NPN Transistor
350mW SOT-23 AEC-Q101

MMBTA42-A

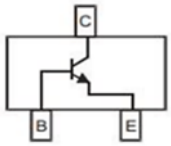
MERITEK

FEATURE

- Silicon Planar Design for High Voltage Application
- Collector-Emitter Voltage V_{CE}=300V
- Collector Current: IC=500mA
- Application: Switching and High Voltage Amplifier
- AEC-Q101 Qualified

MECHANICAL DATA

- Case: SOT-23, Molded Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026



RoHS

MAXIMUM RATING

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	300	V
Collector-Emitter Voltage	V_{CEO}	300	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	500	mA
Total Power Dissipation	P_{tot}	350	mW
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 ~+150	°C

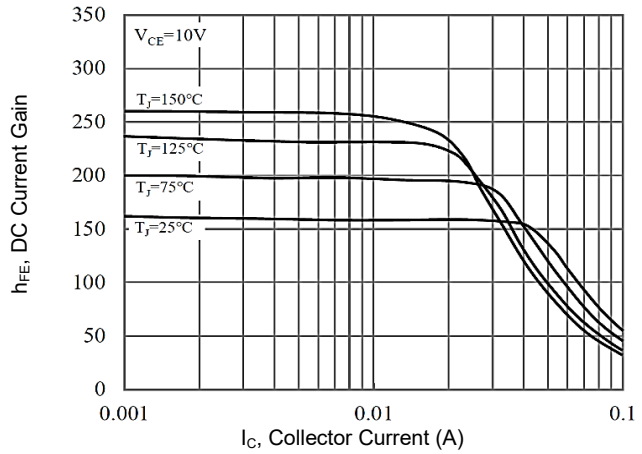
ELECTRICAL CHARACTERISTICS

Parameter- ON Characteristic	Conditions	Symbol	Min.	Max.	Unit
DC Current Gain	V_{CE}=10V, I_C=1mA	h_{FE}	25	-	-
	V_{CE}=10V, I_C=10mA		80	200	
	V_{CE}=10V, I_C=30mA		40	-	
Collector-Emitter Saturation Voltage	I_C=20mA, I_B=2mA	$V_{CE(SAT)}$	-	0.5	V
Base-Emitter Saturation Voltage	I_C=20mA, I_B=2mA	$V_{BE(SAT)}$	-	0.9	V
Parameter- OFF Characteristics	**Conditions**	**Symbol**	**Min.**	**Max.**	**Unit**
Collector-Base Breakdown Voltage	I_C=100μA, I_E=0	$V_{(BR)CBO}$	300	-	V
Collector-Emitter Breakdown Voltage	I_C=1.0mA, I_B=0	$V_{(BR)CEO}$	300	-	V
Emitter-Base Breakdown Voltage	I_E=100μA, I_C=0	$V_{(BR)EBO}$	6	-	V
Base Cut-Off Current	V_{CB}=200V, I_E=0	I_{CBO}	-	100	nA
Emitter Cut-Off Current	V_{EB}=6V, I_C=0	I_{EBO}	-	100	nA
Collector Capacitance	V_{CB}=20.0V, I_E=0, f=1MHz	C_{ob}	-	3	pF
Parameter-Small Signal	**Conditions**	**Symbol**	**Min.**	**Max.**	**Unit**
Current-Gain – Bandwidth Product	I_C=10mA, V_{CE}=20V, f=100MHz	f_T	50	-	MHz

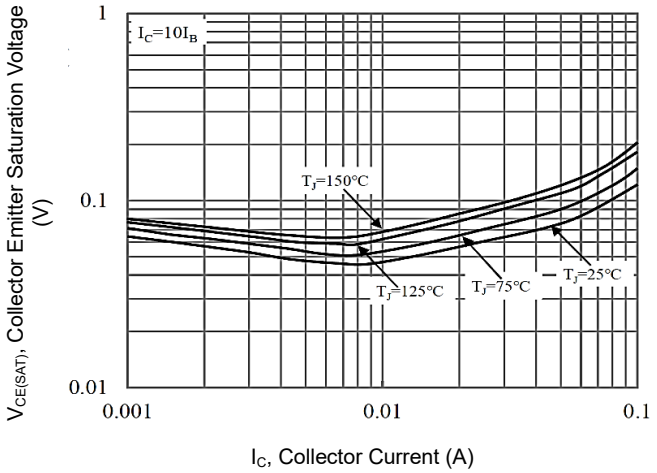
Note:
1. T_A=25°C unless otherwise noted.

CHARACTERISTIC CURVES

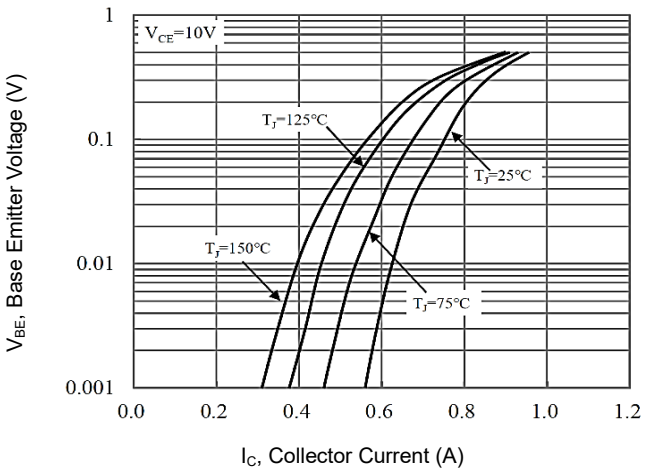
DC Current Gain



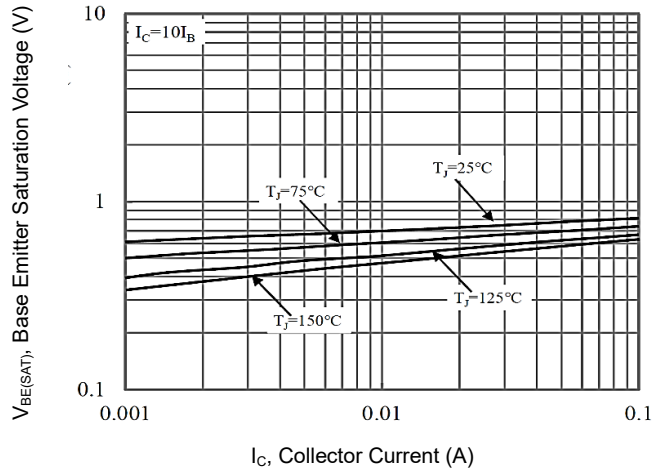
Collector Emitter Saturation Voltage



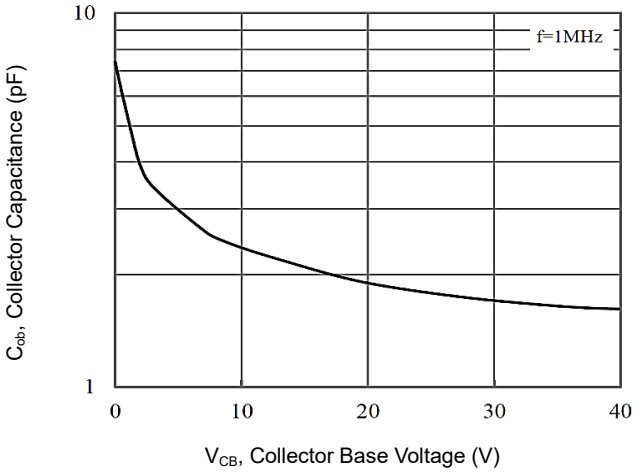
Base Emitter On Voltage



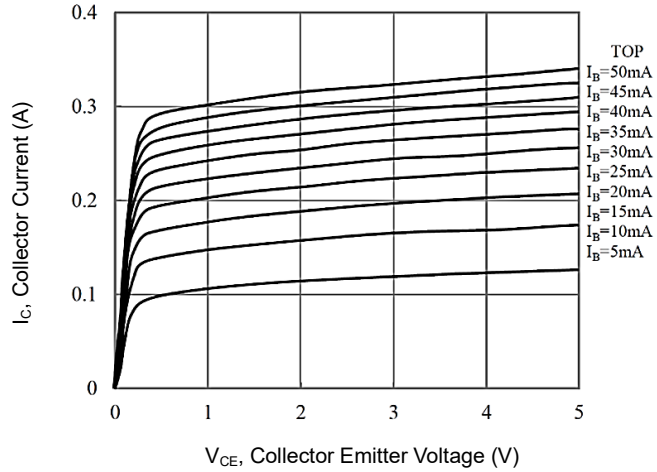
Base Emitter Saturation Voltage



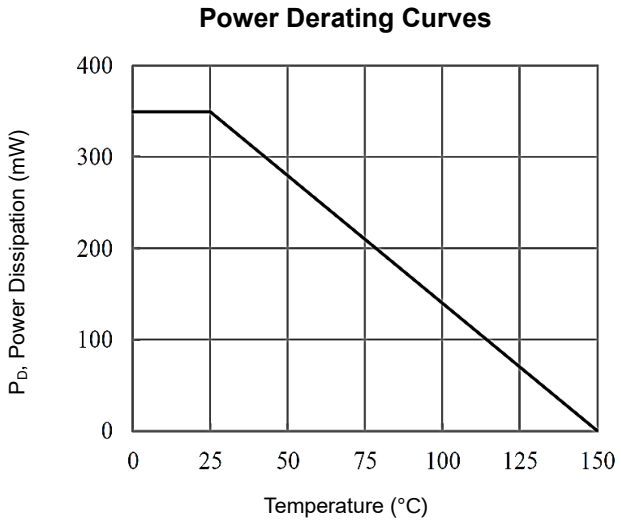
Capacitance



Collector-Emitter Voltage vs. Collector Current



CHARACTERISTIC CURVES



DIMENSIONS

SOT-23	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.79	1.40
b	0.30	0.50
c	0.08	0.20
D	2.70	3.10
e	0.89	1.02
e1	1.78	2.04
E	2.10	2.80
E1	1.20	1.60
L	0.15	--
X	0.80	
X1	0.95	
Y	1.00	
Y1	1.00	
Y2	3.00