

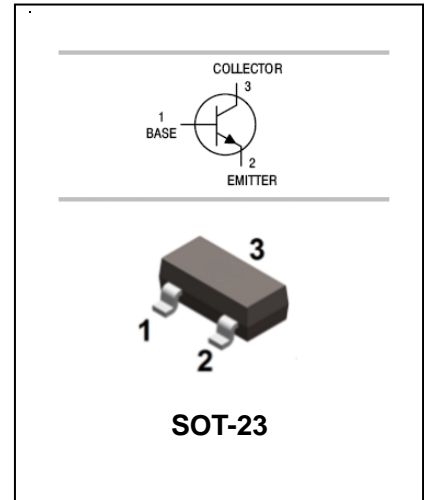


Features

- Epitaxial planar die construction
- Complimentary to MMBTA92
- Ultra-small surface mount package

Mechanical Data

- Case: SOT-23
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
MMBTA42	SOT-23	3000 pcs / Tape & Reel	1D

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V _{CB0}	300	V
Collector-Emitter Breakdown Voltage	V _{CE0}	300	V
Emitter-Base Breakdown Voltage	V _{EBO}	6	V
Continuous Collector Current	I _C	0.5	A
Peak Collector Current	I _{CM}	1	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P _D	300	mW
Thermal Resistance (Junction-to-Ambient) ^{*1}	R _{θJA}	370	°C/W
Thermal Resistance (Junction-to-Case) ^{*1}	R _{θJC}	180	°C/W
Thermal Resistance (Junction-to-Lead) ^{*1}	R _{θJL}	140	°C/W
Operating junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Note 1: The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B



Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 100μA, 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 = 100μA, I _C = 0	6	-	-	V
Collector Cut-off Current	I _{CBO}	V _{CB} = 200V, I _E = 0	-	-	100	nA
Emitter Cut-off Current	I _{EBO}	V _{EB} = 6V, I _C = 0	-	-	100	nA
DC Current Gain	h _{FE}	V _{CE} = 10V, I _C = 1mA	25	-	-	-
		V _{CE} = 10V, I _C = 10mA	40	-	-	-
		V _{CE} = 10V, I _C = 30mA	40	-	-	-
Collector-emitter Saturation Voltage	V _{CE(sat)}	I _C = 20mA, I _B = 2mA	-	-	0.5	V
Base-emitter Saturation Voltage	V _{BE(sat)}	I _C = 20mA, I _B = 2mA	-	-	0.9	V
Transition Frequency	f _T	I _C = 10mA, V _{CE} = 20V	50	-	-	MHz
Collector Output Capacitance	C _{OBO}	V _{CB} = 20V, I _E = 0, f = 1MHZ	-	-	3	pF



Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

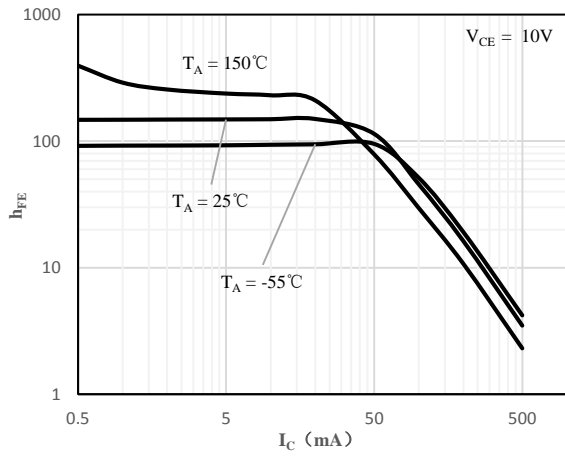


Fig 1 h_{FE} vs. I_C

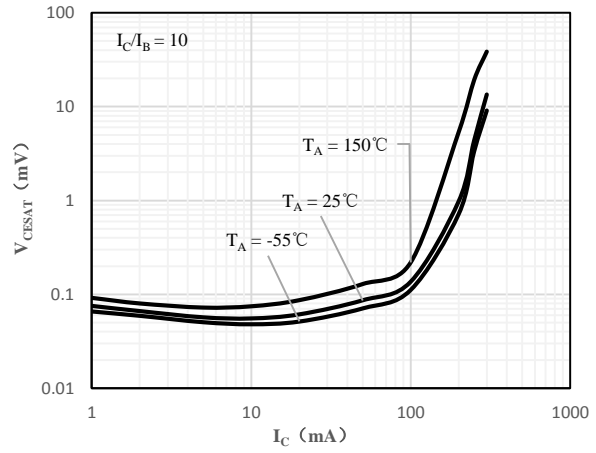


Fig 2 $V_{CE(sat)}$ vs. I_C

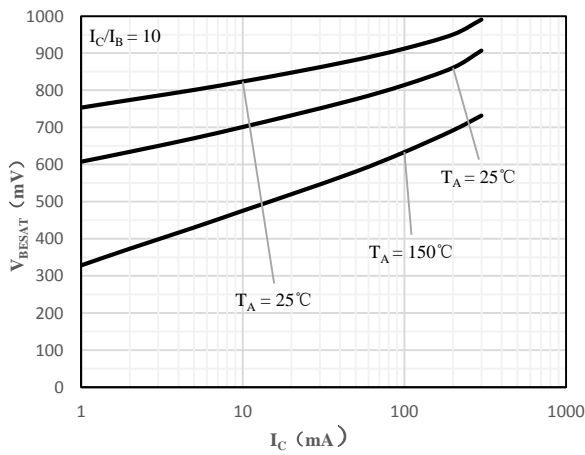


Fig 3 $V_{BE(sat)}$ vs. I_C

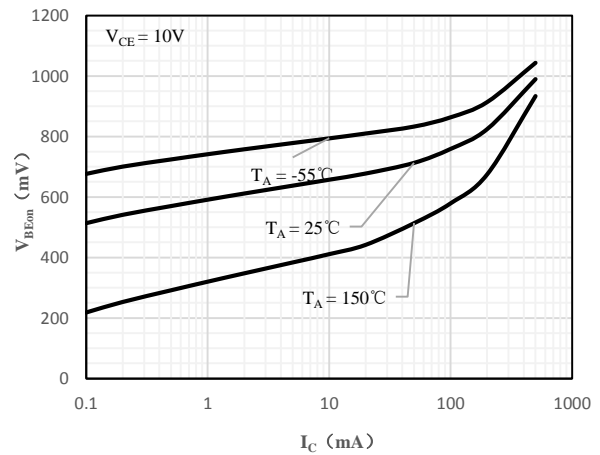


Fig 4 $V_{BE(ON)}$ vs. I_C

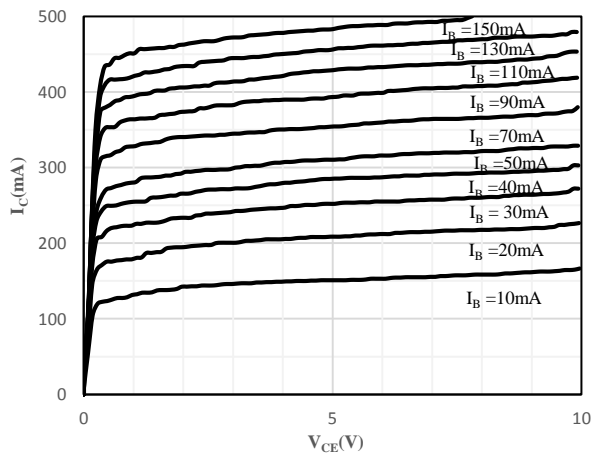


Fig 5 I_C vs. V_{CE}

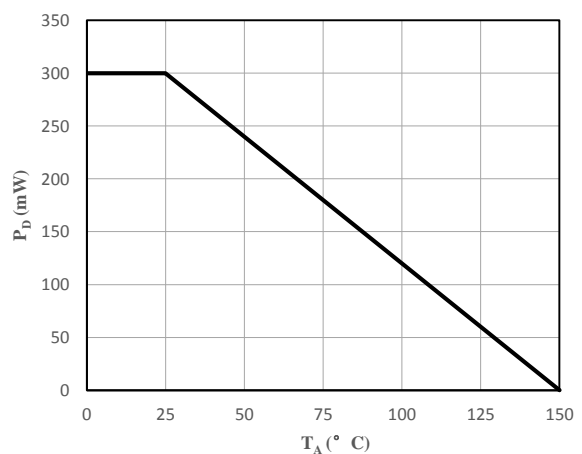


Fig 6 P_D vs. T_A

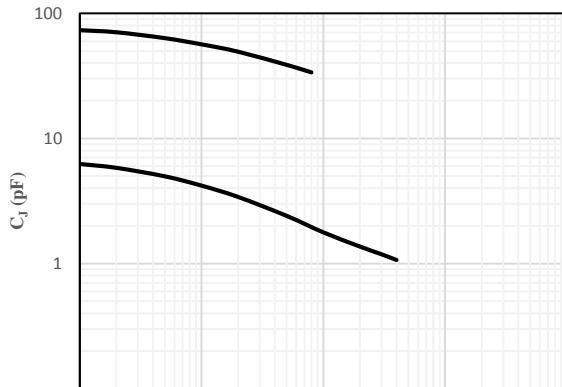
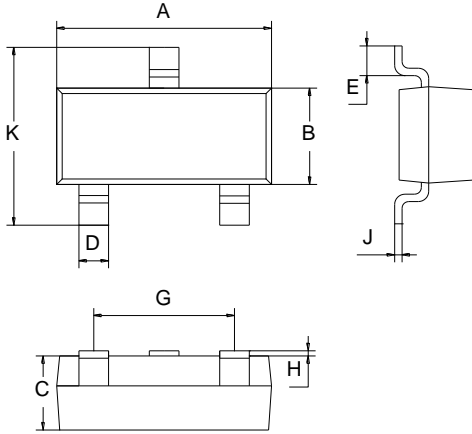


Fig 7 C_j vs. V_R



Package Outline Dimensions (Unit: mm)



SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.9	1.1
D	0.3	0.5
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.05	0.15
K	2.20	2.60

Package Outline Dimensions (Unit: mm)

SOT-23

