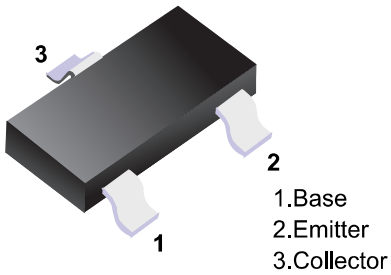
MMBT5088/5089 SOT-23

NPN General Purpose Amplifier

Features

- low noise
- High DC Current Gain



1.Base
2.Emitter
3.Collector

SOT-23

Marking Code	
MMBT5088	1Q
MMBT5089	1RM

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Value		Unit
		MMBT5088	MMBT5089	
Collector-Base Voltage	BV_{CBO}	35	30	V
Collector-Emitter Voltage	BV_{CEO}	30	25	V
Emitter-Base Voltage	BV_{EBO}	5		V
Collector Current	I_C	100		mA
Collector Power Dissipation	P_D	350		mW
Junction Temperature	T_j	150		℃
Storage Temperature	T_{stg}	-55～+150		℃

Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$			102	V
Thermal Resistance,Junction to Ambient	$R_{\theta JA}$			357	V

Electrical Characteristics (Ta=25℃)

Parameter	Symbol	Conditions		Value			Unit
				Min	Typ	Max	
Collector-base breakdown voltage	BV_{CBO}	I_C = 100μ A, I_E = 0	**MMBT5088**	35			V
			MMBT5089	30			
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 1mA, I_B = 0	**MMBT5088**	30			V
			MMBT5089	25			
Emitter-base breakdown voltage	BV_{EBO}	I_E = 100μ A, I_C = 0		5			V
Collector cut-off current	I_{CBO}	V_{CB} = 20V	**MMBT5088**			50	nA
		V_{CB} = 15V	**MMBT5089**			50	
Emitter cut-off current	I_{EBO}	V_{EB} = 4.5V, I_C = 0				100	nA
DC current gain	h_{FE}	V_{CE} = 5V, I_C = 100μA	**MMBT5088**	300		900	
			MMBT5089	400		1200	
		V_{CE} = 5V, I_C = 1mA	**MMBT5088**	350			
			MMBT5089	450			
		V_{CE} = 5V, I_C = 10mA	**MMBT5088**	300			
			MMBT5089	400			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA				0.3	V
Base -emitter saturation voltage	$V_{BE(on)}$	V_{CE} = 5V, I_C = 10mA				0.8	V
Transition frequency	f_T	V_{CE} = 5V, I_C = 500μA, f=20MHz		50			MH_Z
Collector-base capacitance	C_{cb}	V_{CB} = 5V, I_E =0, f=100kHz				4	pF
Base-emitter on voltagel	C_{eb}	V_{BE} = 0.5V, I_E =0, f=100kHz				10	pF
Noise figure	NF	V_{CE} = 5V, I_C = 100μA R_S=10kΩ, f = 10Hz~ 15.7kHz				3	dB

Typical Characteristics

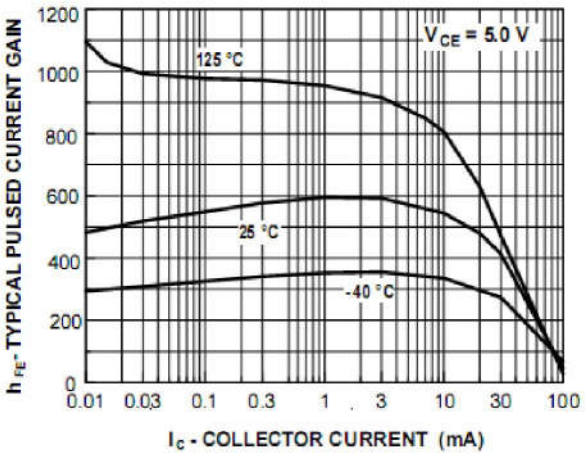


Figure 1. Typical Pulsed Current Gain vs Collector Current

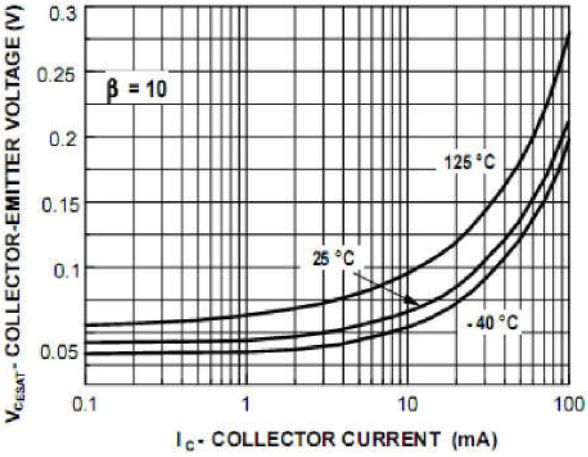


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

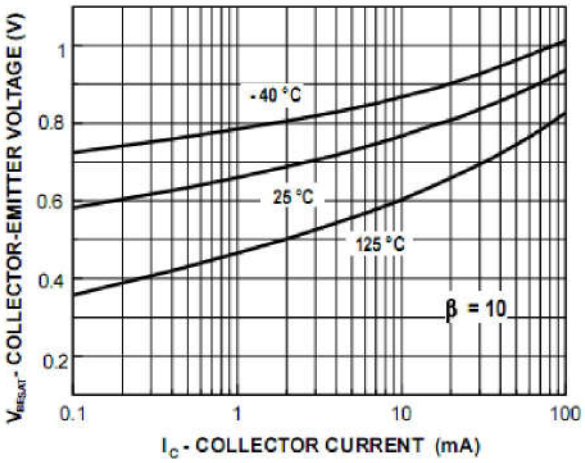


Figure 3. Base-Emitter Saturation Voltage Voltage vs Collector Current

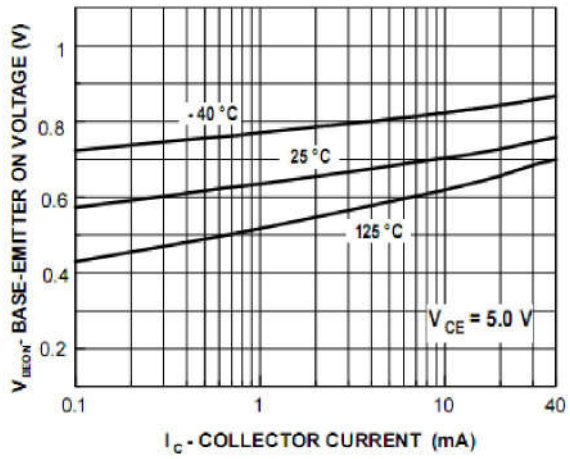


Figure 4. Base-Emitter ON Voltage vs Collector Current

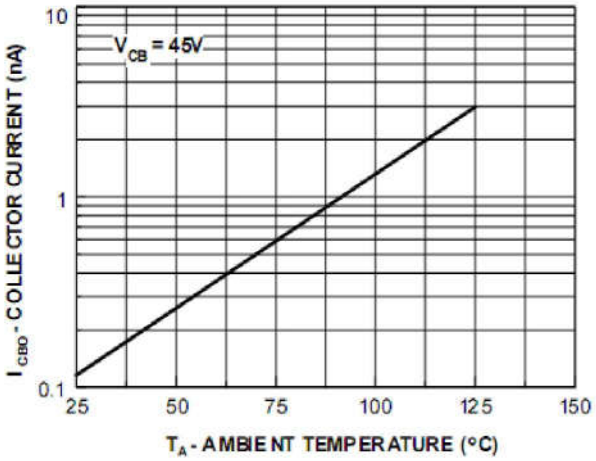


Figure 5. Collector-Cutoff Current vs Ambient Temperature

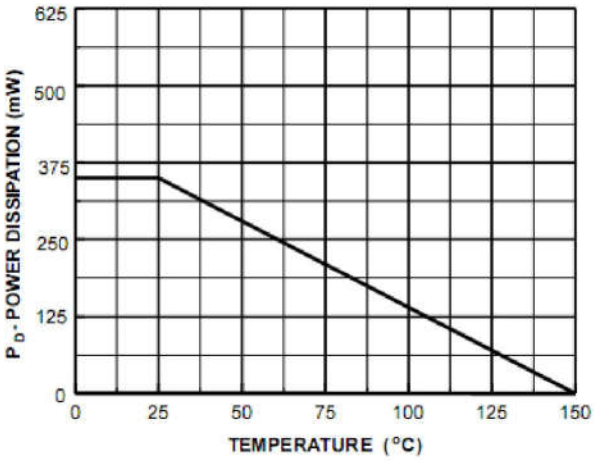


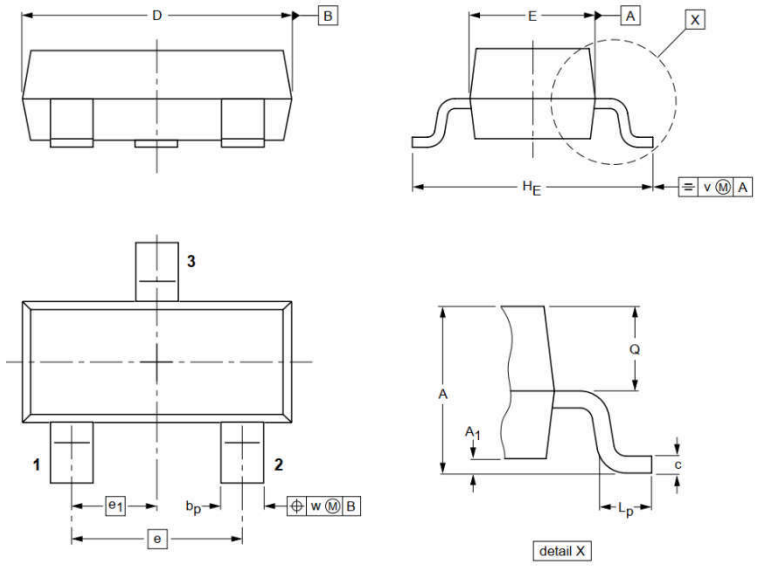
Figure 6. Power Derating

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

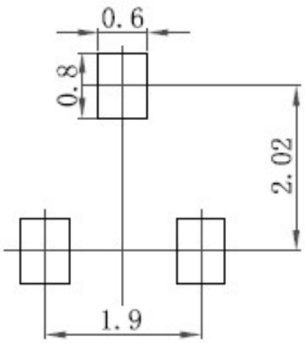
Package Dimensions

SOT-23



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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