

SuperTransistor –  $V_{CBO}$  300V,  $I_C$  300mA SOT-23 Plastic-Encapsulate NPN Transistors

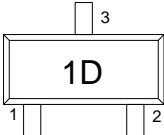
**1. Features**

- Complementary to MMBTA92
- Power dissipation of 350mW
- High stability and high reliability

**2. Mechanical Data**

- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

**3. Pin configuration**

Pin	Function	Outline
1	Base	
2	Emitter	
3	Collector	

**4. Specification**

**Absolute Maximum Rating & Thermal Characteristics**

Ratings at 25 °C ambient temperature unless otherwise specified.

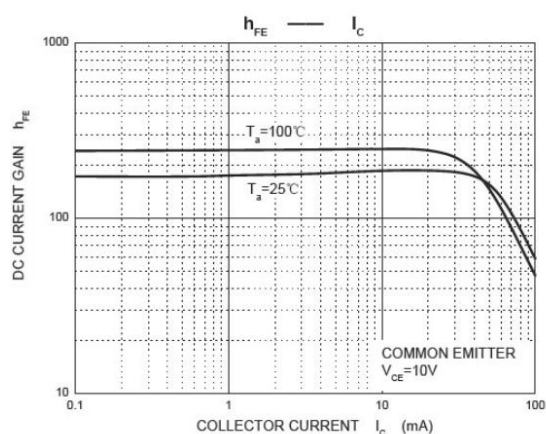
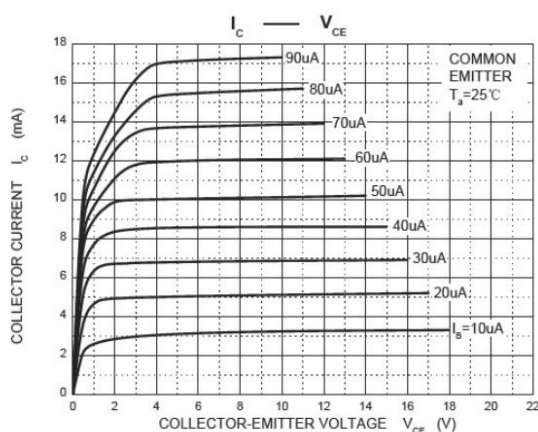
Parameters	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	300	V
Collector-Emitter Voltage	$V_{CEO}$	300	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current-Continuous	$I_C$	300	mA
Collector Power Dissipation	$P_C$	350	mW
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{STG}$	-55~150	°C
Thermal resistance from junction to ambient	$R_{\theta JA}$	357	°C/W

**Electrical Characteristics**(At TA = 25°C unless otherwise specified)

Parameters	Symbols	Test Condition	Limits			
			Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	300			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}^*$	$I_C=1mA, I_B=0$	300			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=200V, I_E=0$			250	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			100	nA
DC current gain	$h_{FE1}^*$	$V_{CE}=10V, I_C=1mA$	60			
	$h_{FE2}^*$	$V_{CE}=10V, I_C=10mA$	100		200	
	$h_{FE3}^*$	$V_{CE}=10V, I_C=30mA$	65			
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=20mA, I_B=2mA$			0.20	V
Base -emitter saturation voltage	$V_{BE(sat)}^*$	$I_C=20mA, I_B=2mA$			0.90	V
Transition frequency	$f_T$	$V_{CE}=20V, I_C=100mA, f=30MHz$	50			MHz

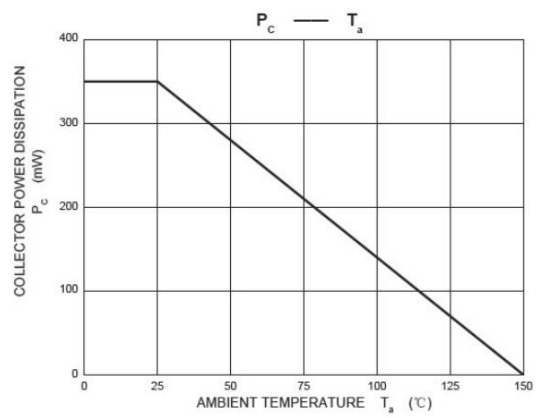
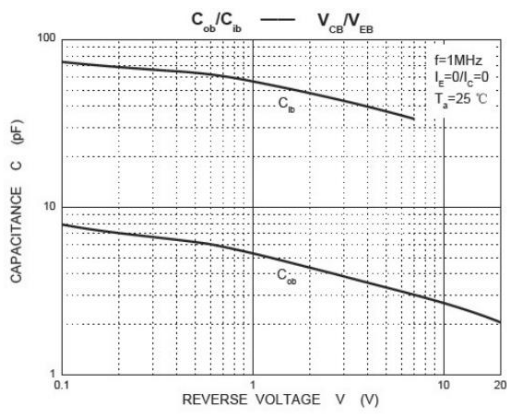
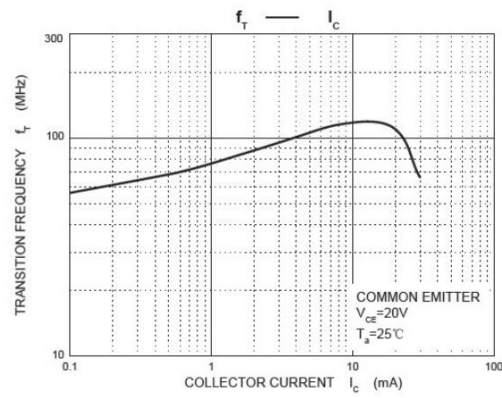
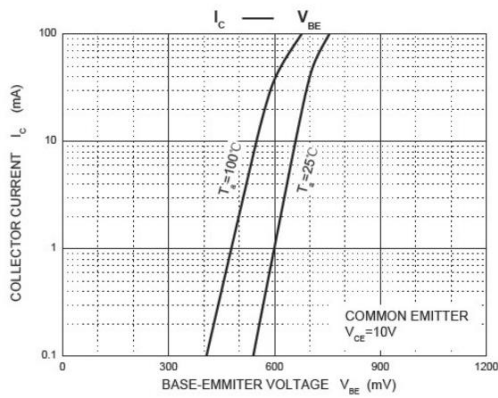
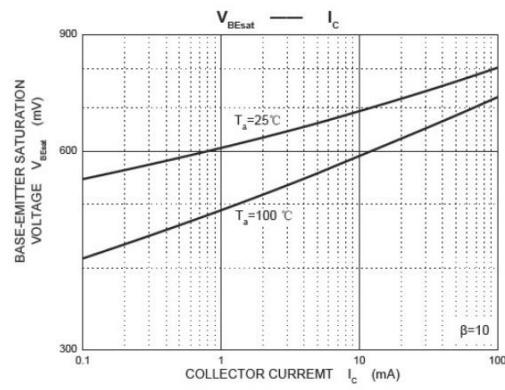
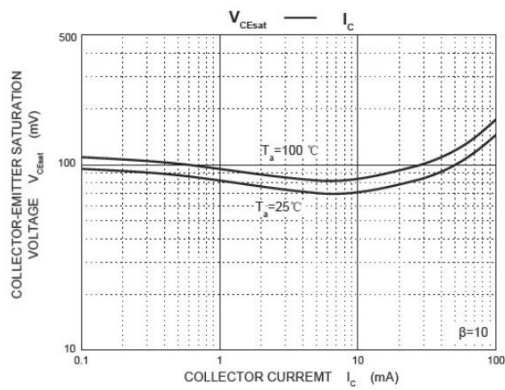
\*Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2.0\%$

**5. Typical Characteristic**

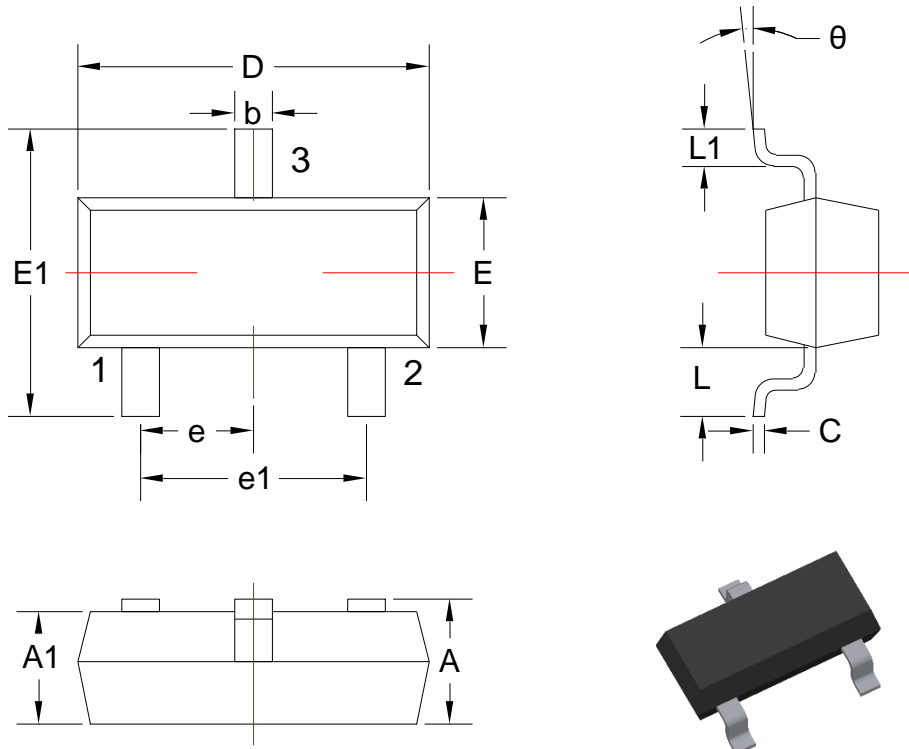


**MMBTA42**

Rev-1.1

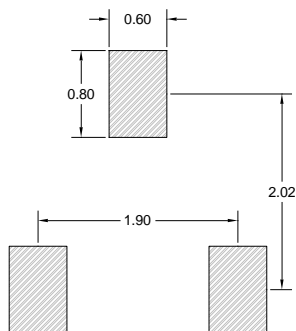


6. Dimension and Patterns (SOT-23)



Units: mm

Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	0.900	1.150	E1	2.250	2.550
A1	0.900	1.050	e	0.950TYP	
b	0.300	0.500	e1	1.800	2.000
c	0.080	0.150	L	0.550REF	
D	2.800	3.000	L1	0.300	0.500
E	1.200	1.400	θ	0°	8°



Note:

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm

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