

NPN Transistor

225mW SOT-23 AEC-Q101

MMBT4401-A

MERITEK

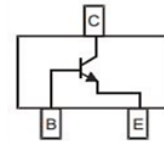
FEATURE

- Collector-Emitter Voltage $V_{CE}=40V$
- Collector Current $I_C=600mA$
- Silicon Planar Design for High Voltage Application
- Application: Signal Processing, Switching, Amplification
- AEC-Q101 Qualified



MECHANICAL DATA

- Case: SOT-23, molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026

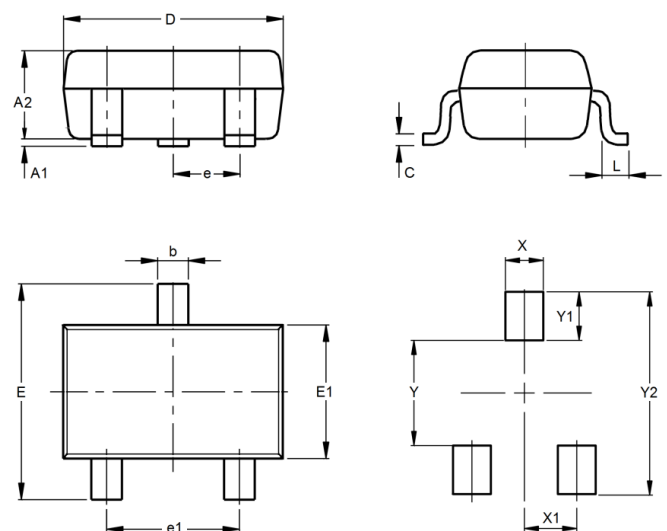


MAXIMUM RATING

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	600	mA
Total Power Dissipation	P_{tot}	225	mW
Typical Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}C/W$
Junction Temperature and Storage Temperature Range	T_J, T_{stg}	-55 ~ +150	$^{\circ}C$

DIMENSIONS

SOT-23	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.80	1.10
b	0.35	0.50
c	0.08	0.20
D	2.80	3.04
e	0.90	1.00
e1	1.80	2.00
E	2.20	2.60
E1	1.20	1.40
L	0.15	--
X	0.80	
X1	0.95	
Y	1.10	
Y1	0.90	
Y2	2.90	



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ELECTRICAL CHARACTERISTICS

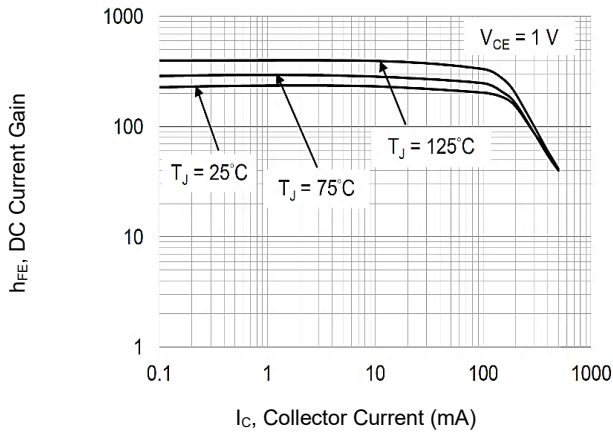
Parameter- ON Characteristic	Conditions	Symbol	Min.	Max.	Unit
DC Current Gain	$V_{CE}=1.0V, I_C=0.1mA$	h_{FE}	20	-	-
	$V_{CE}=1.0V, I_C=1.0mA$		40	-	
	$V_{CE}=1.0V, I_C=10mA$		80	-	
	$V_{CE}=1.0V, I_C=150mA$		100	300	
	$V_{CE}=2.0V, I_C=500mA$		40	-	
Collector-Emitter Saturation Voltage	$I_C=150mA, I_B=15mA$	$V_{CE(SAT)}$	-	0.40	V
	$I_C=500mA, I_B=50mA$		-	0.75	V
Base-Emitter Saturation Voltage	$I_C=150mA, I_B=15mA$	$V_{BE(SAT)}$	0.75	0.95	V
	$I_C=500mA, I_B=50mA$		-	1.20	V
Parameter- OFF Characteristics	Conditions	Symbol	Min.	Max.	Unit
Collector-Base Breakdown Voltage	$I_C=100\mu A, I_E=0$	$V_{(BR)CBO}$	60	-	V
Collector-Emitter Breakdown Voltage	$I_C=1.0mA, I_B=0$	$V_{(BR)CEO}$	40	-	V
Emitter-Base Breakdown Voltage	$I_E=100\mu A, I_C=0$	$V_{(BR)EBO}$	6	-	V
Base Cut-Off Current	$V_{CE}=35V, V_{EB}=0.4V$	I_{BL}	-	100	nA
Collector Cut-Off Current	$V_{EB}=5V$	I_{CEX}	-	100	nA
Collector-Base Capacitance	$V_{CB}=5.0V, I_E=0, f=1MHz$	C_{CBO}	-	6.5	pF
Emitter-Base Capacitance	$V_{CB}=0.5V, I_C=0, f=1MHz$	C_{EBO}	-	30	pF
Delay Time	$V_{CC}=30V, I_C=150mA, I_{B1}=15mA, V_{BE}=2V$	t_d	-	15	nS
Rise Time		t_r	-	20	nS
Storage Time	$V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA$	t_s	-	225	nS
Fall Time		t_f	-	30	nS
Parameter-Small Signal	Conditions	Symbol	Min.	Max.	Unit
Current-Gain – Bandwidth Product	$I_C=20mA, V_{CE}=10V, f=100MHz$	f_T	250	-	MHz

Note:

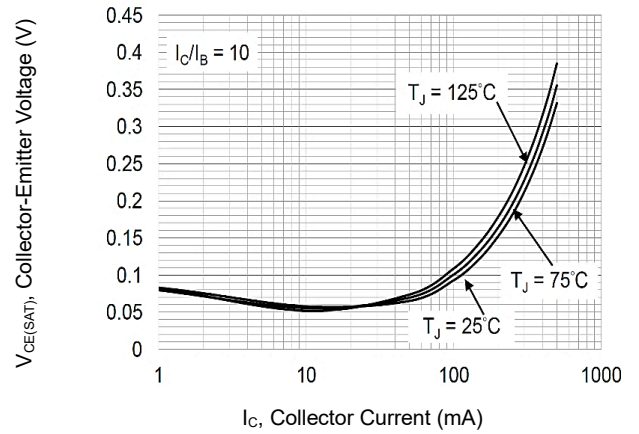
1. $T_A=25^\circ C$ unless otherwise noted.
2. Device on FR-5 = 1.0 x 0.75 x 0.062 in.

CHARACTERISTIC CURVES

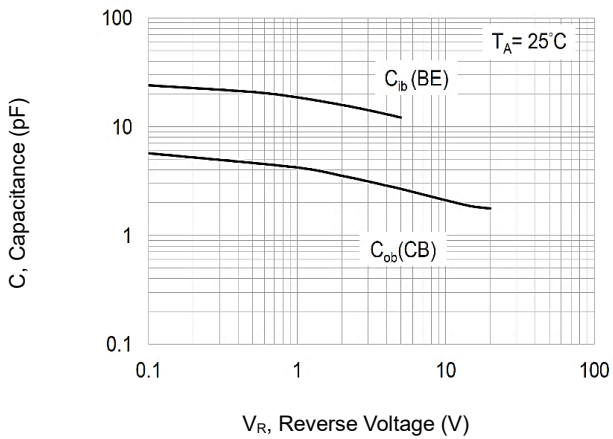
DC Current Gain



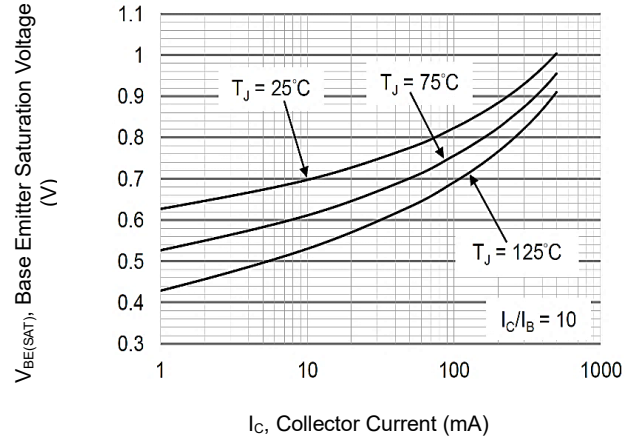
Collector Emitter Saturation Voltage



Capacitance



Base Emitter Saturation Voltage



Base Emitter on Voltage

