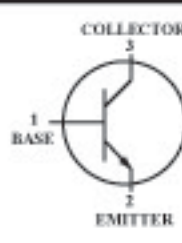


**High-Voltage NPN Transistor
Surface Mount**

Maximum Ratings

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	300	V _{dc}
Collector-Base Voltage	V _{CBO}	300	V _{dc}
Emitter-Base Voltage	V _{EBO}	5.0	V _{dc}
Collector Current-Continuous	I _C	500	mAdc

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board ⁽¹⁾ T _A =25°C Derate above 25°C	P _D	225	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	556	°C/W
Total Device Dissipation Alumina Substrate, ⁽²⁾ T _A =25°C Derate above 25°C	P _D	300	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	417	°C/W
Junction and Storage, Temperature	T _J , T _{stg}	-55 to +150	°C

Device Marking

MMBTA42=1D

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

Characteristics	Symbol	Min	Max	Unit
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Off Characteristics

Collector-Emitter Breakdown Voltage ⁽³⁾ (I _C =1.0mAdc, I _B =0)	V _{(BR)CEO}	300	-	V _{dc}
Collector-Base Breakdown Voltage (I _C =100 μAdc, I _E =0)	V _{(BR)CBO}	300	-	V _{dc}
Emitter-Base Breakdown Voltage (I _E =10 μAdc, I _C =0)	V _{(BR)EBO}	5.0	-	V _{dc}
Base Cutoff Current (V _{CB} =200 Vdc, I _E =0)	I _{CBO}	-	0.25	μAdc
Emitter Cutoff Current V _{EB} =3V, 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 ≤300 μS, Duty Cycle ≤2.0%.

MMBTA42

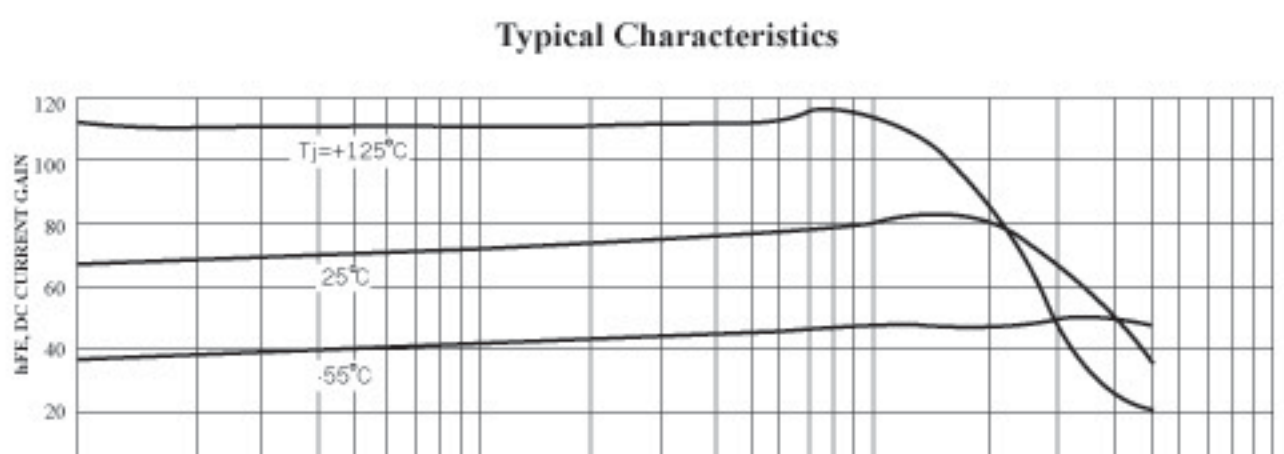
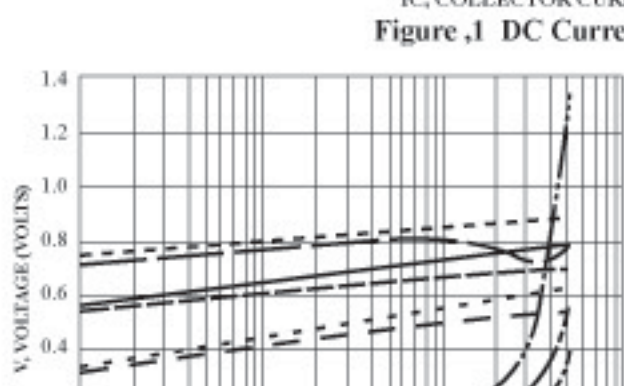
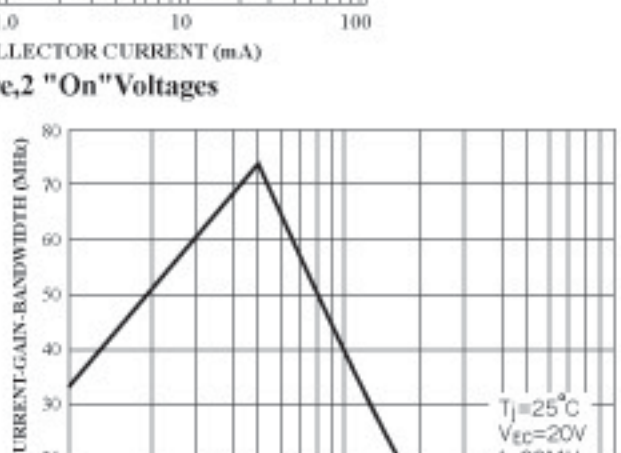
Electrical Characteristics (T_A=25 °C unless otherwise noted) (Continued)

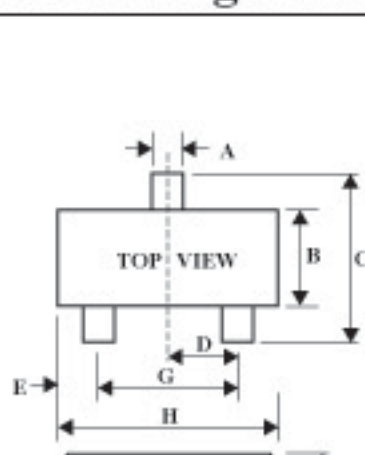
Characteristics	Symbol	Min	Max	Unit
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On Characteristics

DC Current Gain (I _C = 1.0 mAdc, V _{CE} =10Vdc)	HFE(1)	25	-	-
(I _C = 10 mAdc, V _{CE} = 10Vdc)	HFE(2)	100	200	-
(I _C = 30 mAdc, V _{CE} = 10Vdc)	HFE(3)	25	-	-
Collector-Emitter Saturation Voltage ⁽³⁾ (I _C = 20 mAdc, I _B = 2.0 mAdc)	V _{CE(sat)}	-	0.5	V _{dc}
Base-Emitter Saturation Voltage ⁽³⁾ (I _C = 20 mAdc, I _B = 2.0 mAdc)	V _{BE(sat)}	-	0.9	V _{dc}
Current-Gain-Bandwidth Product (I _C = 10 mAdc, V _{CE} = 5 Vdc, f=130MHz)	f _T	-50	-	MHz

MMBTA42

Typical Characteristics

Figure 1 DC Current Gain

Figure 2 "On" Voltages

Figure 3 Current-Gain-Bandwidth
MMBTA42

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