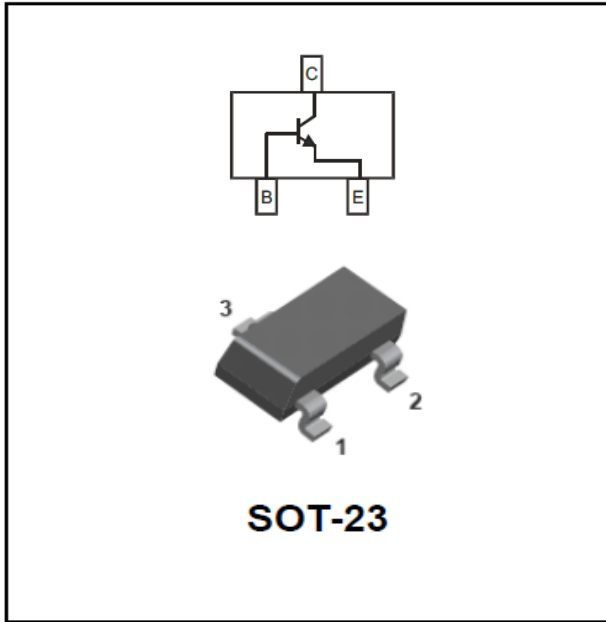


## NPN Transistor



### Features

- Epoxy meets UL-94 V-0 flammability rating
- Moisture 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°C unless otherwise noted)

Item	Symbol	Unit	Value
Collector-Base Voltage	BVCBO	V	300
Collector-Emitter Voltage	BVCEO	V	300
Emitter-Base Voltage	BVEBO	V	5
Collector Current -Continuous	IC	mA	500
Total Device Dissipation	PD	mW	350
Junction Temperature	Tj	°C	150
Storage Temperature	TSTG	°C	-55 to +150

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

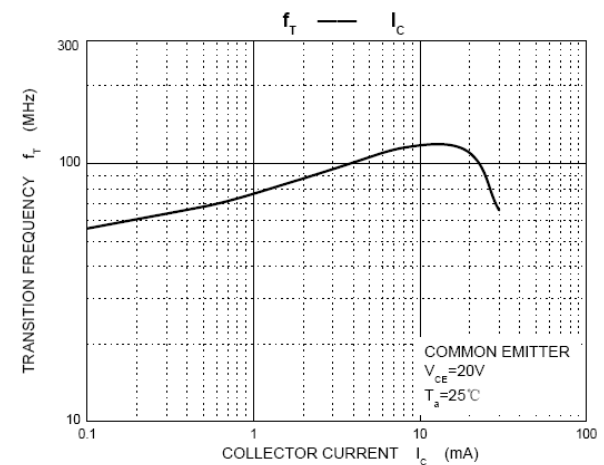
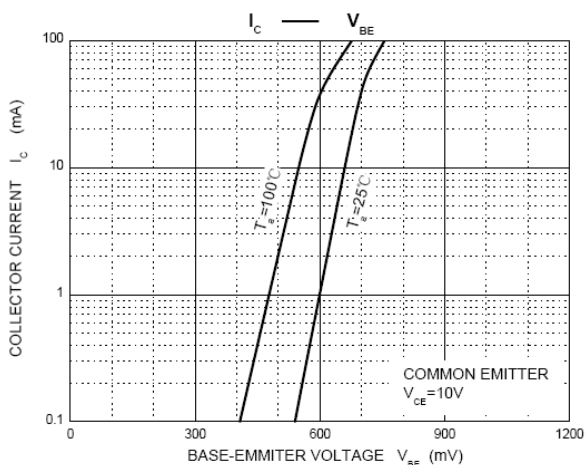
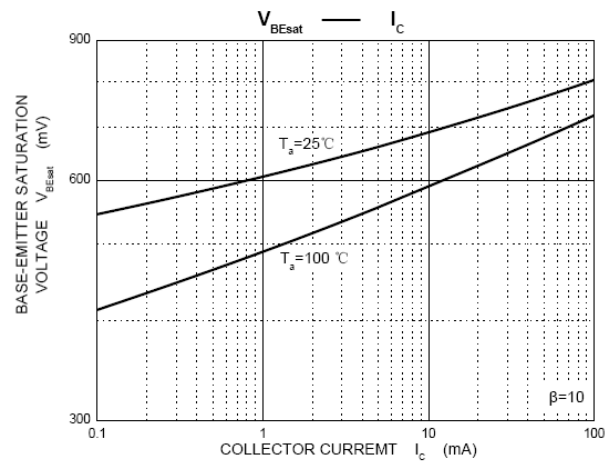
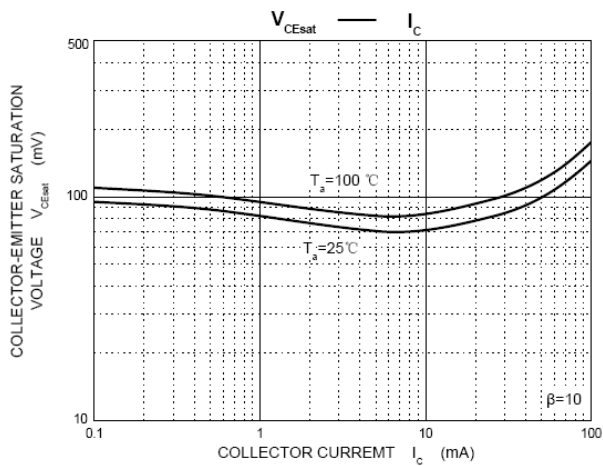
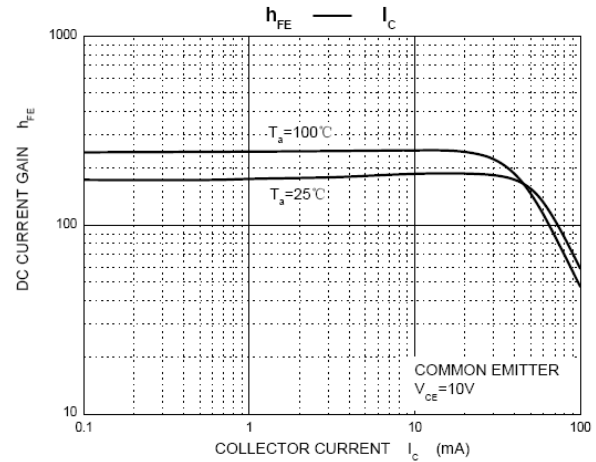
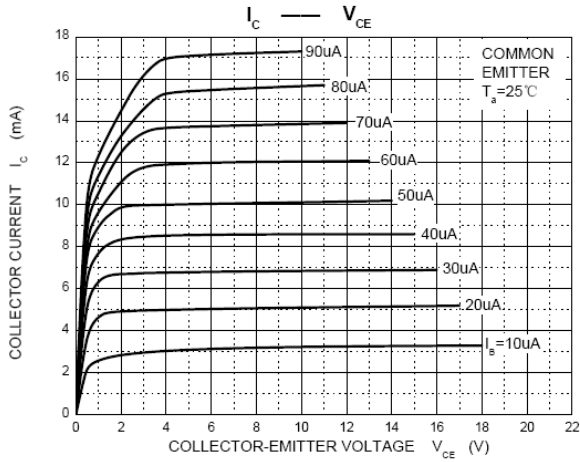
Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	$V_{(BR)CBO}$	V	IC= 100uA, IE=0	300		
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	V	IC= 1mA, IB=0	300		
Emitter-base breakdown voltage	$V_{(BR)EBO}$	V	IE= 100uA, IC=0	5		
Collector cut-off current	ICBO	uA	VCE=200V, IC=0			0.5
Emitter cut-off current	IEBO	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	fT	MHZ	VCE=20V, IC=10mA, f=30MHZ	50		

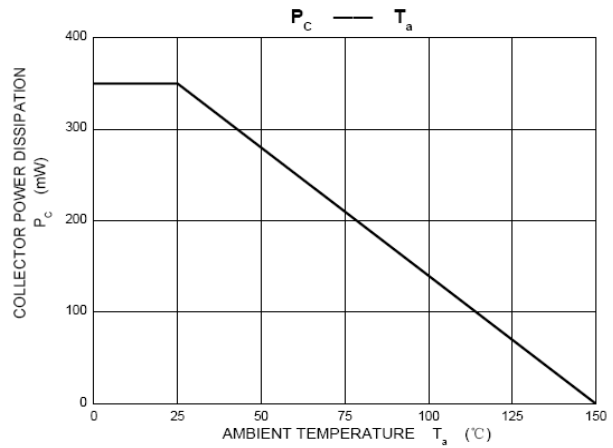
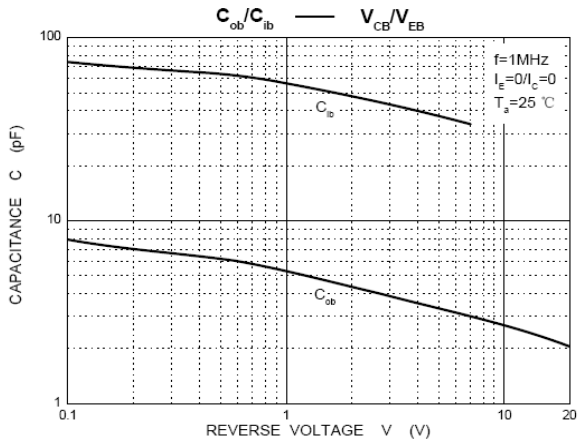


## Ordering Information (Example)

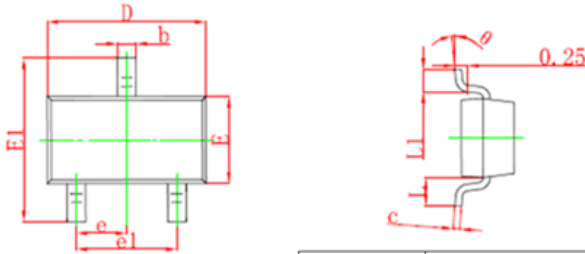
PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMBTA42	F2	Approximate 0.008	3000	30000	120000	7" reel

## Characteristics (Typical)



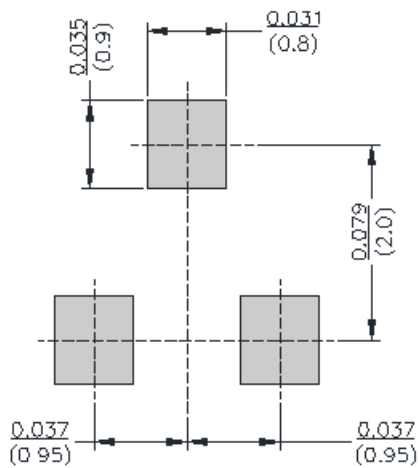


## ■SOT-23 Package Outline Dimensions



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
phi	0°	8°	0°	8°

## ■SOT-23Suggested Pad Layout





## Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.