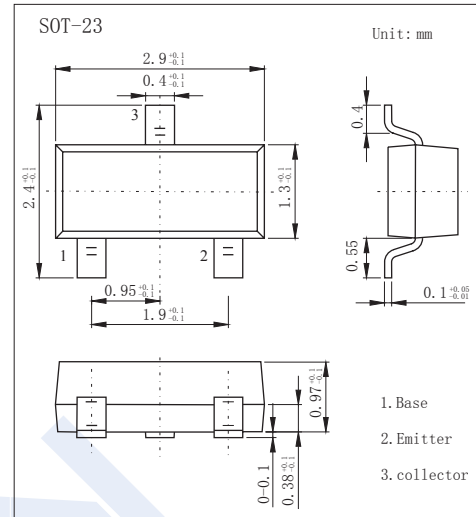


## NPN Transistors

### MMBT5088 (KMBT5088)

#### ■ Features

- Collector Current Capability  $I_c=100\text{mA}$
- Collector Emitter Voltage  $V_{CE0}=30\text{V}$



#### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	35	V
Collector - Emitter Voltage	$V_{CEO}$	30	
Emitter - Base Voltage	$V_{EBO}$	4.5	
Collector Current - Continuous	$I_c$	100	mA
Collector Power Dissipation	$P_C$	350	mW
Derate above $25^\circ\text{C}$		2.8	mw/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to 150	

## NPN Transistors

## MMBT5088 (KMBT5088)

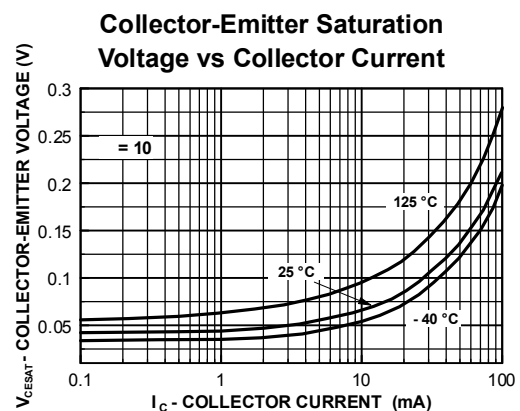
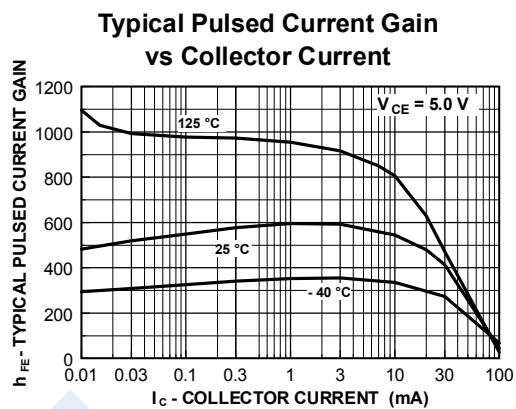
■ Electrical Characteristics  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_C = 100 \mu\text{A}$ , $I_E = 0$	35			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_C = 1 \text{ mA}$ , $I_B = 0$	30			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = 100 \mu\text{A}$ , $I_C = 0$	5			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 20 \text{ V}$ , $I_E = 0$			50	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 3 \text{ V}$ , $I_C = 0$			50	
		$V_{EB} = 4.5 \text{ V}$ , $I_C = 0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10 \text{ mA}$ , $I_B = 1 \text{ mA}$			0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10 \text{ mA}$ , $I_B = 1 \text{ mA}$			1.2	
Base-Emitter On Voltage	$V_{BE(on)}$	$V_{CE} = 5 \text{ V}$ , $I_C = 10 \text{ mA}$			0.8	
DC current gain	$h_{FE(1)}$	$V_{CE} = 5 \text{ V}$ , $I_C = 0.1 \text{ mA}$	300		900	
	$h_{FE(2)}$	$V_{CE} = 5 \text{ V}$ , $I_C = 1 \text{ mA}$	350			
	$h_{FE(3)}$	$V_{CE} = 5 \text{ V}$ , $I_C = 10 \text{ mA}$	300			
Small-Signal Current Gain	$h_{fe}$	$I_C = 1 \text{ mA}$ , $V_{CE} = 5 \text{ V}$ , $f = 1 \text{ kHz}$	350		1400	
Noise Figure	NF	$I_C = 100 \mu\text{A}$ , $V_{CE} = 5.0 \text{ V}$ , $R_S = 10 \text{ k}\Omega$ , $f = 10 \text{ Hz to } 15.7 \text{ kHz}$			3	dB
Collector-Base Capacitance	$C_{cb}$	$V_{CB} = 5 \text{ V}$ , $I_E = 0$ , $f = 100 \text{ kHz}$			4	pF
Emitter-Base Capacitance	$C_{eb}$	$V_{BE} = 0.5 \text{ V}$ , $I_C = 0$ , $f = 100 \text{ kHz}$			10	
Transition frequency	$f_T$	$V_{CE} = 5 \text{ V}$ , $I_C = 0.5 \text{ mA}$ , $f = 20 \text{ MHz}$	50			MHz

## ■ Marking

Marking	1Q
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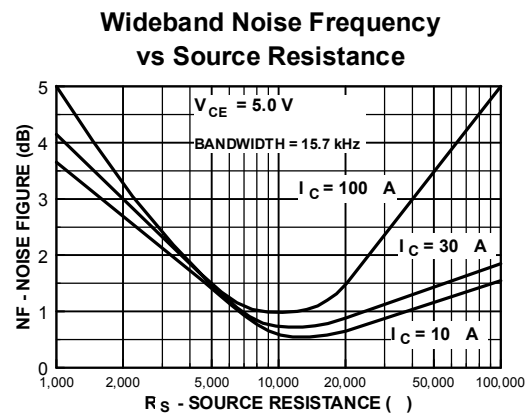
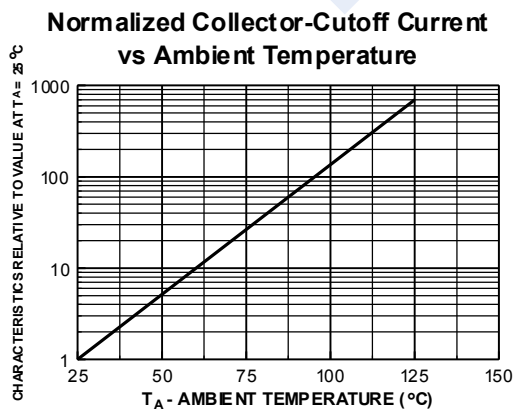
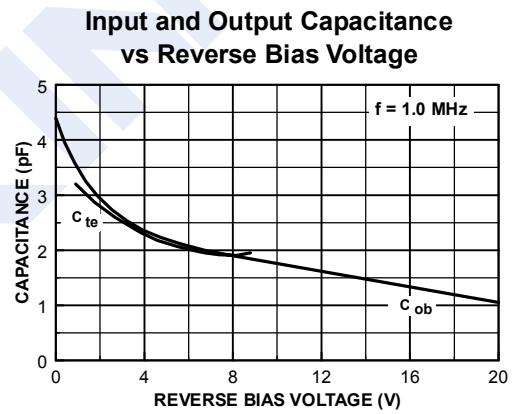
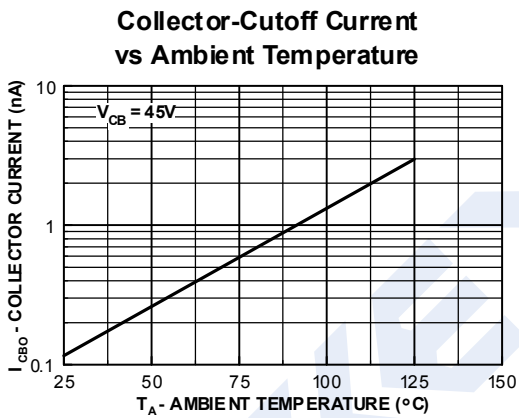
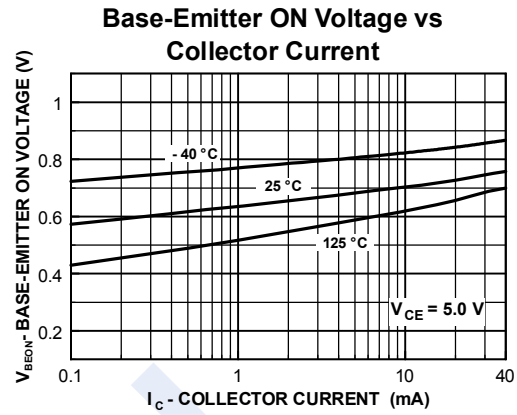
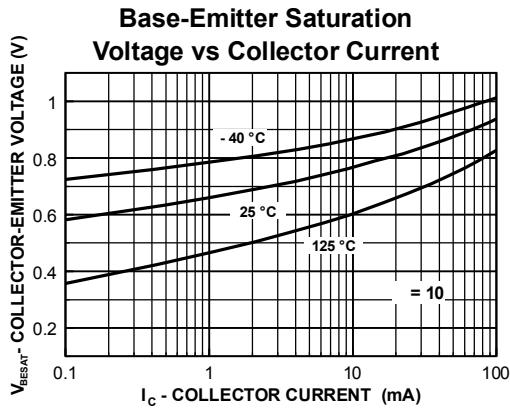
## ■ Typical Characteristics



## NPN Transistors

### MMBT5088 (KMBT5088)

■ Typical Characteristics

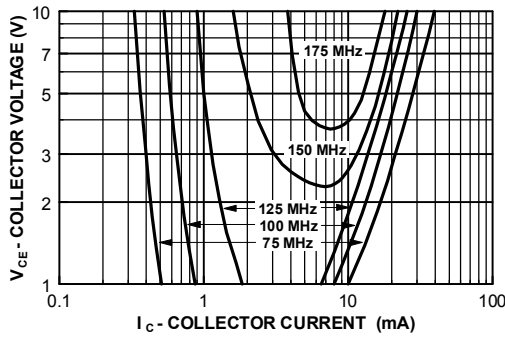


## NPN Transistors

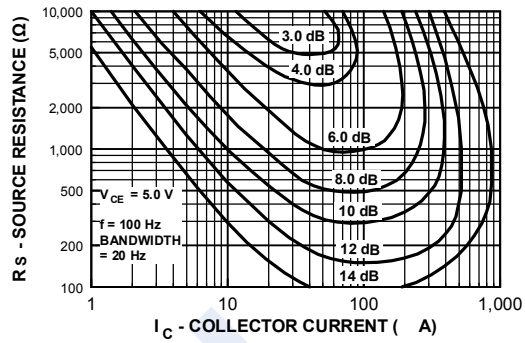
### MMBT5088 (KMBT5088)

■ Typical Characteristics

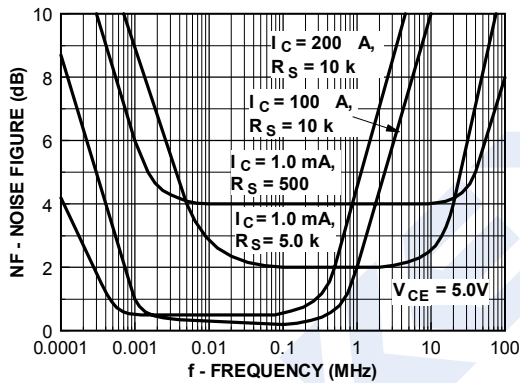
Contours of Constant Bandwidth Product ( $f_T$ )



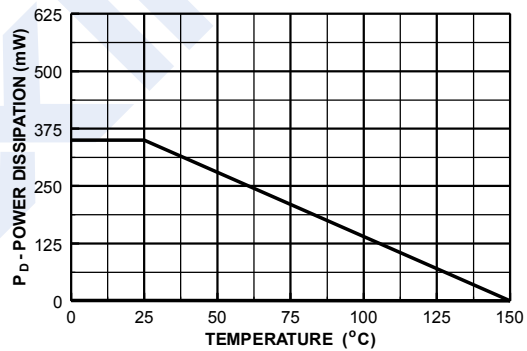
Contours of Constant Narrow Band Noise Figure



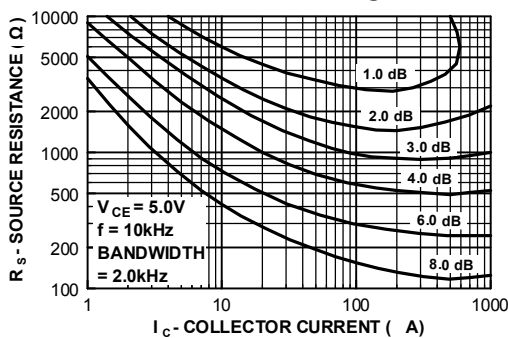
Noise Figure vs Frequency



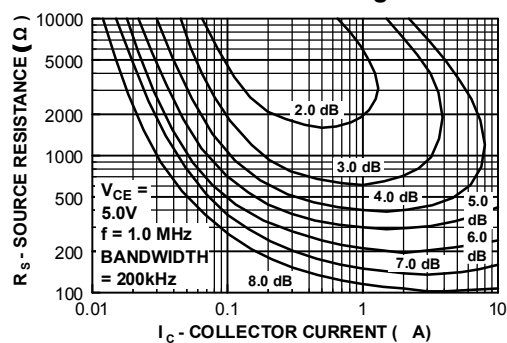
Power Dissipation vs Ambient Temperature



Contours of Constant Narrow Band Noise Figure



Contours of Constant Narrow Band Noise Figure

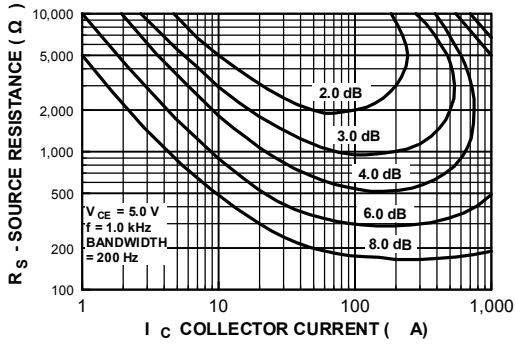


### NPN Transistors

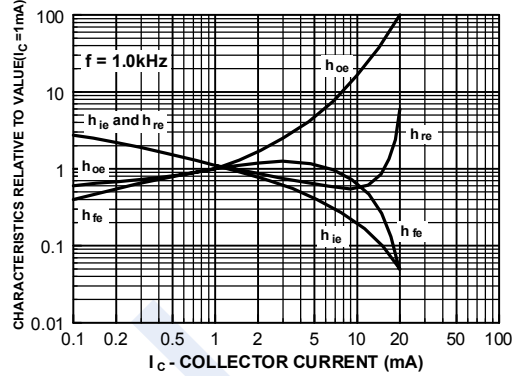
### MMBT5088 (KMBT5088)

■ Typical Characteristics

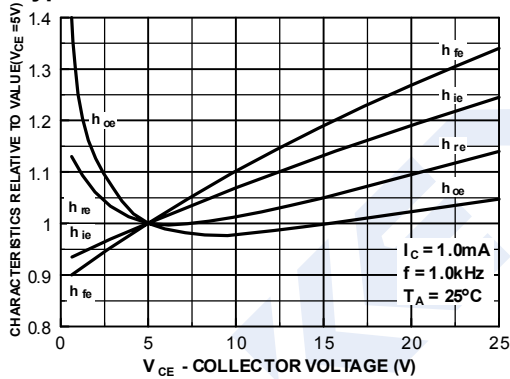
Contours of Constant Narrow Band Noise Figure



Typical Common Emitter Characteristics



Typical Common Emitter Characteristics



Typical Common Emitter Characteristics

