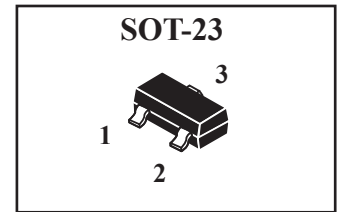
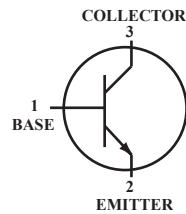


High-Voltage NPN Transistor Surface Mount

 Lead(Pb)-Free



Maximum Ratings

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	300	Vdc
Collector-Base Voltage	V_{CBO}	300	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current-Continuous	I_C	500	mAdc

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board ⁽¹⁾ TA=25°C	P_D	225	mW
Derate above 25°C		1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, ⁽²⁾ TA=25°C	P_D	300	mW
Derate above 25°C		2.4	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage, Temperature	T_J, T_{stg}	-55 to +150	°C

Device Marking

MMBTA42=1D

Electrical Characteristics (TA=25°C Unless Otherwise noted)

Characteristics	Symbol	Min	Max	Unit
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Off Characteristics

Collector-Emitter Breakdown Voltage ⁽³⁾ ($I_C=1.0\text{mAdc}, I_E=0$)	$V_{(BR)CEO}$	300	-	Vdc
Collector-Base Breakdown Voltage ($I_C=100\ \mu\text{Adc}, I_E=0$)	$V_{(BR)CBO}$	300	-	Vdc
Emitter-Base Breakdown Voltage ($I_E=10\ \mu\text{Adc}, I_C=0$)	$V_{(BR)EBO}$	5.0	-	Vdc
Base Cutoff Current ($V_{CB}=200\ \text{Vdc}, I_E=0$)	I_{CBO}	-	0.25	μAdc
Emitter Cutoff Current $V_{EB}=3\text{V}, I_C=0$	I_{EBO}	-	0.1	μAdc

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

2.Alumina=0.4 x 0.3 x 0.024 in. 99.5% alumina.

3.Pulse Test:Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

Electrical Characteristics ($T_A=25\text{ }^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristics	Symbol	Min	Max	Unit
On Characteristics				
DC Current Gain ($I_C= 1.0\text{ mAdc}$, $V_{CE}=10\text{Vdc}$)	$H_{FE(1)}$	25	-	-
($I_C= 10\text{ mAdc}$, $V_{CE}= 10\text{Vdc}$)	$H_{FE(2)}$	100	200	-
($I_C= 30\text{ mAdc}$, $V_{CE}= 10\text{Vdc}$)	$H_{FE(3)}$	25	-	-
Collector-Emitter Saturation Voltage(3) ($I_C= 20\text{ mAdc}$, $I_B= 2.0\text{ mAdc}$)	$V_{CE(sat)}$	-	0.5	Vdc
Base-Emitter Saturation Voltage(3) ($I_C= 20\text{ mAdc}$, $I_B= 2.0\text{ mAdc}$)	$V_{BE(sat)}$	-	0.9	Vdc
Current-Gain-Bandwidth Product ($I_C= 10\text{ mAdc}$, $V_{CE}= 5\text{ Vdc}$, $f=130\text{MHz}$)	f_T	-50	-	MHz

Typical Characteristics

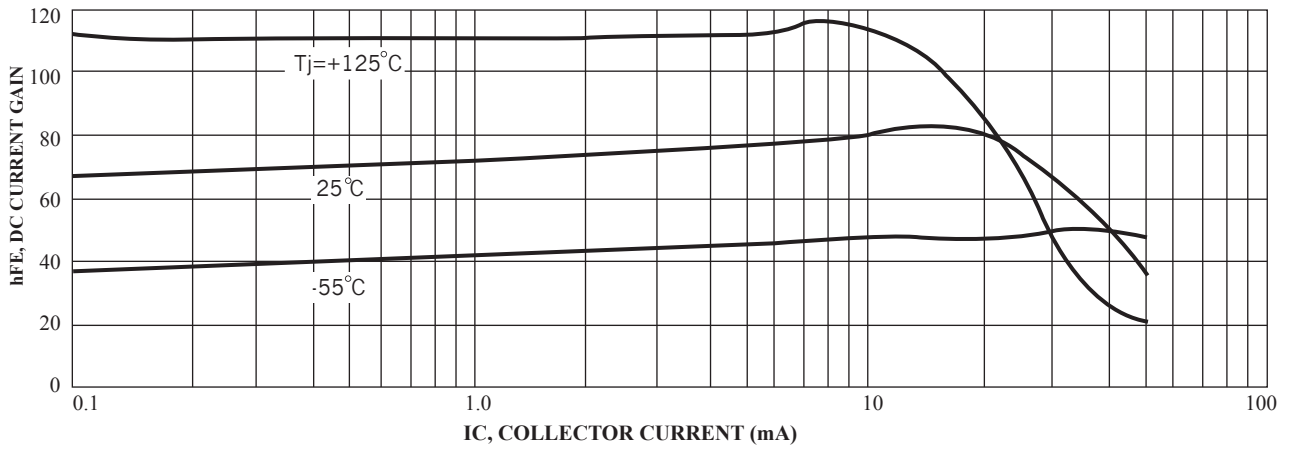
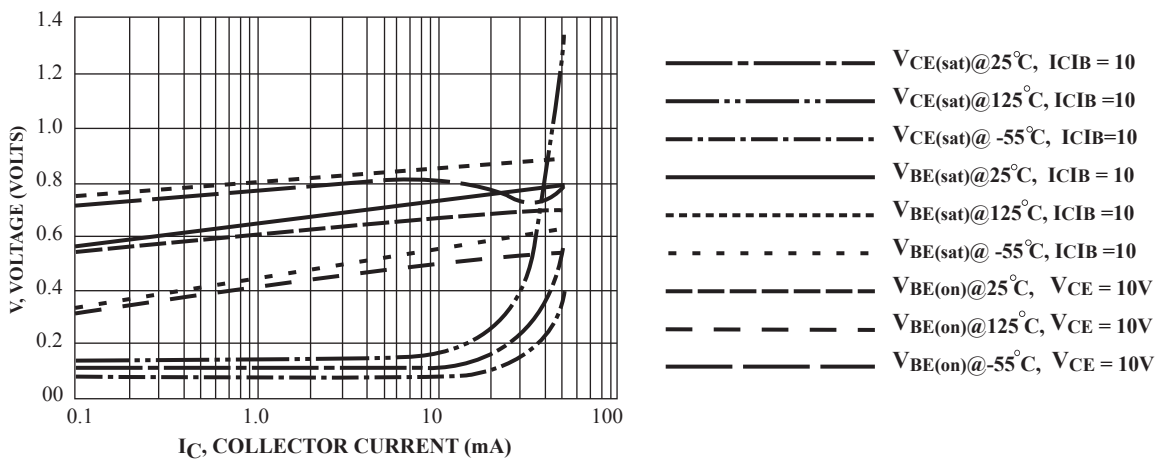


Figure ,1 DC Current Gain



Figure,2 "On" Voltages

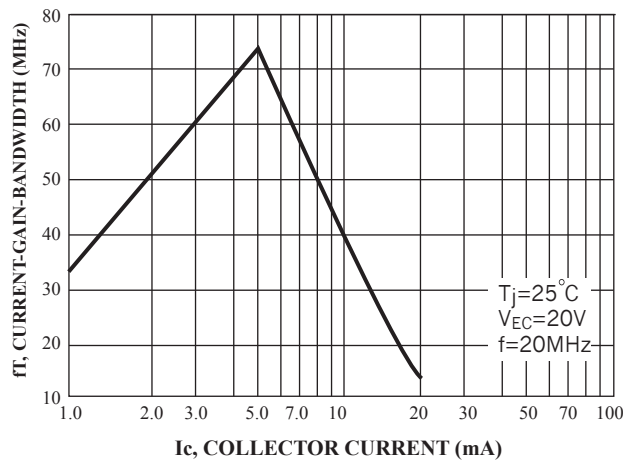
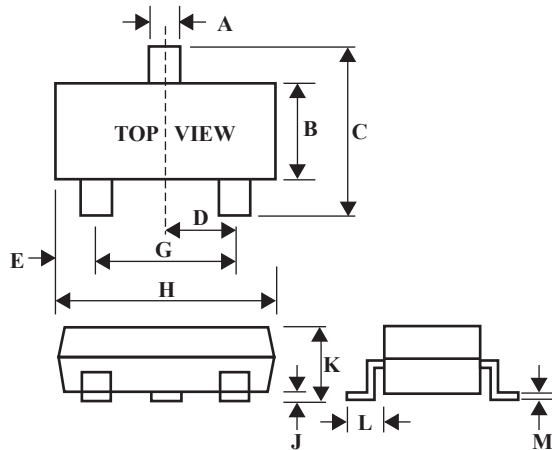


Figure ,3 Current-Gain-Bandwidth

SOT-23 Package Outline Dimension



SOT-23		
Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25