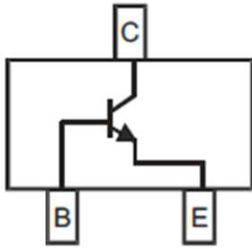


## NPN High Voltage Transistors



**SOT-23**

### Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- High Conductance
- High Voltage
- Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

- NPN General Purpose Amplifier

### Mechanical Data

- Case: SOT-23
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Marking: 1D

### ■ Maximum Ratings (Ta=25°C 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 -Continuous	$I_C$	mA	500
Total Device Dissipation	$P_D$	mW	350
Junction Temperature	$T_j$	°C	-55 to +150
Storage Temperature	$T_{STG}$	°C	-55 to +150



### ■ Electrical Characteristics (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	$V_{CBO}$	V	$I_C = 100\mu A, I_E = 0$	300		
Collector-emitter breakdown voltage	$V_{CEO}$	V	$I_C = 1mA, I_B = 0$	300		
Emitter-base breakdown voltage	$V_{EBO}$	V	$I_E = 100\mu A, I_C = 0$	5		
Collector-base cut-off current	$I_{CBO}$	$\mu A$	$V_{CB} = 200V, I_E = 0$			0.5
Emitter-base cut-off current	$I_{EBO}$	$\mu A$	$V_{EB} = 5V, I_C = 0$			0.5
DC current gain	$h_{FE}$		$V_{CE} = 10V, I_C = 1mA$	25		
	$h_{FE}$		$V_{CE} = 10V, I_C = 10mA$	40		300
	$h_{FE}$		$V_{CE} = 10V, I_C = 30mA$	40		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C = 20mA, I_B = 2mA$			0.5
Base-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C = 20mA, I_B = 2mA$			1.0

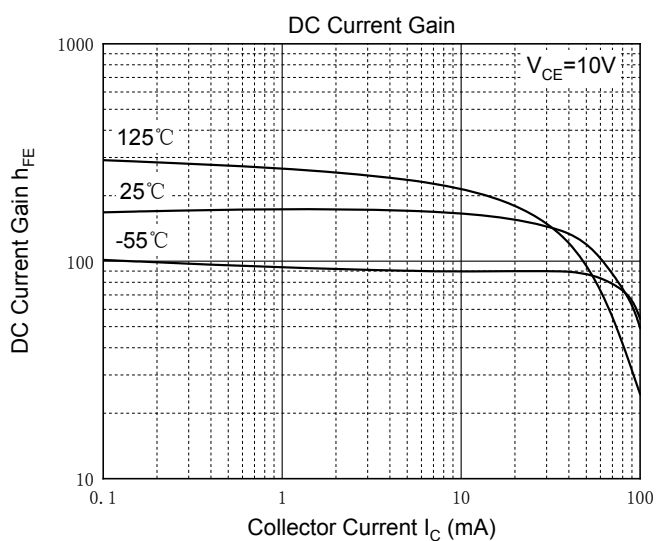
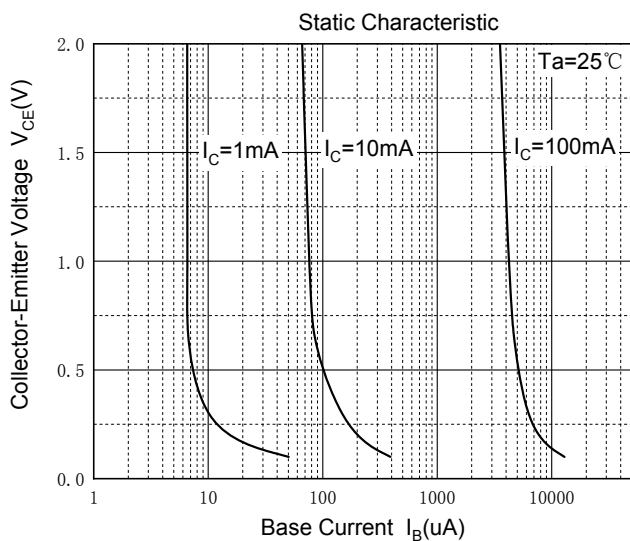
### ■ Other Characteristics (Ta=25°C unless otherwise noted)

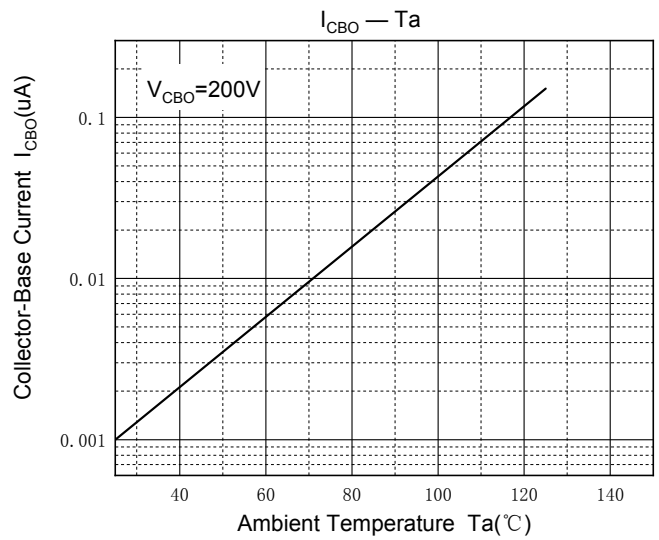
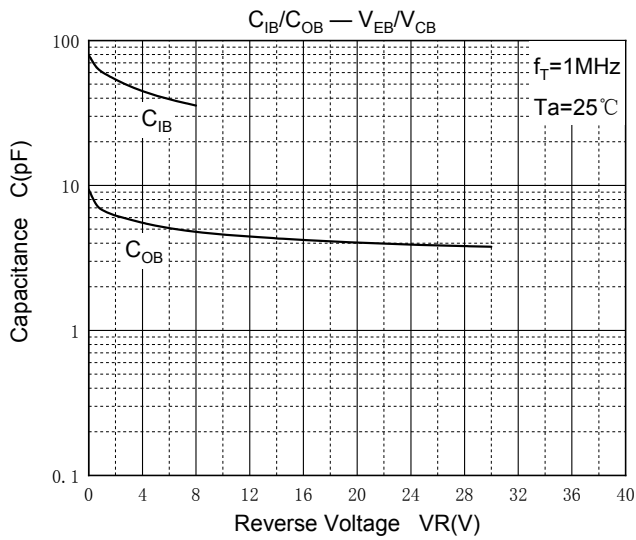
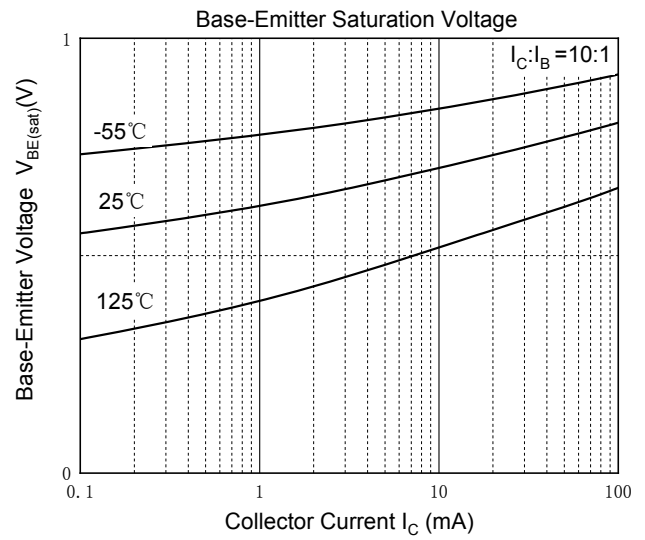
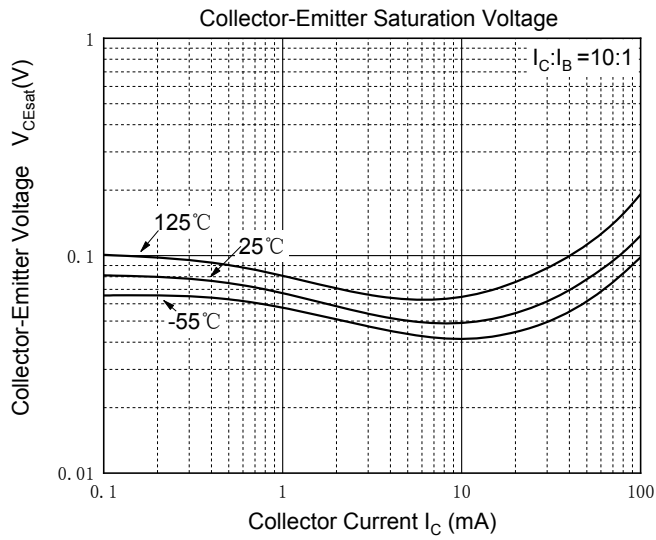
Item	Symbol	Unit	Conditions	Min	Typ	Max
Transition frequency	$f_T$	MHz	$V_{CE} = 20V, I_C = 10mA, f = 30MHz$	50		

### ■ Ordering Information (Example)

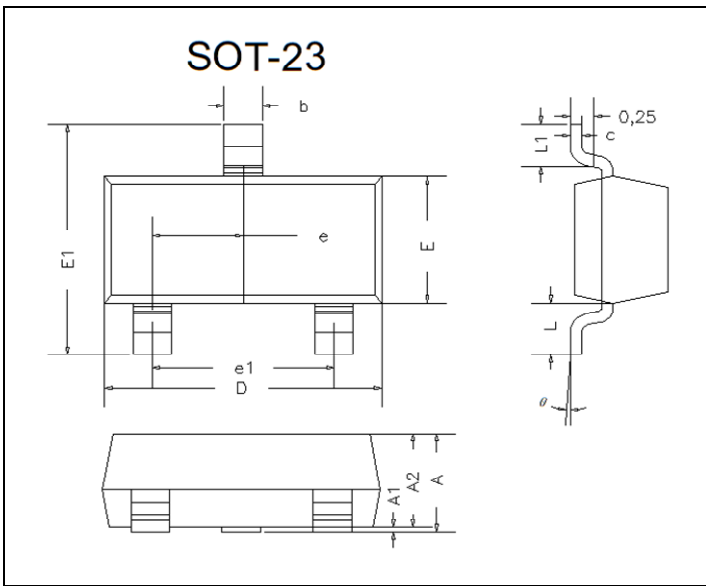
PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMBTA42Q	F2	Approximate 0.01	3000	30000	120000	7" reel

### ■ Characteristics(Typical)



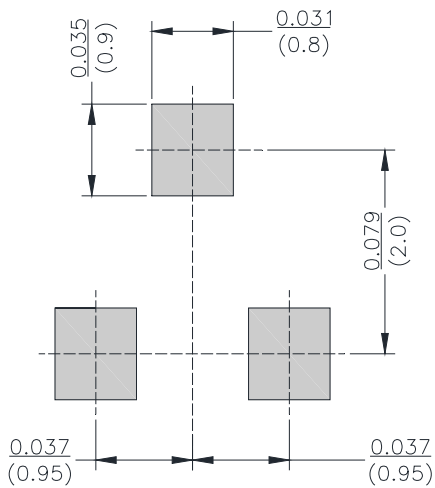


## ■ SOT-23 Package Outline Dimensions



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.045	0.90	1.15	
A1	0.000	0.004	0.00	0.10	
A2	0.035	0.041	0.90	1.05	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.110	0.118	2.80	3.00	
E	0.047	0.055	1.20	1.40	
E1	0.089	0.100	2.25	2.55	
e	0.370TYP		0.95TYP		
e1	0.071	0.079	1.80	2.00	
L	0.220REF		0.55REF		
L1	0.012	0.020	0.30	0.50	
θ	0°	8°	0°	8°	

## ■ SOT-23 Suggested Pad Layout



Unit:  $\frac{\text{inch}}{\text{mm}}$



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