

NPN Transistor

40V 0.3W SOT-23 AEC-Q101

MMBT4401-A

MERITEK

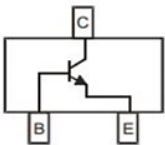
FEATURE

- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching
- AEC-Q101 Compliance
- Application: Signal Processing, Switching, Amplification



MECHANICAL DATA

- Case: SOT-23, Molded Epoxy Meets UL94V-0
- Terminals: Solderable per MIL-STD-750, Method 2026

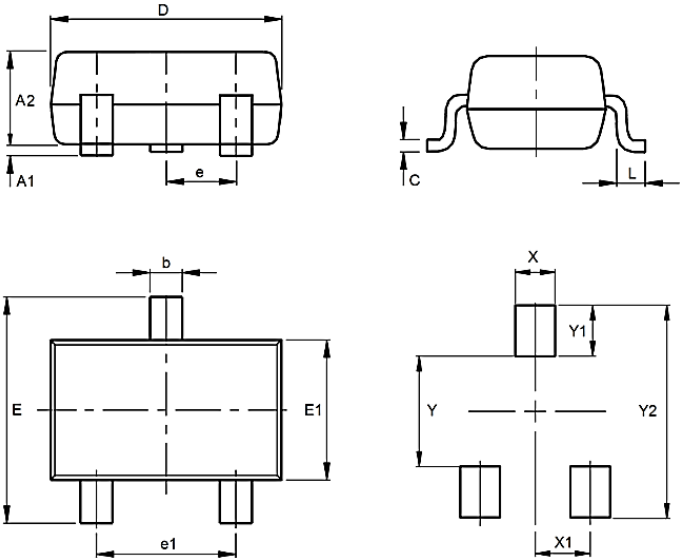


MAXIMUM RATING

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	600	mA
Total Power Dissipation	P_{tot}	300	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	°C/ W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{stg}	-55 ~+150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.20
D	2.80	3.00
e	0.95 TYP	
e1	1.80	2.00
E	2.25	2.55
E1	1.20	1.40
L	0.30	0.50
X	0.80	
X1	0.95	
Y	1.40	
Y1	1.00	
Y2	3.40	



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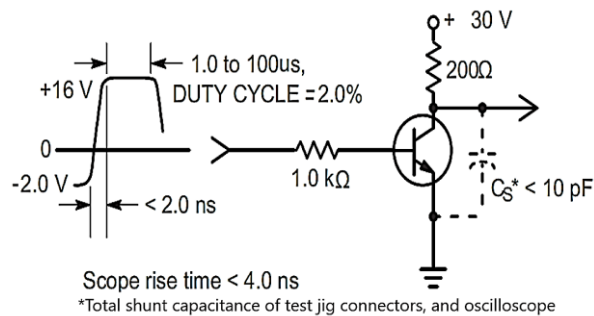
ELECTRICAL CHARACTERISTICS

Parameter- ON Characteristic	Conditions	Symbol	Min.	Max.	Unit
DC Current Gain	$V_{CE} = 1V, I_C = 0.1mA$	h_{FE}	20	-	-
	$V_{CE} = 1V, I_C = 1mA$		40	-	
	$V_{CE} = 1V, I_C = 10mA$		80	-	
	$V_{CE} = 1V, I_C = 150mA$		100	300	
	$V_{CE} = 2V, I_C = 500mA$		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	$I_C = 150mA, I_B = 15mA$	$V_{BE(SAT)}$	-	0.95	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	$I_C = 1mA, I_B = 0$	$V_{(BR)CEO}$	40	-	V
Emitter-Base Breakdown Voltage	$I_E = 100\mu A, I_C = 0$	$V_{(BR)EBO}$	6	-	V
Collector-Base Cut-Off Current	$V_{CB} = 50V, I_E = 0$	I_{CBO}	-	0.1	μA
Collector Cut-Off Current	$V_{CE} = 35V, V_{EB} = 0.4V$	I_{CEX}	-	0.1	μA
Emitter-Base Cut-Off Current	$V_{EB} = 5V, I_C = 0$	I_{EBO}	-	0.1	μA
Delay Time	$V_{CC} = 30V, I_C = 150mA, V_{BE(Off)} = -2V, I_{B1} = 15mA$	T_d	-	15	nS
Rise Time		T_r	-	20	
Storage Time		T_s	-	225	
Fall Time		T_f	-	60	
Parameter-Small Signal	Conditions	Symbol	Min.	Max.	Unit
Current-Gain – Bandwidth Product	$I_C = 20mA, V_{CE} = 10V, f = 100MHz$	f_T	250	-	MHz

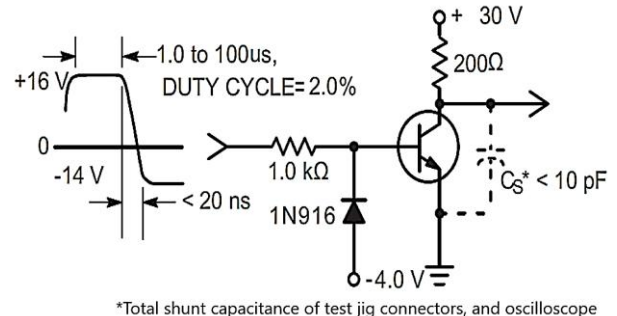
Note:

1. $T_A = 25^\circ C$ unless otherwise noted.

Turn-On Time

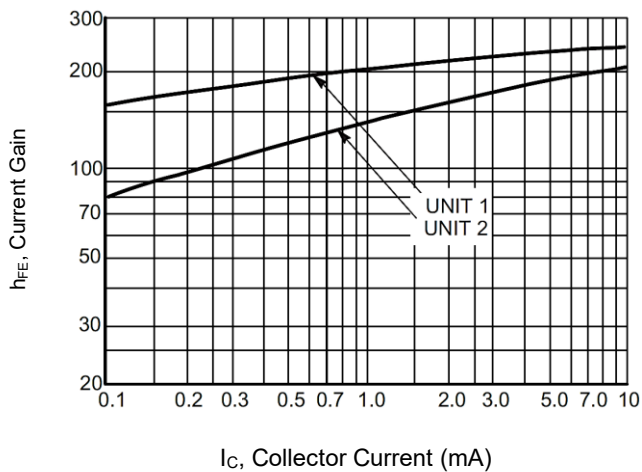


Turn-Off Time

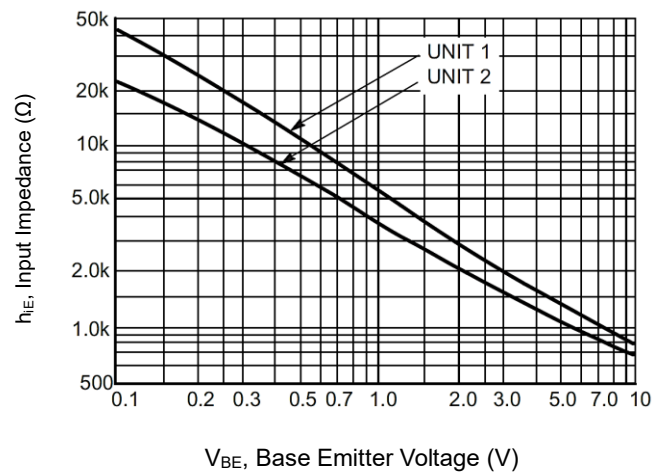


CHARACTERISTIC CURVES

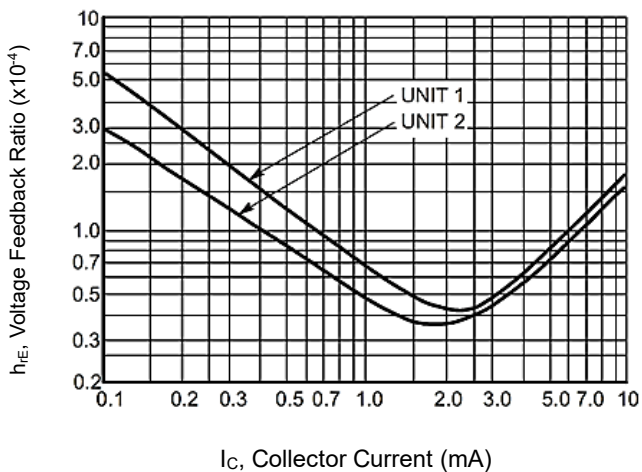
Current Gain



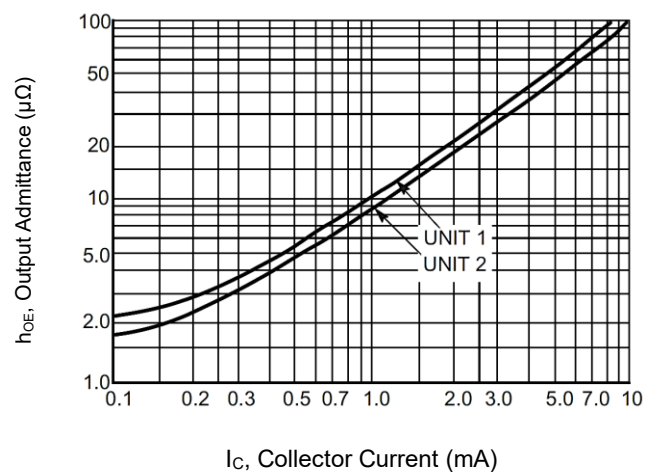
Input Impedance



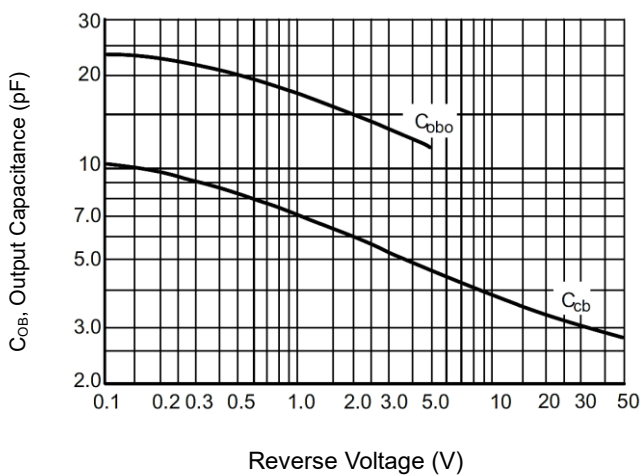
Voltage Feedback Ratio



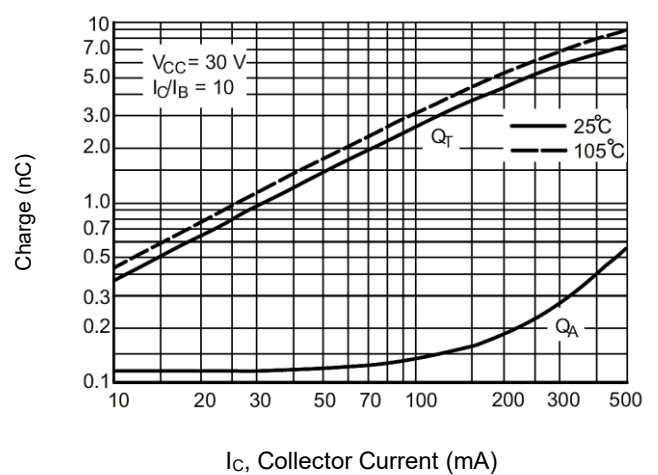
Output Admittance



Capacitance

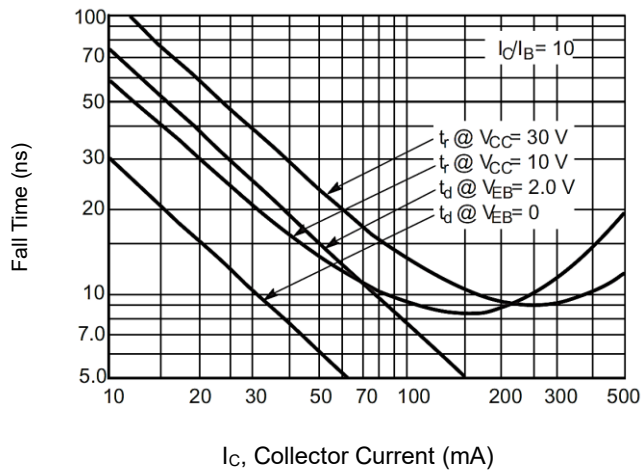


Charge

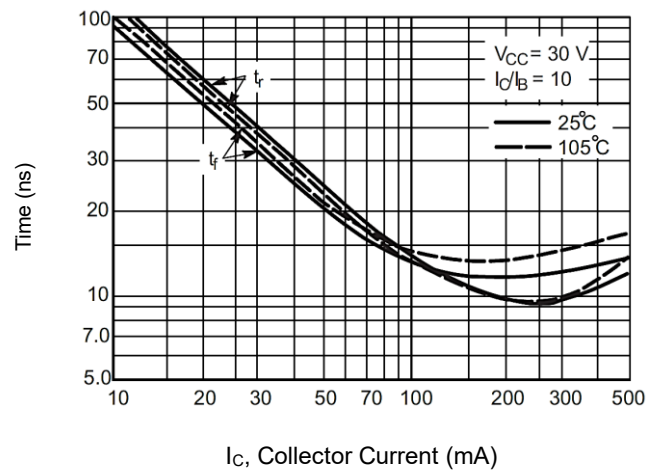


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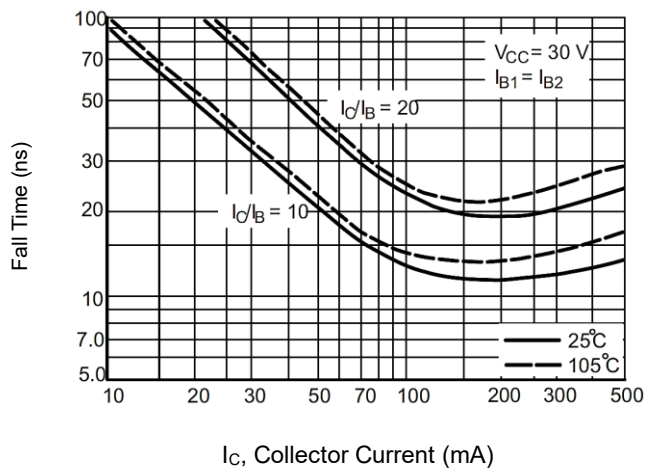
Turn-On Time



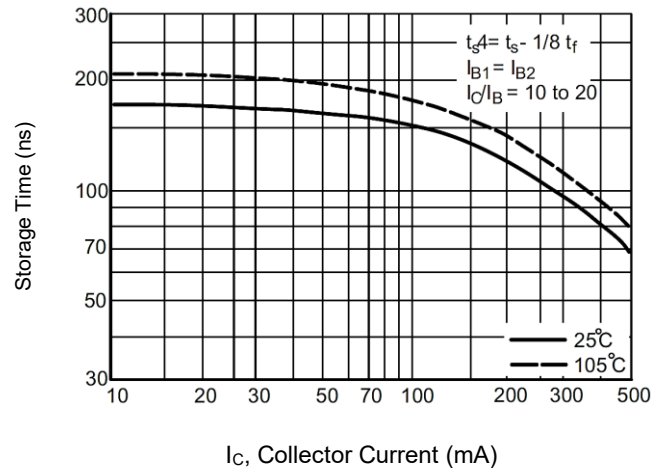
Rise and Fall Times



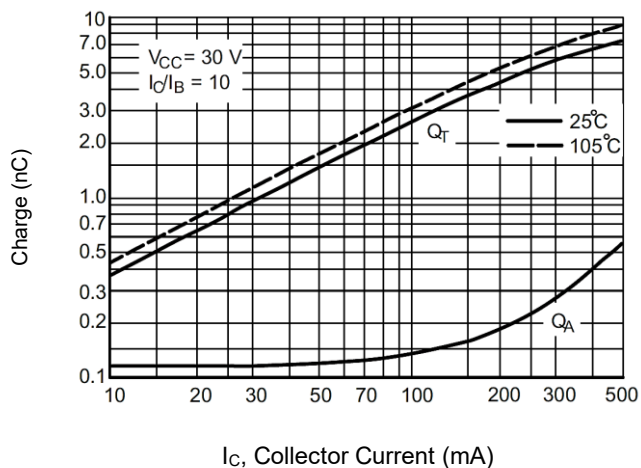
Fall Times



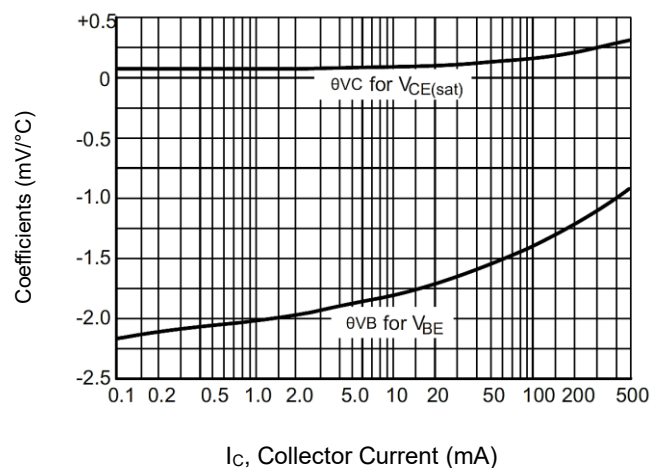
Storage Time



Charge

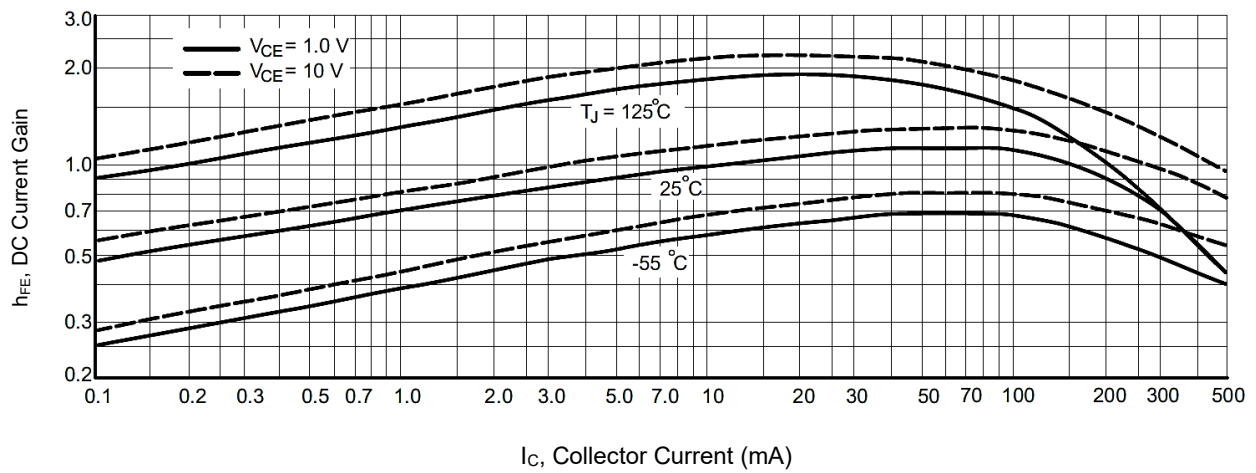


Temperature Coefficients



CHARACTERISTIC CURVES

DC Current Gain



Collector Saturation Region

