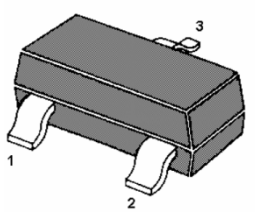
MMBT5089

NPN General Purpose Amplifier

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



1: Base 2: Emitter 3: Collector

Marking: 1RM

SOT-23 Plastic Package

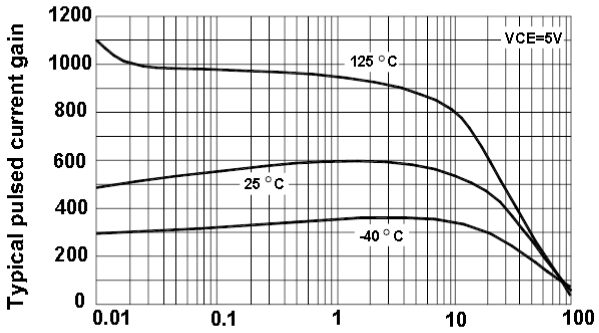
Absolute Maximum Ratings (Ta = 25 ℃)

	Symbol	Value	Unit
Collector Emitter Voltage	V_{CEO}	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°C	P_{tot}	200 2.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	°C/W
Operating and Storage Junction Temperature Range	T_J, T_S	-55 to +150	°C

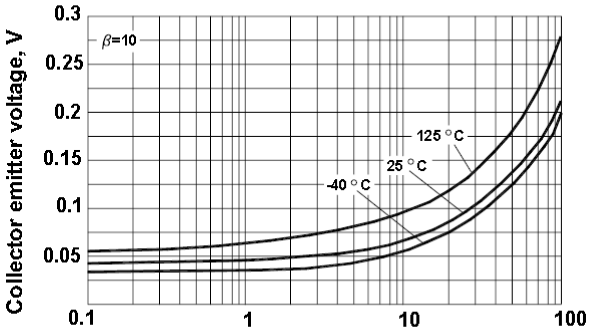
Characteristics at T_{amb}=25 ^{o}C

	Symbol	Min.	Max.	Unit
DC Current Gain				
at V_{CE}=5V, I_C=100μA	h_{FE}	400	1200	-
at V_{CE}=5V, I_C=1mA	h_{FE}	450	-	-
at V_{CE}=5V, I_C=10mA	h_{FE}	400	-	-
Small Signal Current Gain				
at V_{CE}=5V, I_C=1mA, f=1KHz	h_{fe}	450	1800	-
Collector Base Breakdown Voltage				
at I_C=100μA	$V_{(BR)CBO}$	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	I_{EBO}	-	50	nA
at V_{EB}=4.5V	I_{EBO}	-	100	nA
Gain Bandwidth Product				
at V_{CE}=5V, I_C=500μA, 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=100μA, Rs=10KΩ, f = 10Hz to 15.7KHz	NF	-	2	dB

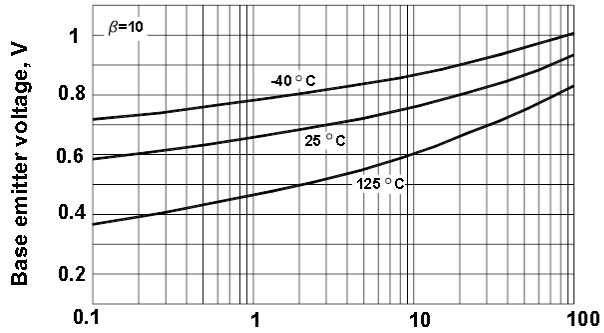
Typical pulsed current gain
vs. collector current



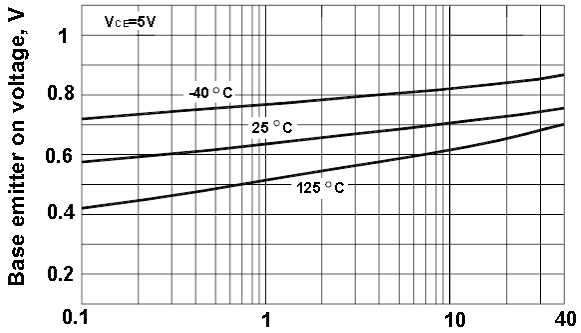
Collector emitter saturation
voltage vs.collector current



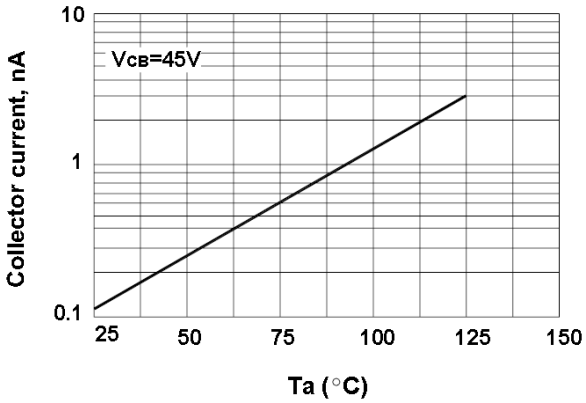
Base emitter saturation
voltage vs.collector current



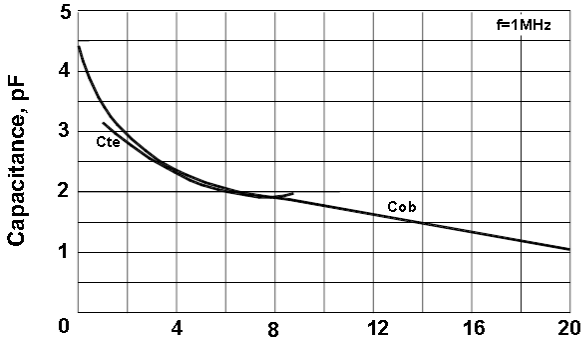
Base emitter on voltage
vs.collector current



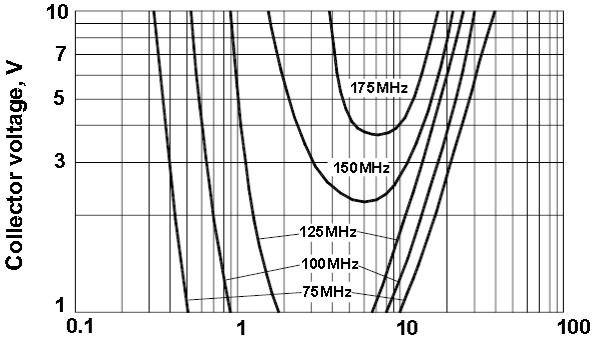
Collector cutoff current vs.
ambient temperature



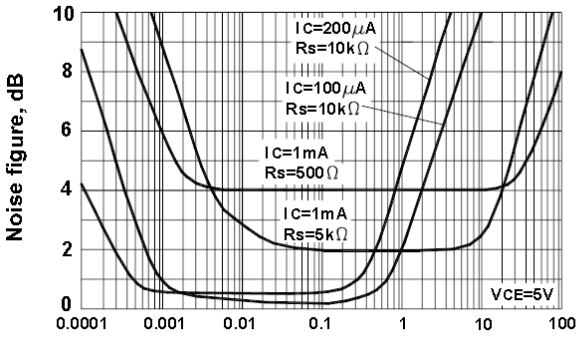
Input and output capacitance vs. reverse bias voltage



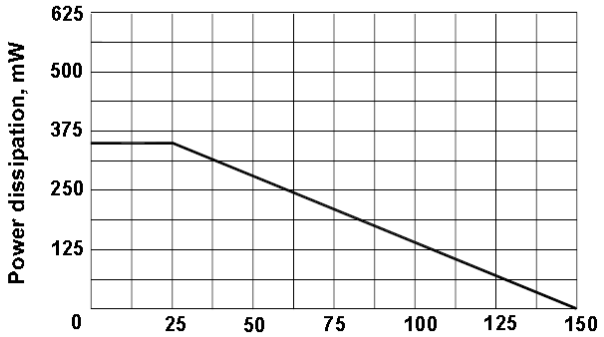
Contours of constant gain bandwidth product



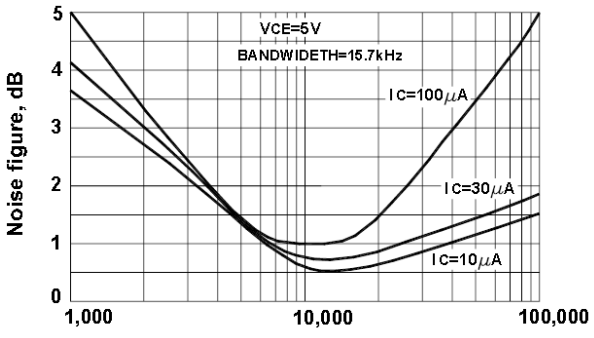
Noise figure vs. frequency



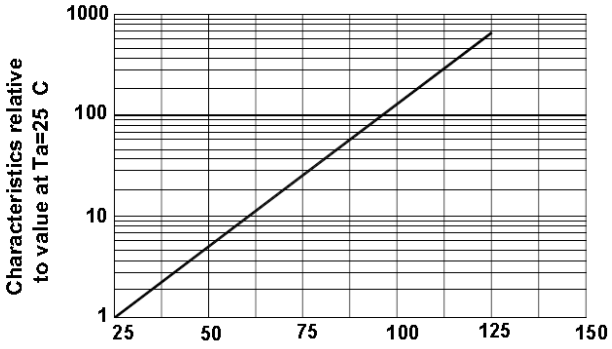
Power dissipation vs. ambient temperature



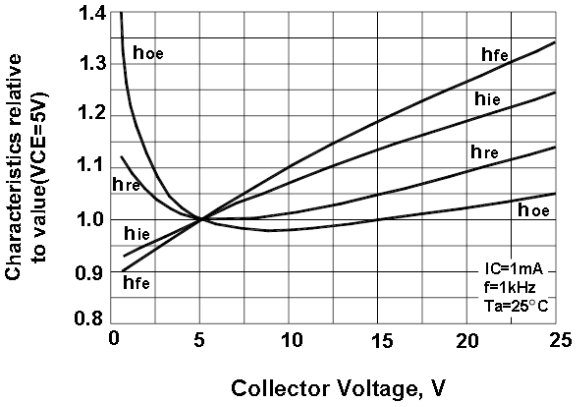
Wideband noise frequency vs. source resistance



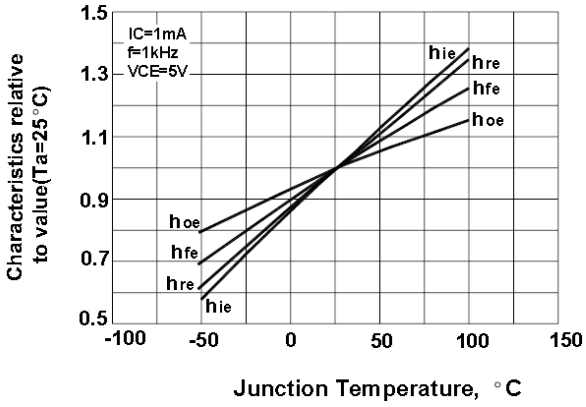
Normalized collector cutoff current vs. ambient temperature



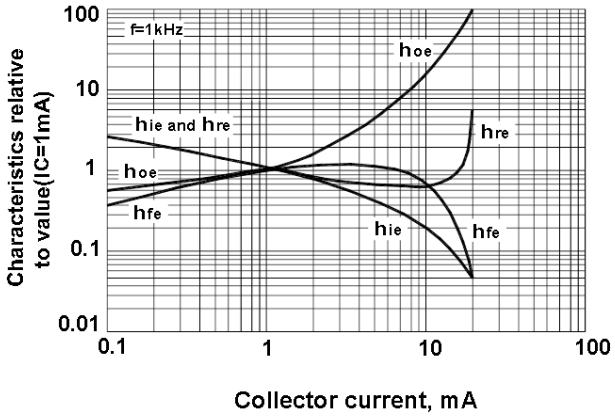
Typical common emitter characteristics



Typical common emitter characteristics



Typical common emitter characteristics



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