MMBT4403

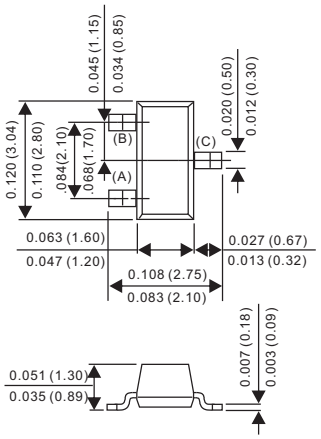
600mA Silicon PNP Epitaxial Planar Transistor

Features

- Epitaxial plana chip construction
- Ideal for medium power application and switching
- Capable of 225mW power dissipation.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Compliant to Halogen-free

Package outline

SOT-23



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

Maximum ratings (AT T_A=25℃ unless otherwise noted)

Parameters	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter -Base Voltage	V_{EBO}	-5	V
Collector Current-Continuous	I_C	-600	mA
Collector Power Dissipation	P_C	300	mW
Junction Temperature	T_j	150	℃
Storage Temperature	Tstg	-55-+150	℃
Thermal resistance From junction to ambient	$R_{\theta JA}$	417	℃/W

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Characteristics (AT T_A=25°C unless otherwise noted)

Parameters	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = -100uA, I_E = 0	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = -1 mA, I_B = 0	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = -100uA, I_C = 0	-5			V
Collector cut-off current	I_{CBO}	V_{CB} = -35V, I_E = 0			-0.1	uA
Collector cut-off current	I_{CEX}	V_{CE} = -35V, V_{EB} =0.4V			-0.1	uA
Emitter cut-off current	I_{EBO}	V_{EB} = -4V, I_C =0			-0.1	uA
DC current gain	h_{FE1}	V_{CE} = -1V, I_C=-0.1mA	30			
	h_{FE2}	V_{CE} = -1V, I_C=-1mA	60			
	h_{FE3}	V_{CE} = -1V, I_C=-10mA	100			
	h_{FE4}	V_{CE} = -2V, I_C = -150mA	100		300	
	h_{FE5}	V_{CE} = -2V, I_C = -500mA	20			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = -150mA, I_B = -15mA			-0.4	V
		I_C = -500mA, I_B = -50mA			-0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = -150mA, I_B = -15mA			-0.95	V
		I_C = -500mA, I_B = -50mA			-1.3	V
Transition frequency	f_T	V_{CE} = -10V, I_C = -20mA, f=100MHz	200			MHz
Delay time	t_d	V_{CC}=-30V,$V_{BE(off)}$=-0.5V I_C=-150mA,I_{B1}=-15mA			15	ns
Rise time	t_r				20	ns
Storage time	t_s	V_{CC} = -30V, I_C = -150mA I_{B1}=I_{B2}=-15mA			225	ns
Fall time	t_f				60	ns

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Switching time equivalent test circuits

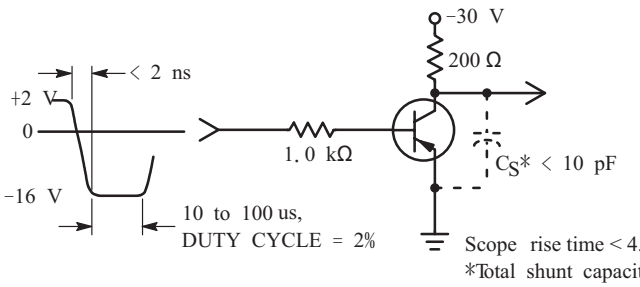

Figure 1. Turn-On Time

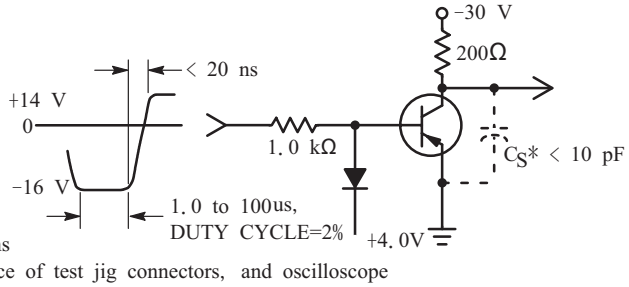

Figure 2. Turn-Off Time

Scope rise time < 4.0 ns
*Total shunt capacitance of test jig connectors, and oscilloscope

TRANSIENTCHARACTERISTICS

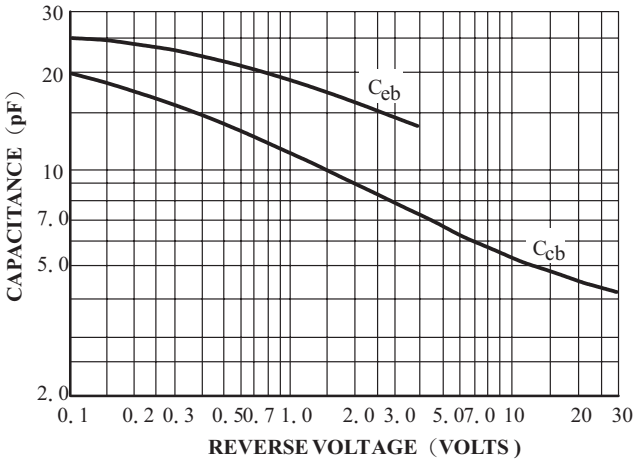

Figure 3. Capacitances

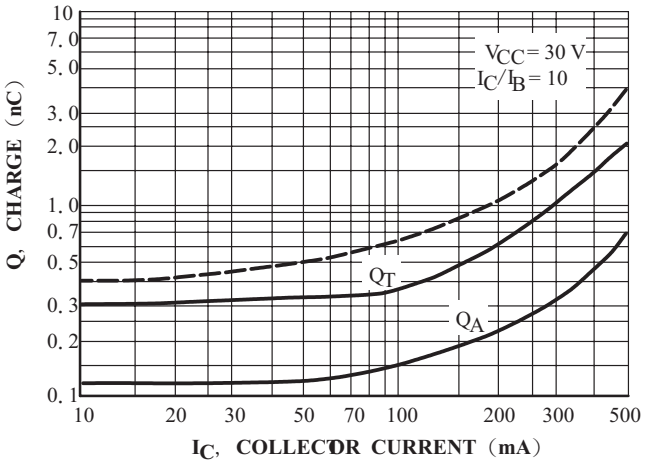

Figure 4. Charge Data

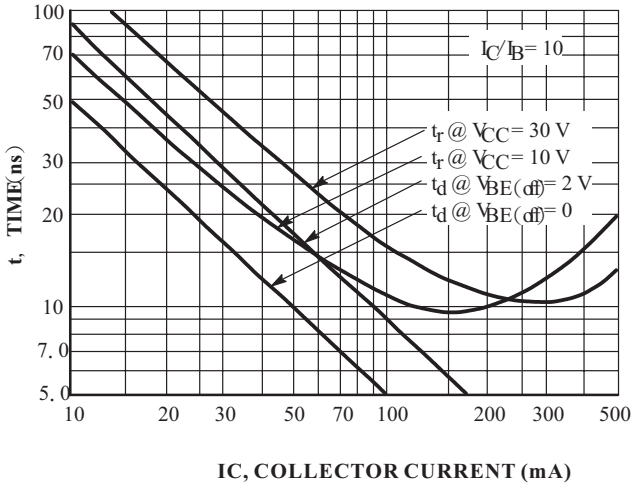

Figure 5. Turn-On Time

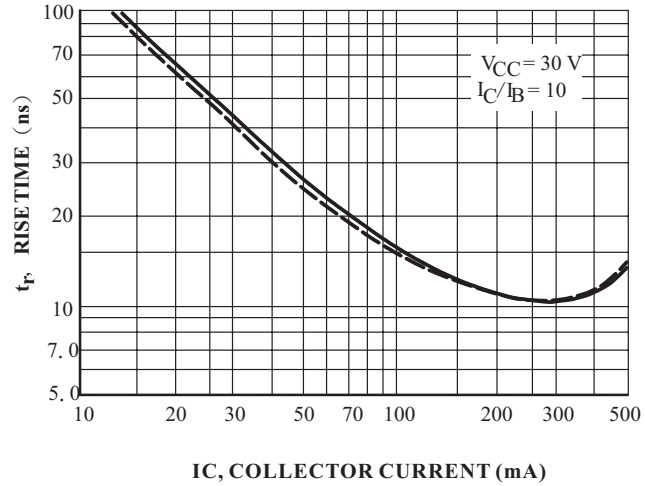

Figure 6. Rise Time

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Rating and characteristic curves

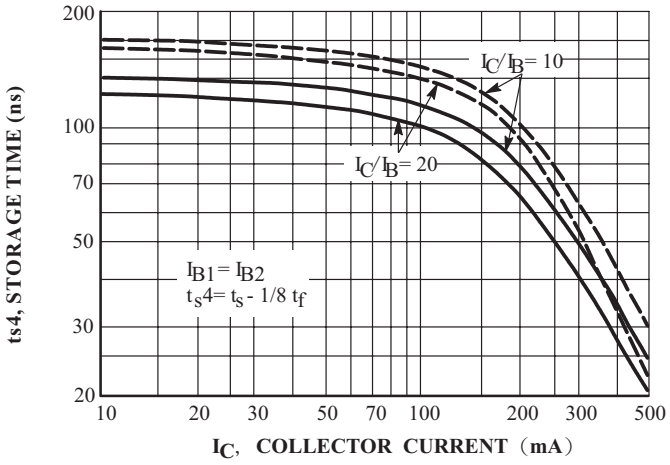

Figure 7. Storage Time

h PARAMETERS
VCE = ±10 Vdc, f = 1.0 kHz, TA = 25°C
This group of graphs illustrates the relationship between hfe and other h parameters for this series of transistors. To obtain these curves, a high±gain and a low±gain unit were selected from the FMBT4403 lines, and the same units were used to develop the correspondingly±numbered curves on each graph.

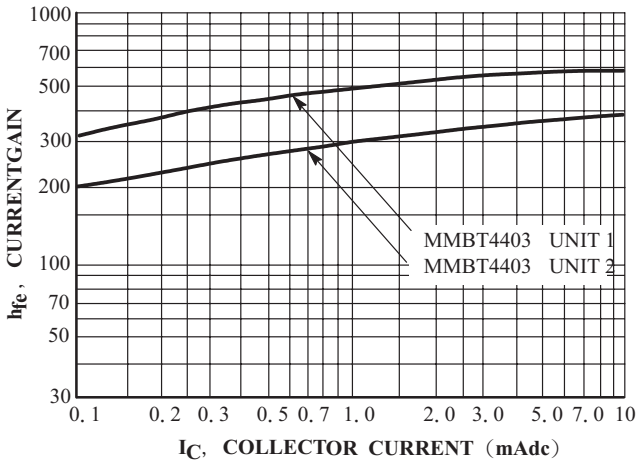

Figure 8. Current Gain

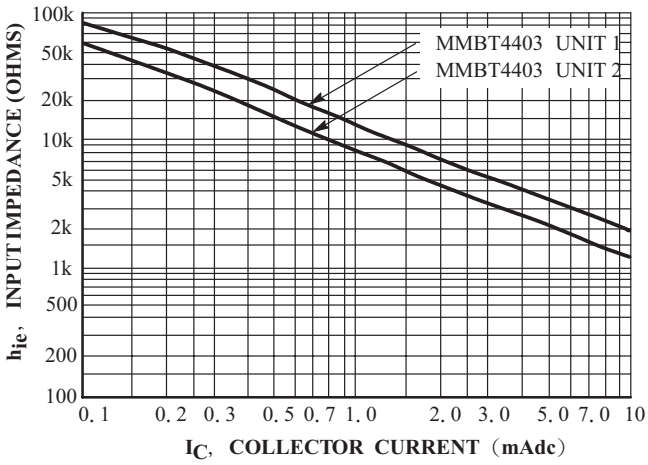

Figure 9 . Input Impedance

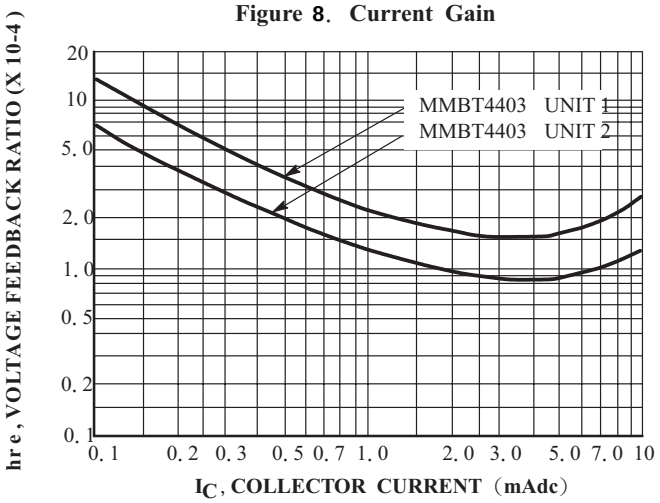

Figure 10. Voltage Feedback Ratio

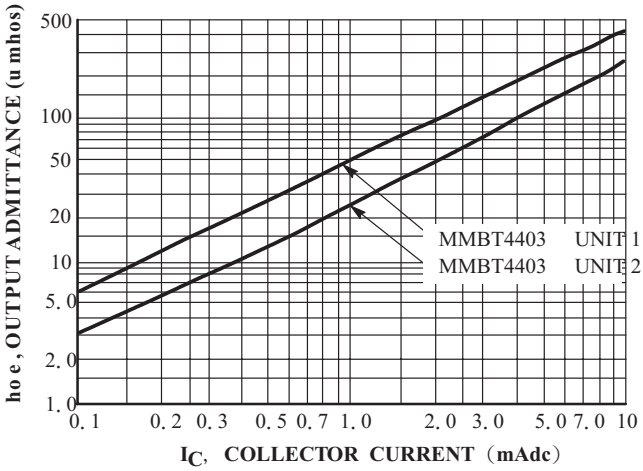

Figure 11. Output Admittance

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Rating and characteristic curves

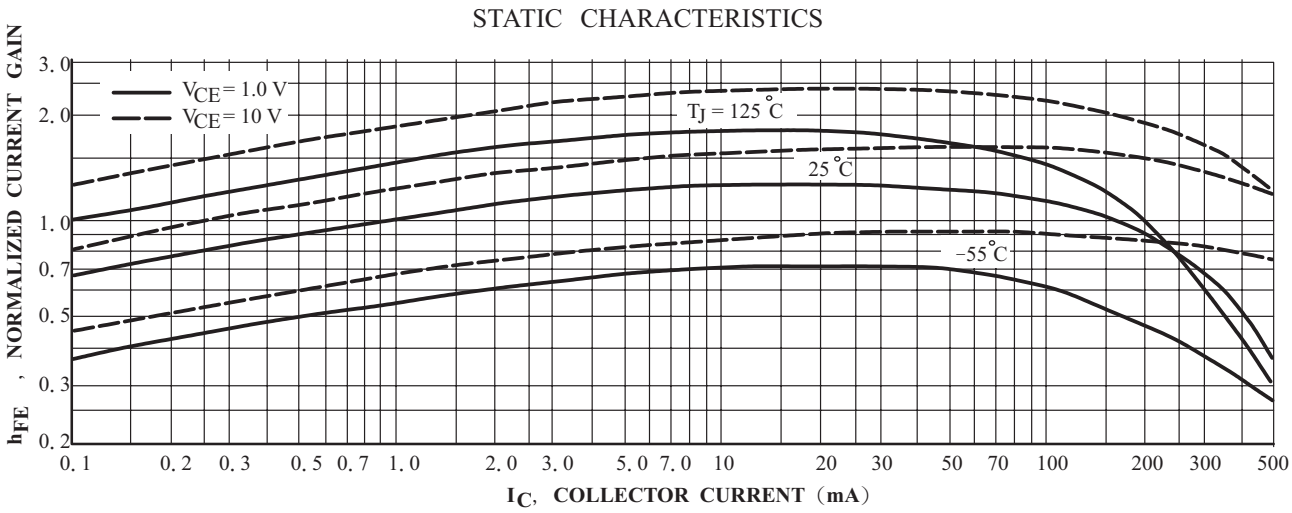

Figure 12. DC Current Gain

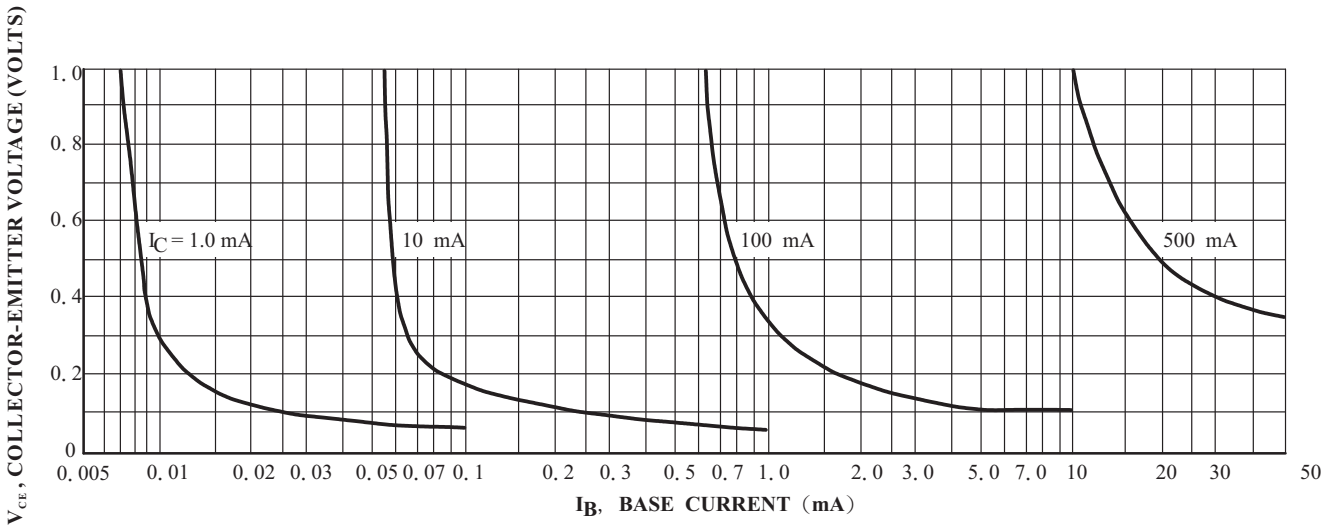

Figure 13. Collector Saturation Region

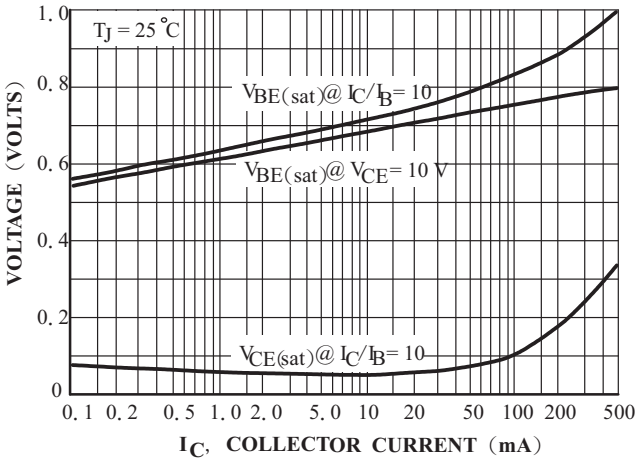

Figure 14. "On" Voltages

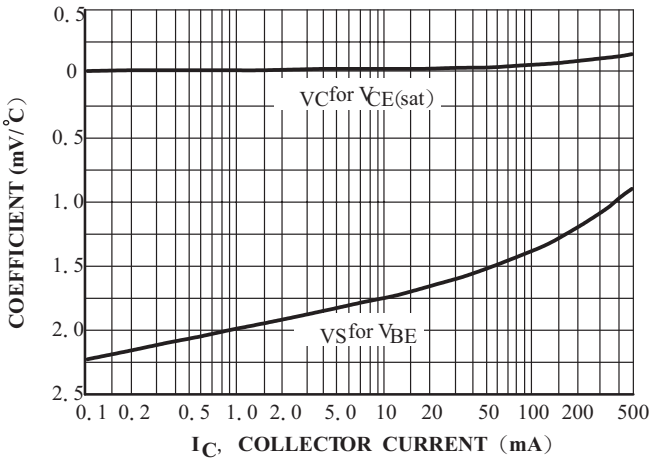

Figure 15. Temperature Coefficients

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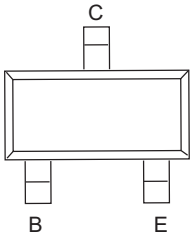
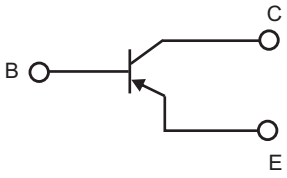
Pinning information

Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
MMBT4403	2T

Suggested solder pad layout

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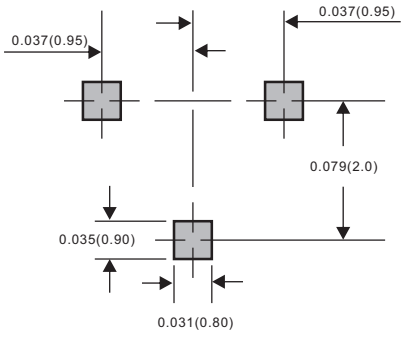

Dimensions in inches and (millimeters)