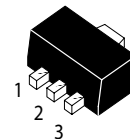


**NPN Plastic-Encapsulate Transistor**
 **Lead(Pb)-Free**
**SOT-89**

1. BASE  
2. COLLECTOR  
3. EMITTER

**Maximum Ratings** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CE0}$	300	Vdc
Collector-Base Voltage	$V_{CB0}$	300	Vdc
Emitter-Base Voltage	$V_{EB0}$	5.0	Vdc
Collector Current-Continuous	$I_C$	500	mAdc

**Thermal Characteristics**

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1.) $T_A=25^{\circ}\text{C}$ Derate above $25^{\circ}\text{C}$	$P_D$	500 4.0	mW mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient <sup>(1)</sup>	$R_{\theta JA}$	250	$^{\circ}\text{C}/\text{W}$
Junction and Storage, Temperature Range	$T_J, T_{stg}$	-55 to +150	$^{\circ}\text{C}$

**Device Marking**

MXTA42=A42

Characteristics	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage ( $I_C=1.0\text{ mAdc}, I_E=0$ )	$V_{(BR)CE0}$	300	-	Vdc
Collector-Base Breakdown Voltage ( $I_C=100\text{ }\mu\text{Adc}, I_E=0$ )	$V_{(BR)CB0}$	300	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E=100\text{ }\mu\text{Adc}, I_C=0$ )	$V_{(BR)EB0}$	5.0	-	Vdc
Collector Cutoff Current ( $V_{CB}=200\text{ Vdc}, I_E=0$ )	$I_{CB0}$	-	0.25	$\mu\text{Adc}$
Emitter Cutoff Current ( $V_{EB}=5.0\text{ Vdc}, I_C=0$ )	$I_{EB0}$	-	0.1	$\mu\text{Adc}$

1.FR-5=1.0 x 0.75 x 0.062 in.

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise noted) (Continued)

Characteristics	Symbol	Min	Max	Unit
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**ON CHARACTERISTICS**

DC Current Gain ( $I_C=1\text{ mAdc}, V_{CE}=10\text{ Vdc}$ ) ( $I_C=10\text{ mAdc}, V_{CE}=10\text{ Vdc}$ ) ( $I_C=30\text{ mAdc}, V_{CE}=10\text{ Vdc}$ )	$h_{FE(1)}$ $h_{FE(2)}$ $h_{FE(3)}$	60 80 75	- 250 -	-
Collector-Emitter Saturation Voltage ( $I_C=20\text{ mAdc}, I_B=2\text{ mAdc}$ )	$V_{CE(sat)}$	-	0.2	Vdc
Base-Emitter Saturation Voltage ( $I_C=20\text{ mAdc}, I_B=2\text{ mAdc}$ )	$V_{BE(sat)}$	-	0.9	Vdc
Transition Frequency ( $V_{CE}=20\text{ Vdc}, I_C=10\text{ mAdc}, f=30\text{ MHz}$ )	$f_T$	50	-	MHz

**Classification of  $h_{FE(2)}$** 

Rank	A	B1	B2	C
Range	80-100	100-150	150-200	200-250

## Typical Characteristics

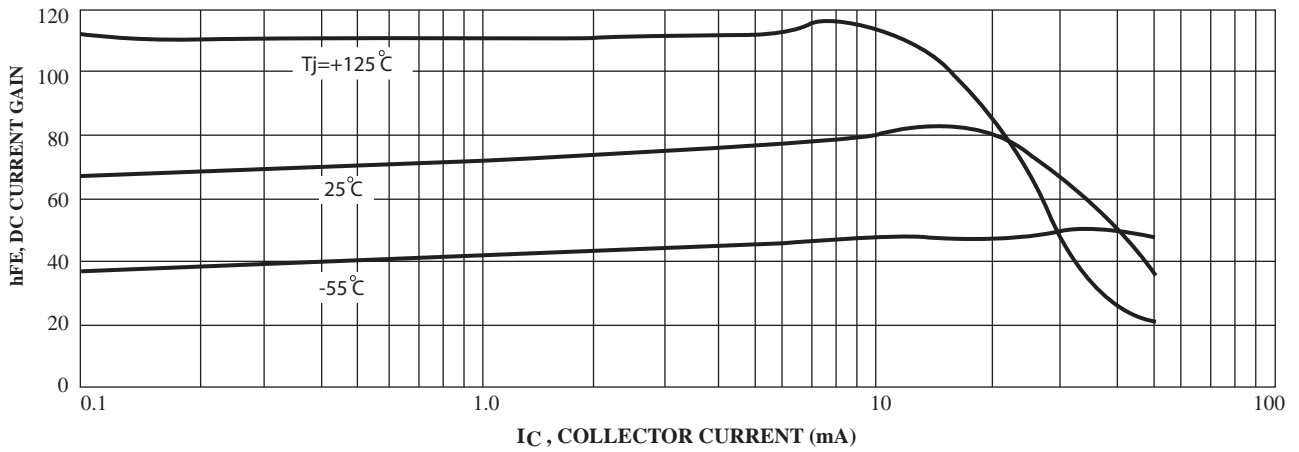


FIG. 1 DC Current Gain

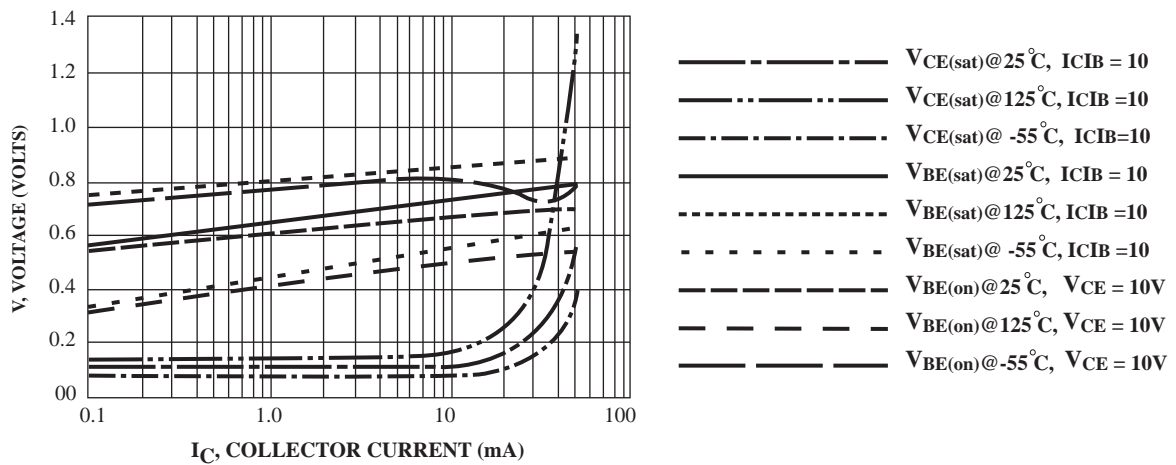


FIG. 2 "On" Voltages

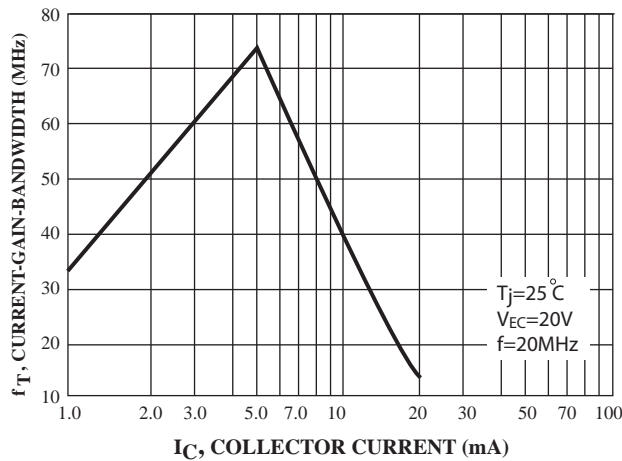
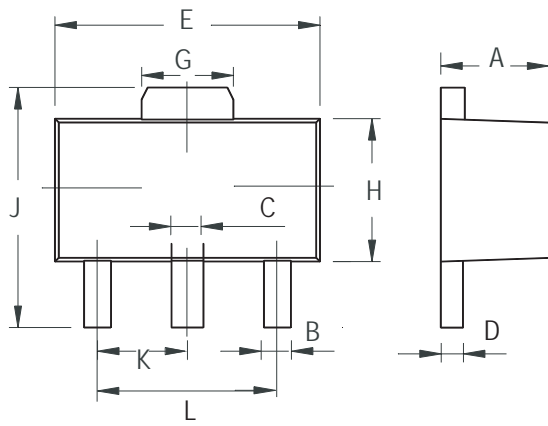


FIG. 3 Current-Gain-Bandwidth

**SOT-89 Outline Dimensions**

unit:mm



<b>SOT-89</b>		
<b>Dim</b>	<b>Min</b>	<b>Max</b>
<b>A</b>	1.400	1.600
<b>B</b>	0.320	0.520
<b>C</b>	0.360	0.560
<b>D</b>	0.350	0.440
<b>E</b>	4.400	4.600
<b>G</b>	1.400	1.800
<b>H</b>	2.300	2.600
<b>J</b>	3.940	4.250
<b>K</b>	1.500TYP	
<b>L</b>	2.900	3.100