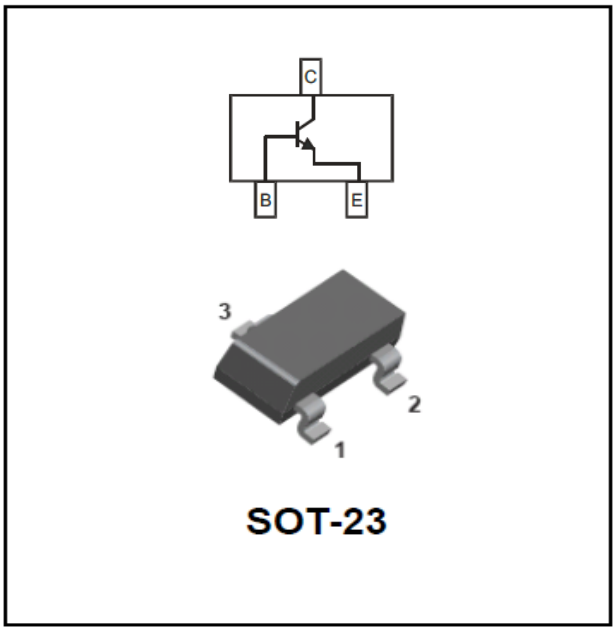
NPN Transistor



Features

- ●Epoxy meets UL-94 V-0 flammability rating
- ●Halogen free available upon request by adding suffix ”HF”
- ●Moitsure Sensitivity Level 1
- ●High Conductance
- ●Surface Mount Package Ideally Suited for Automatic Insertion

Mechanical Data

- ● **Package**: SOT-23

Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free

- ● **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- ● **Marking**: 1D

■ Maximum Ratings (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Value
Collector-Base Voltage	V_{CBO}	V	300
Collector-Emitter Voltage	V_{CEO}	V	300
Emitter-Base Voltage	V_{EBO}	V	5
Collector Current	I_C	mA	500
Collector Power Dissipation	Pc	mW	350
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	℃/W	357
Operation Junction Temperature	T_j	℃	150
Storage Temperature	T_{stg}	℃	-55 to +150

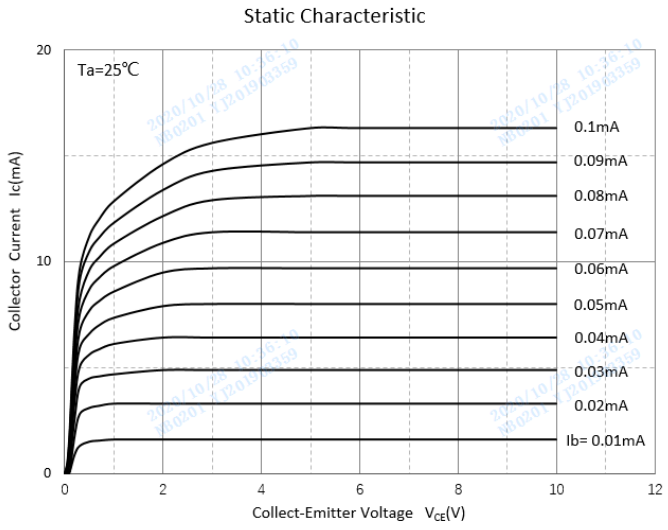
■ Ordering Information (Example)

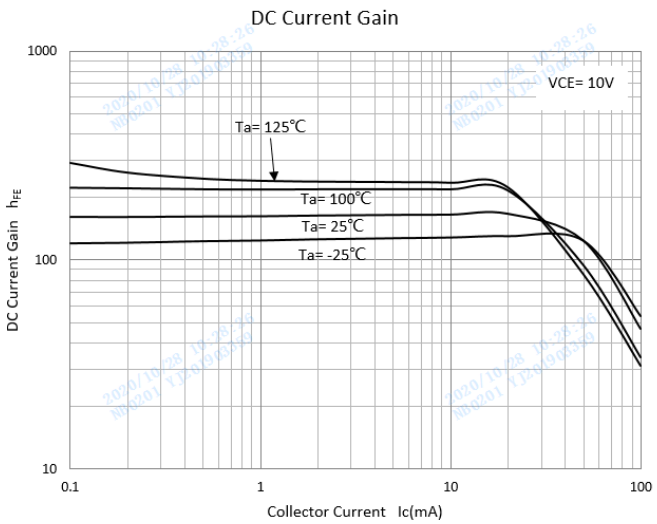
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMBTA42	F2	Approximate 0.008	3000	30000	120000	7” reel

■ Electrical Characteristics (Ta=25℃ unless otherwise noted)

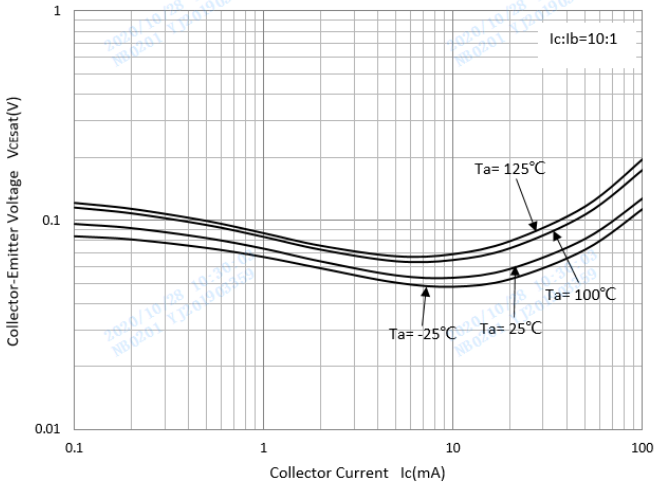
Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V_{CBO}	V	IC= 100uA,IE=0	300		
Collector-emitter breakdown voltage	$V_{)CEO}$	V	IC= 1mA, IB=0	300		
Emitter-base breakdown voltage	V_{EBO}	V	IE= 100uA, IC=0	5		
Collector-base cut-off current	I_{CBO}	uA	VCB=200V, IE =0			0.5
Emitter-base cut-off current	I_{EBO}	uA	VEB=5 V , IC=0			0.5
DC current gain	$h_{FE(1)}$		VCE= 10V, IC= 1mA	25		
	$h_{FE(2)}$		VCE= 10V, IC=10mA	40		300
	$h_{FE(3)}$		VCE=10V, IC=30mA	40		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	IC=20mA, IB= 2mA			0.5
Base-emitter saturation voltage	$V_{BE(sat)}$	V	IC=20mA, IB= 2mA			1.0
Transition frequency	f_T	MHz	VCE=20V,IC=10mA,f=30MHz	50		

■ Characteristics (Typical)

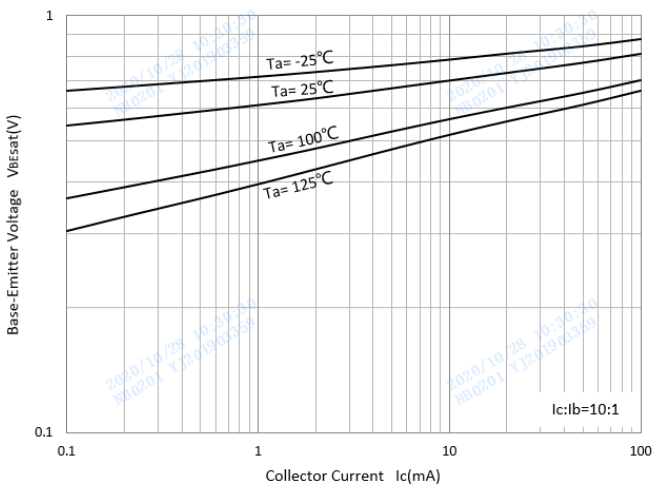




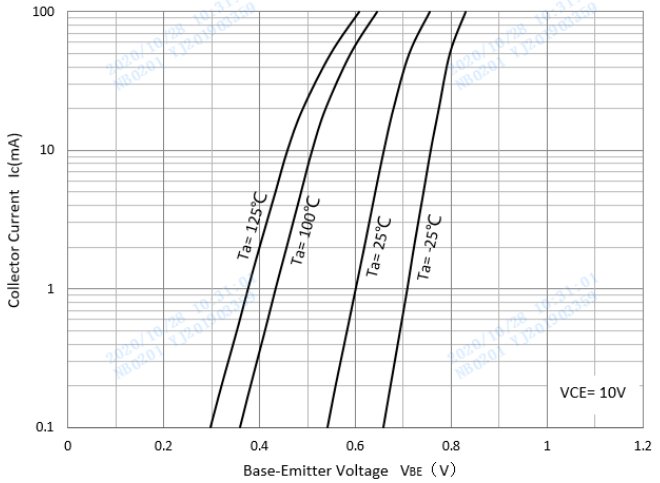
Collector-Emitter Saturation Voltage



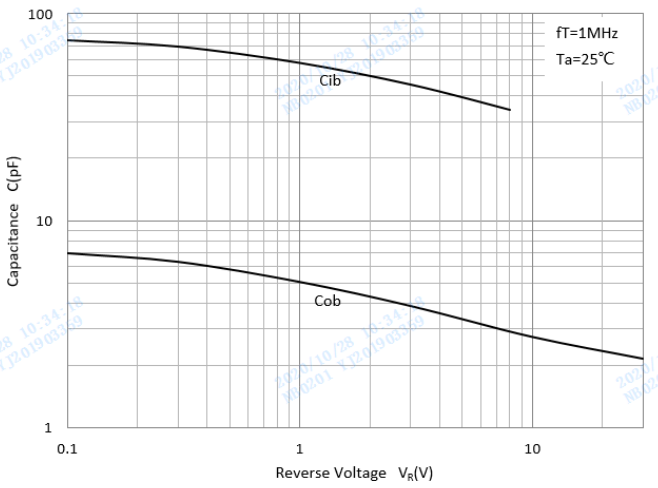
Base-Emitter Saturation Voltage



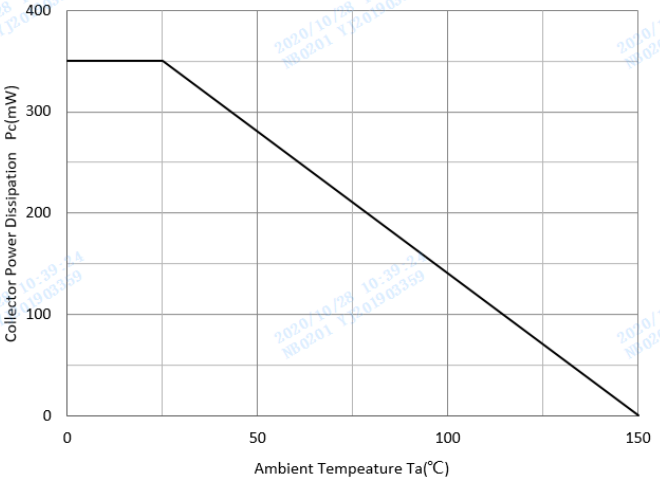
Base-Emitter On Voltage



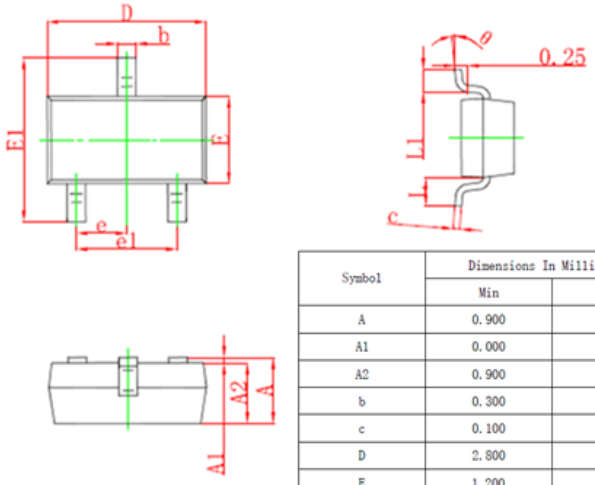
Cob/Cib-V_{CB}/V_{EB}



Collector Power Derating Curve

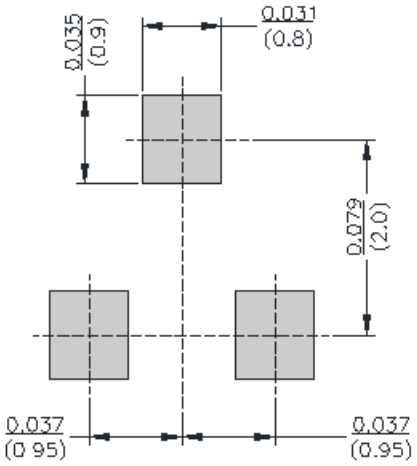


■SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

■SOT-23 Soldering Footprint



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