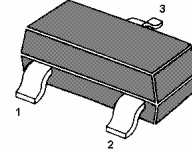


MMBT5089

NPN General Purpose Amplifier

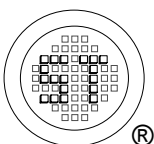
For low noise, high gain, general purpose amplifier applications at collector currents from 1 μ A to 50mA.



1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

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

	Symbol	Value	Unit
Collector Emitter Voltage	V_{CE0}	25	V
Collector Base Voltage	V_{CBO}	30	V
Emitter Base Voltage	V_{EBO}	4.5	V
Collector Current - Continuous	I_C	100	mA
Total Device Dissipation Derate above 25 $^\circ\text{C}$	P_{tot}	200 2.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Operating and Storage Junction Temperature Range	T_J, T_S	-55 to +150	$^\circ\text{C}$



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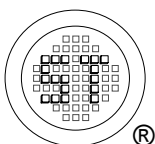
ISO/TS 16949 : 2002 Certificate No. 05103
ISO 14001:2004 Certificate No. 7116
ISO 9001:2000 Certificate No. 0508098

Dated : 20/10/2005

MMBT5089

Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE}=5V, I_C=100\mu A$ at $V_{CE}=5V, I_C=1mA$ at $V_{CE}=5V, I_C=10mA$	h_{FE} h_{FE} h_{FE}	400 450 400	1200 - -	- - -
Small Signal Current Gain at $V_{CE}=5V, I_C=1mA, f=1KHz$	h_{fe}	450	1800	-
Collector Base Breakdown Voltage at $I_C=100\mu A$	$V_{(BR)CBO}$	30	-	V
Collector Emitter Breakdown Voltage at $I_C=1mA$	$V_{(BR)CEO}$	25	-	V
Collector Emitter Saturation Voltage at $I_C=10mA, I_B=1mA$	V_{CEsat}	-	0.5	V
Base Emitter On Voltage at $I_C=10mA, V_{CE}=5V$	V_{BEon}	-	0.8	V
Collector Cutoff Current at $V_{CB}=15V$	I_{CBO}	-	50	nA
Emitter Cutoff Current at $V_{EB}=3V$ at $V_{EB}=4.5V$	I_{EBO} I_{EBO}	- -	50 100	nA nA
Gain Bandwidth Product at $V_{CE}=5V, I_C=500\mu A, f=20MHz$	f_T	50	-	MHz
Collector Base Capacitance at $V_{CB}=5V, f=100KHz$	C_{cb}	-	4	pF
Emitter Base Capacitance at $V_{BE}=0.5V, f=100KHz$	C_{eb}	-	10	pF
Noise Figure at $V_{CE}=5V, I_C=100\mu A, R_s=10K\Omega, f=10Hz$ to 15.7KHz	NF	-	2	dB



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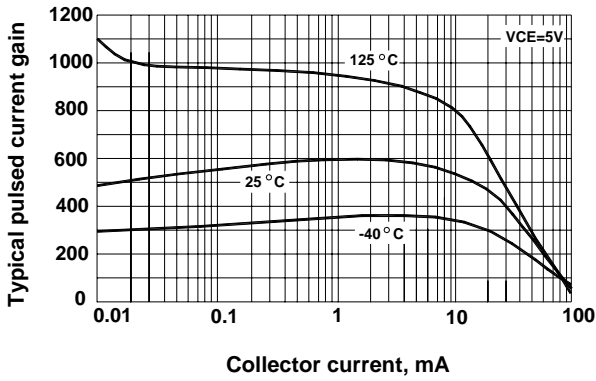
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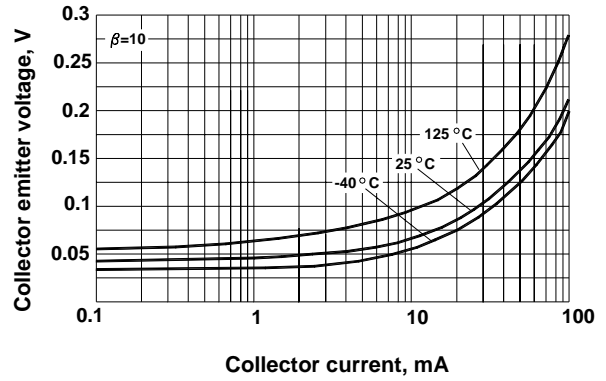
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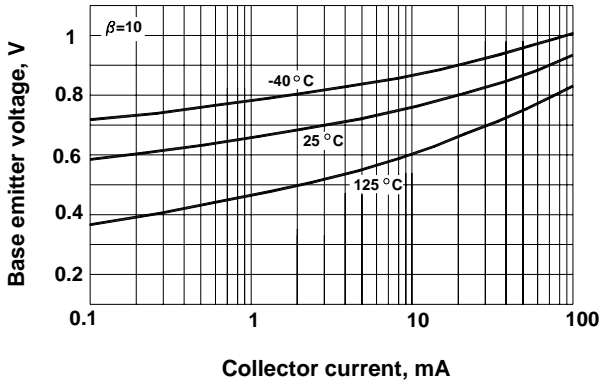
Typical pulsed current gain vs. collector current



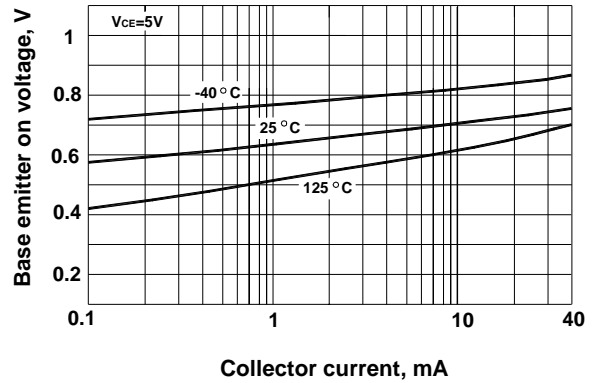
Collector emitter saturation voltage vs. collector current



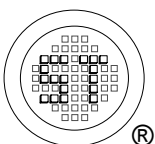
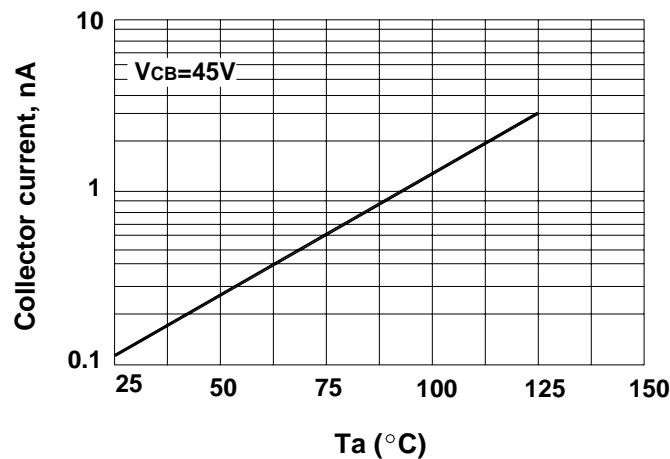
Base emitter saturation voltage vs. collector current



Base emitter on voltage vs. collector current



Collector cutoff current vs. ambient temperature



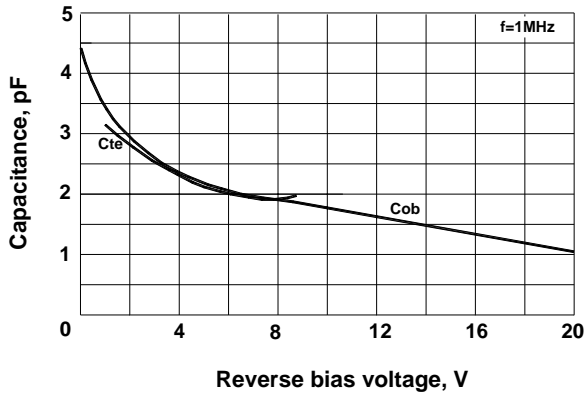
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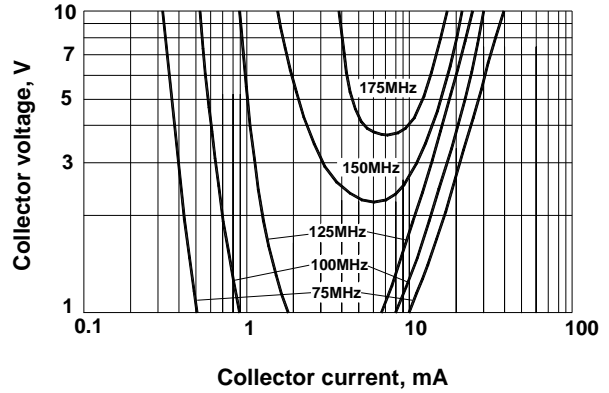


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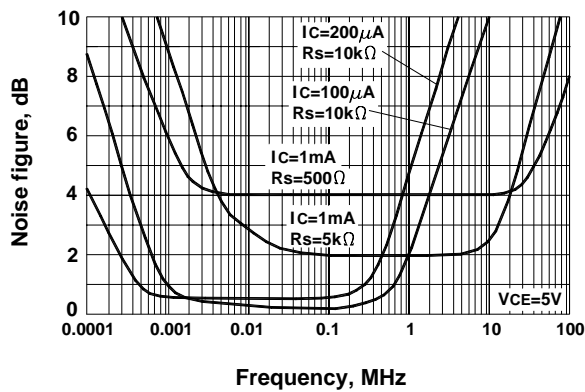
Input and output capacitance vs. reverse bias voltage



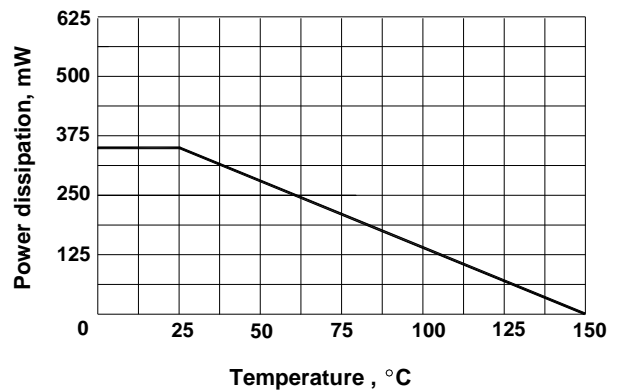
Contours of constant gain bandwidth product



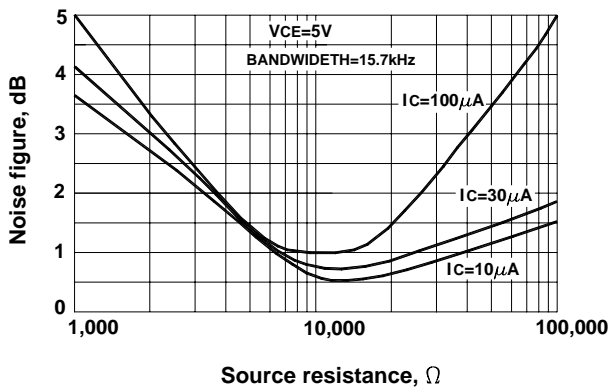
Noise figure vs. frequency



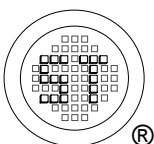
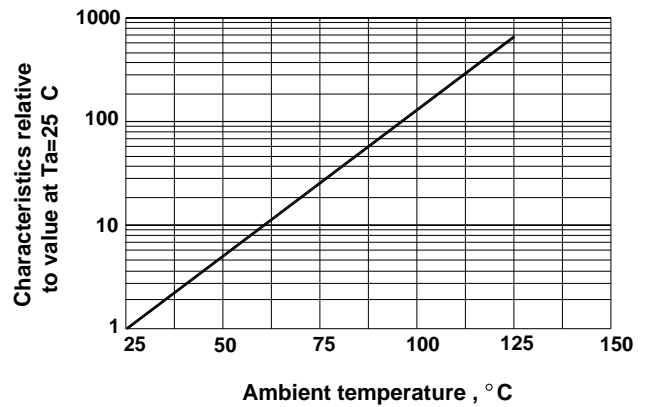
Power dissipation vs. ambient temperature



Wideband noise frequency vs. source resistance



Normalized collector cutoff current vs. ambient temperature



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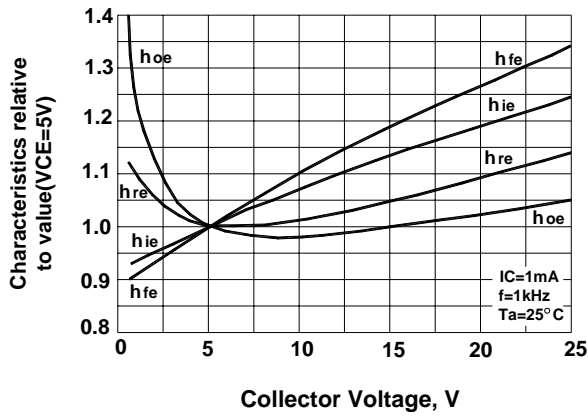
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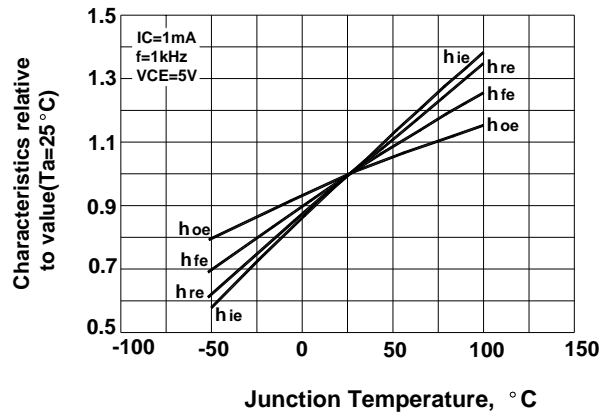
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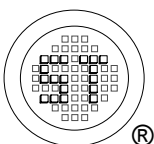
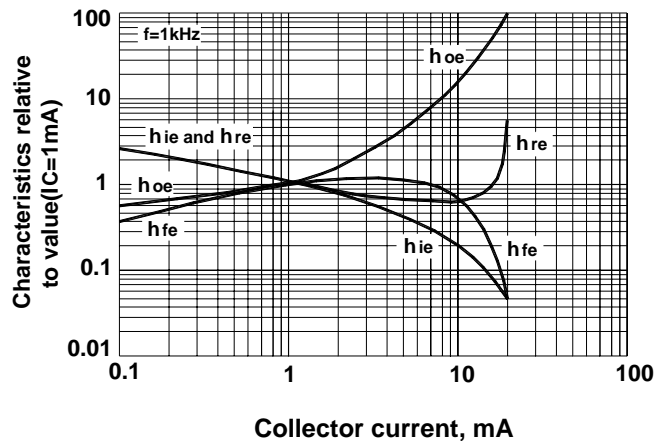
Typical common emitter characteristics



Typical common emitter characteristics



Typical common emitter characteristics



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