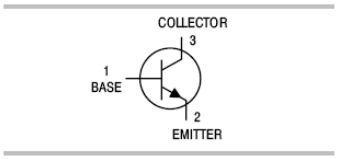
NPN Silicon Epitaxial Planar Transistor

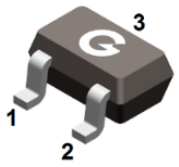
MMSTA42

Features

HF

- Epitaxial planar die construction
- Complimentary to MMSTA92
- Ultra-small surface mount package
- RoHS compliant with Halogen-free





SOT-323

Mechanical Data

- Case: SOT-323
- 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
MMSTA42	SOT-323	3000 pcs / Tape & Reel	K3M

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

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V_{CBO}	300	V
Collector-Emitter Breakdown Voltage	V_{CEO}	300	V
Emitter-Base Breakdown Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	0.2	A
Peak Collector Current (t_p ≤1ms)	I_{CM}	0.4	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C)	P_D	200	mW
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	220	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	120	°C/W
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	170	°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 1 inch^2 FR-4 board with 2OZ copper

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	-	1.5	-	pF

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

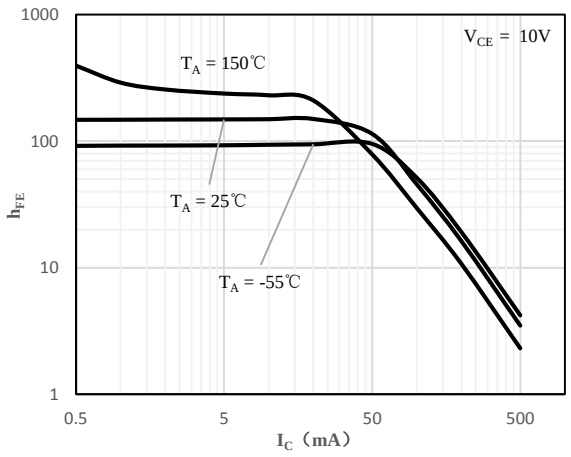


Fig 1 h_{FE} vs. I_C

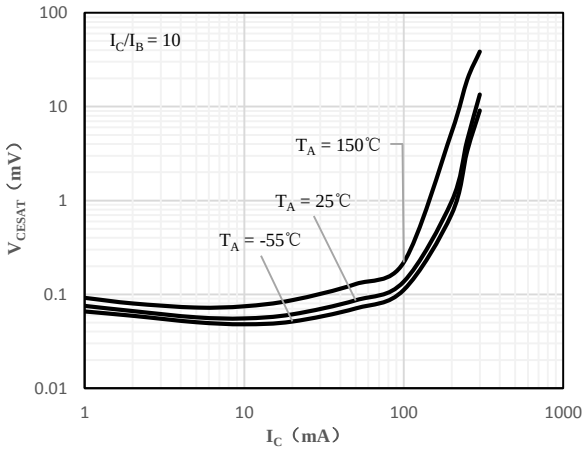


Fig 2 $V_{CE(sat)}$ vs. I_C

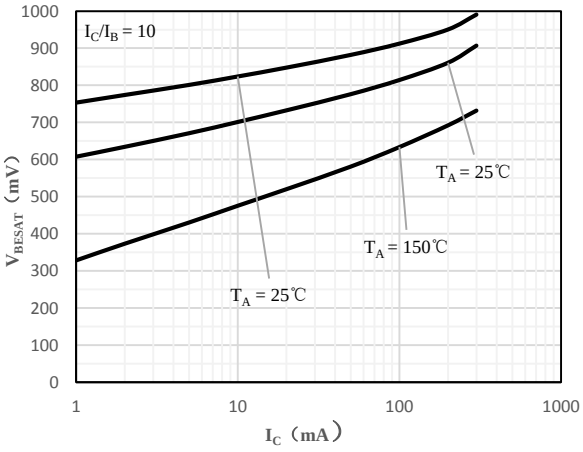


Fig 3 $V_{BE(sat)}$ vs. I_C

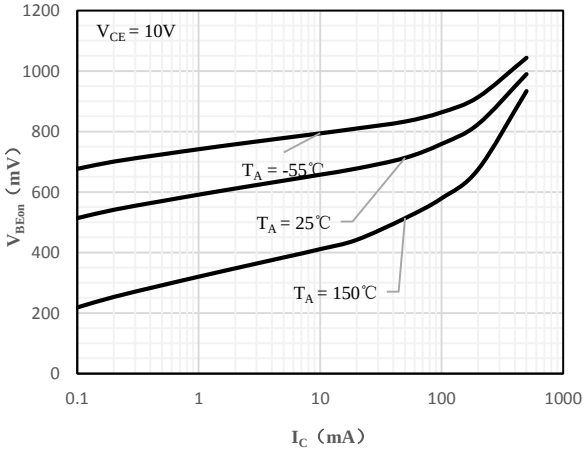


Fig 4 $V_{BE(ON)}$ vs. I_C

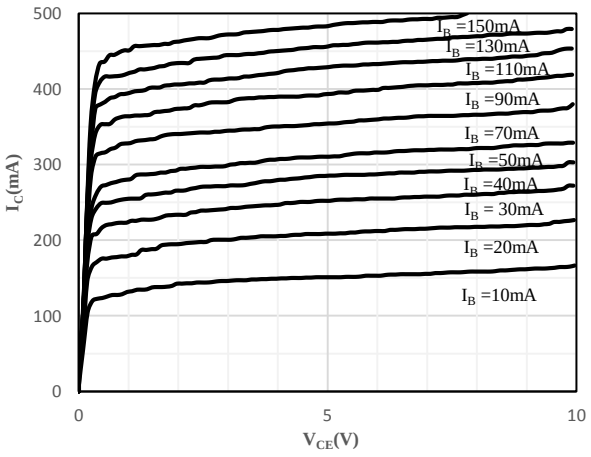


Fig 5 I_C vs. V_{CE}

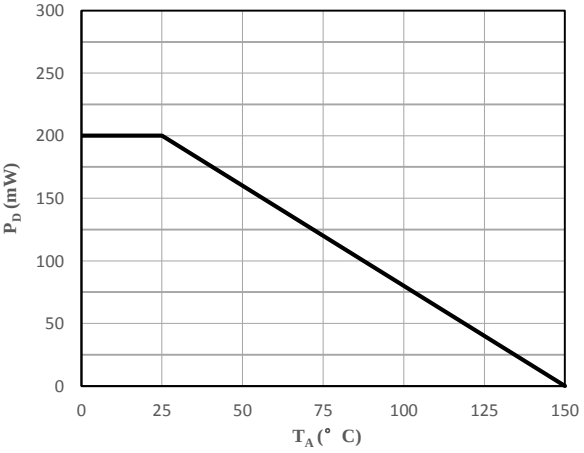


Fig 6 P_D vs. T_A

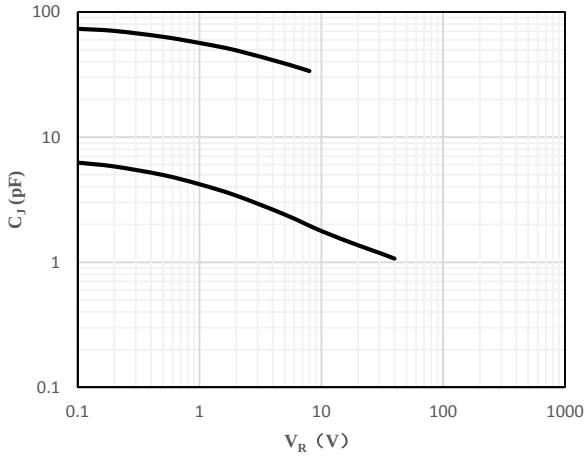
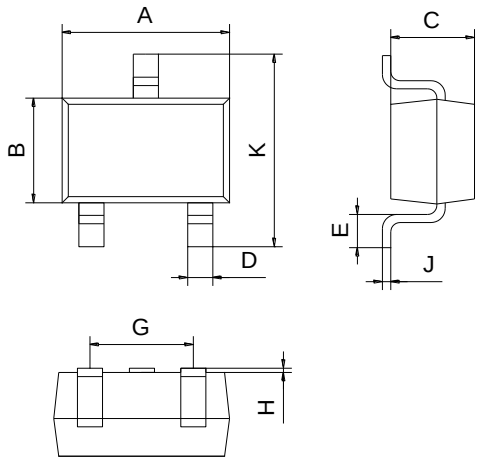


Fig 7 C_J vs. V_R

Package Outline Dimensions (Unit: mm)



SOT-323		
Dimension	**Min.**	**Max.**
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

Mounting Pad Layout (Unit: mm)

SOT-323

