

NPN Transistor

60V 0.6A 300mW SOT-23

MMBT4401

MERITEK

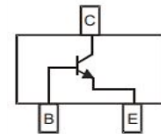
FEATURE

- Operating and Storage temperature: -55~+150°C
- Collector current: 600mA



MECHANICAL DATA

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



MAXIMUM RATING (TA=25°C unless otherwise noted)

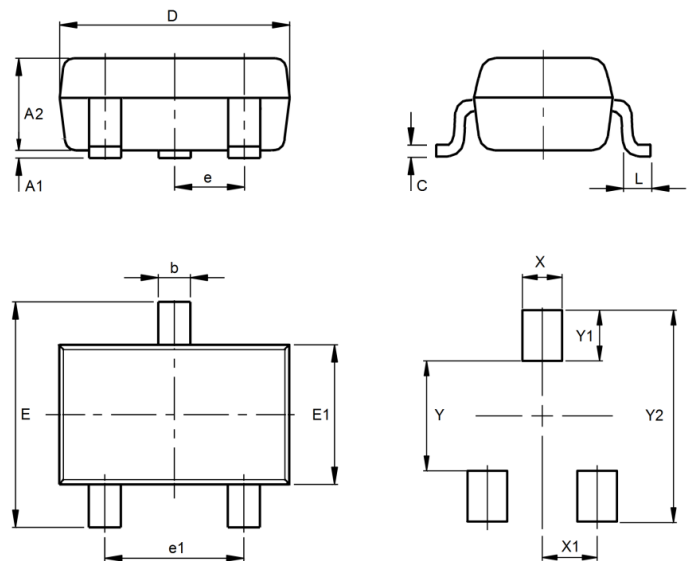
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	600	mA
Power Dissipation	P_D	300	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	°C

Note:

1. Device on FR-5 = 1.0 x 0.75 x 0.062 in.

DIMENSIONS AND RECOMMENDED LAND PATTERN

Item	Min (mm)	Max (mm)
A1	-	0.10
A2	0.89	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	-	
Y1	0.80	
Y2	-	



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ELECTRICAL CHARACTERISTICS (TA=25 °C unless otherwise noted)

Parameter	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} = 1.0V, I _C = 500mA		40	-	
Collector Base Cut-Off Current	V _{CB} = 35V	I _{CBO}	-	100	nA
Emitter Base Cut-Off Current	V _{EB} = 5V	I _{EBO}	-	100	nA
Collector-Base Breakdown Voltage	I _C = 100μA	V _{(BR)CBO}	60	-	V
Collector-Emitter Breakdown Voltage	I _C = 1.0mA	V _{(BR)CEO}	40	-	V
Emitter-Base Breakdown Voltage	I _E = 100μA	V _{(BR)EBO}	6.0	-	V
Collector-Emitter Saturation Voltage	I _C = 150mA, I _B = 15mA	V _{CE(sat)}	-	0.40	V
	I _C = 500mA, I _B = 50mA			0.75	
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	
Current-Gain — Bandwidth Product	V _{CE} = 10V, I _C = 20mA, f = 100 MHz	f _T	250	-	MHz
Output Capacitance	V _{CB} = 5.0V, f = 1.0 MHz	C _{obo}	-	6.5	pF
Delay Time	V _{CC} = 30V, V _{BE} = 2.0V	t _d	-	15	nS
Rise Time	I _C = 150mA, I _{B1} = 15mA	t _r	-	20	nS
Storage Time	V _{CC} = 30V, I _C = 150mA	t _s	-	225	nS
Fall Time	I _{B1} = I _{B2} = 15mA	t _f	-	30	nS

CHARACTERISTIC CURVES

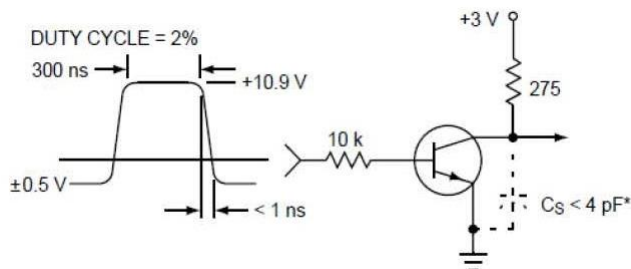


Fig1: Delay and Rise Time Equivalent Test Circuit

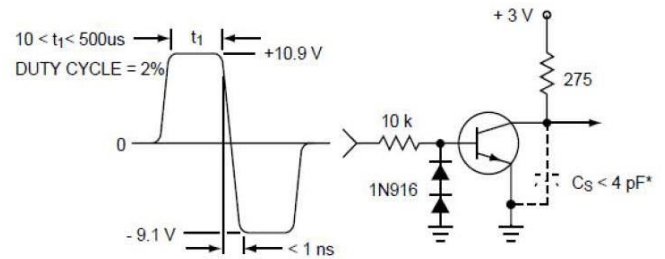


Fig2: Storage and Fall Time Equivalent Test Circuit

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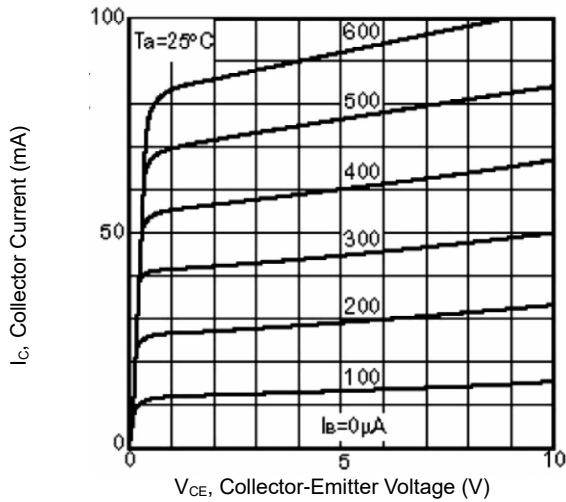
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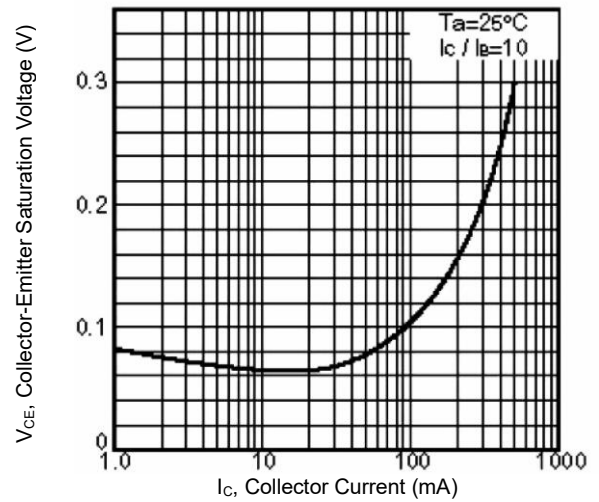
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CHARACTERISTIC CURVES

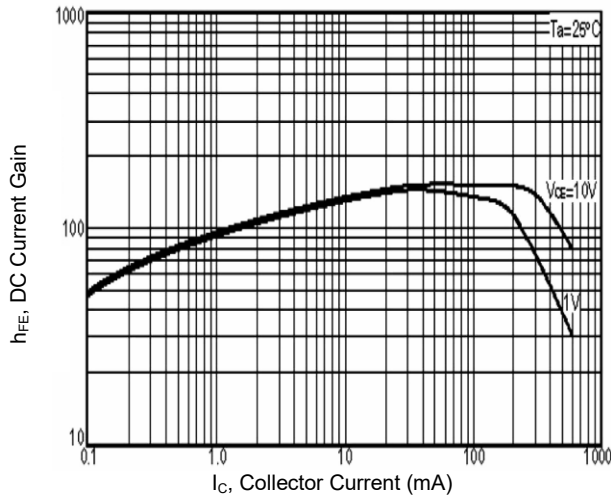
Collector-Emitter Voltage vs. Collector Current



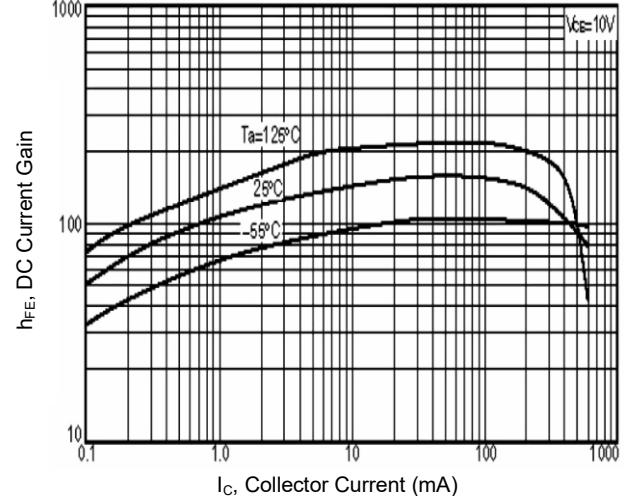
Collector Current vs. $V_{CE(Sat)}$ Voltage



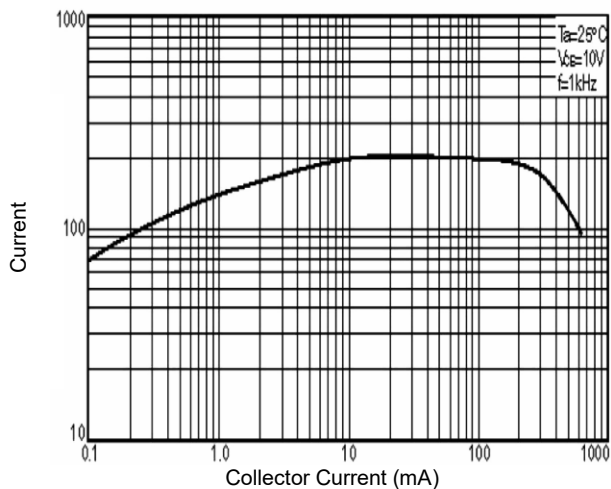
Collector Current vs DC Current Gain (I)



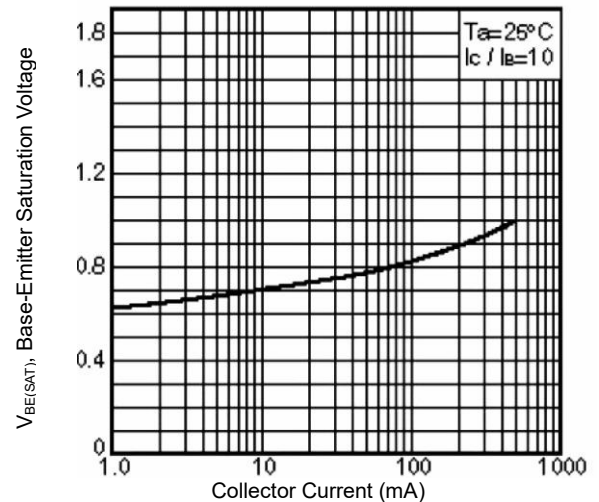
Collector Current vs DC Current Gain (II)



Collector Current vs AC Current Gain



Collector Current vs $V_{BE(SAT)}$ Voltage



*Specifications subject to change without notice