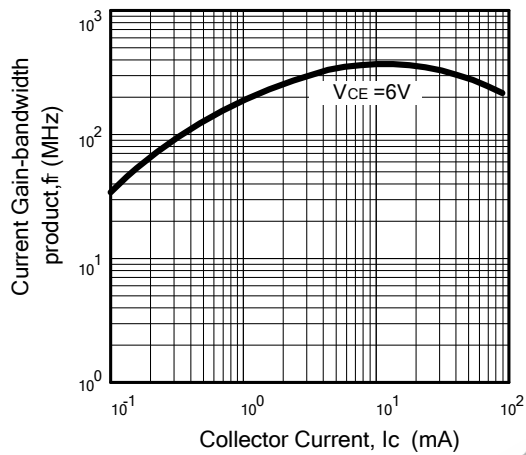
Base-Emitter On Voltage



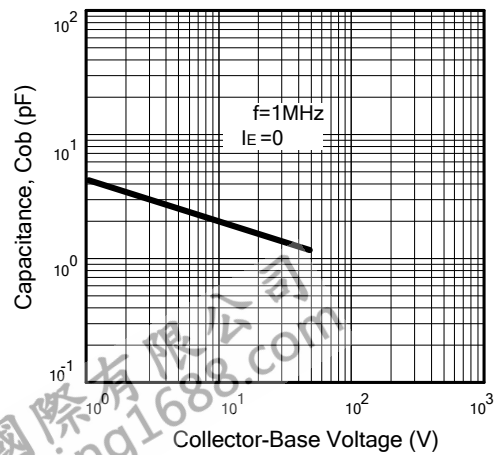
Saturation Voltage



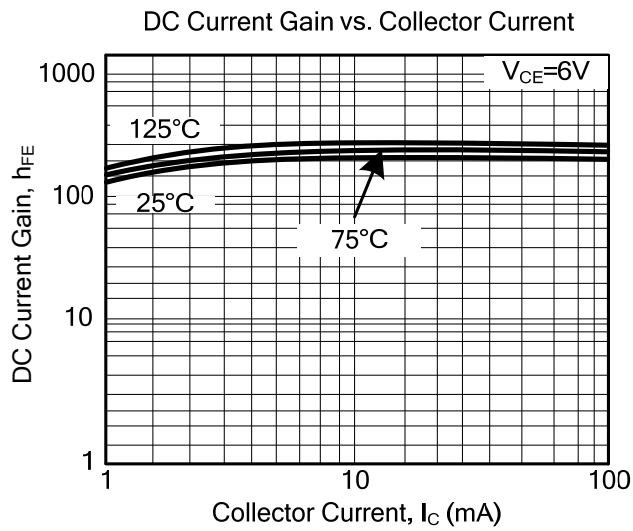
Current Gain-Bandwidth Product



Collector Output Capacitance



■ TYPICAL CHARACTERISTICS (Cont.)



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