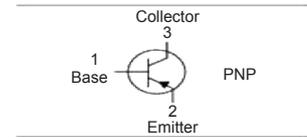


# PNP Silicon Epitaxial Planar Transistor



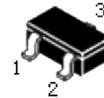
## Features:

- Complementary NPN type available (MMST4401).
- Epitaxial planar die construction.
- Also available in lead free version.



## Applications:

- General purpose application and switching application.



SOT-323

**Maximum Rating** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Value	Units
Collector-Base Voltage	$V_{CB0}$	-40	V
Collector-Emitter Voltage	$V_{CE0}$		
Emitter-Base Voltage	$V_{EB0}$		
Collector Current -Continuous	$I_C$	600	mA
Collector Dissipation	$P_C$	200	mW
Thermal resistance ,Junction to ambient	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_j, T_{stg}$	-55 to 150	$^\circ\text{C}$

**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -100\mu\text{A}, I_E = 0$	-40		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}, I_B = 0$	-40		
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -100\mu\text{A}, I_C = 0$	-5		
Collector cut-off current	$I_{CEX}$	$V_{CE} = -35\text{V}, V_{EB(OFF)} = -0.4\text{V}$		-0.1	$\mu\text{A}$
Base cut-off current	$I_{BL}$	$V_{CE} = -35\text{V}, V_{EB(OFF)} = -0.4\text{V}$			
DC current gain	$h_{FE}$	$V_{CE} = -1\text{V}, I_C = -0.1\text{mA}$	30	300	
		$V_{CE} = -1\text{V}, I_C = -1\text{mA}$	60		
		$V_{CE} = -1\text{V}, I_C = -10\text{mA}$	100		
		$V_{CE} = -2\text{V}, I_C = -150\text{mA}$	100		
		$V_{CE} = -2\text{V}, I_C = 500\text{mA}$	20		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -150\text{mA}, I_B = -15\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$		-0.4 -0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -150\text{mA}, I_B = -15\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$		-0.95 -1.3	V



# PNP Silicon Epitaxial Planar Transistor



Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Transition frequency	$f_T$	$V_{CE} = -10V, I_C = -1mA, f = 1kHz$	200		MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10V, I_E = 0, f = 1MHz$		8.5	pF
Delay time	$t_d$	$V_{CC} = -30V, V_{BE(off)} = -2V, I_C = -150mA, I_{B1} = -15mA$		15	nS
Rise time	$t_r$		20		
Storage time	$t_s$	$V_{CC} = -30V, I_C = -150mA, I_{B1} = I_{B2} = -15mA$		225	
Fall time	$t_f$		30		

## Typical Characteristics @ $T_A = 25^\circ C$ unless otherwise specified

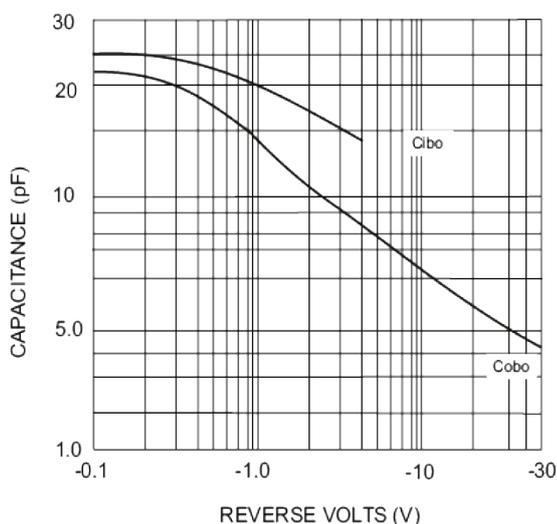


Fig. 1 Typical Capacitance

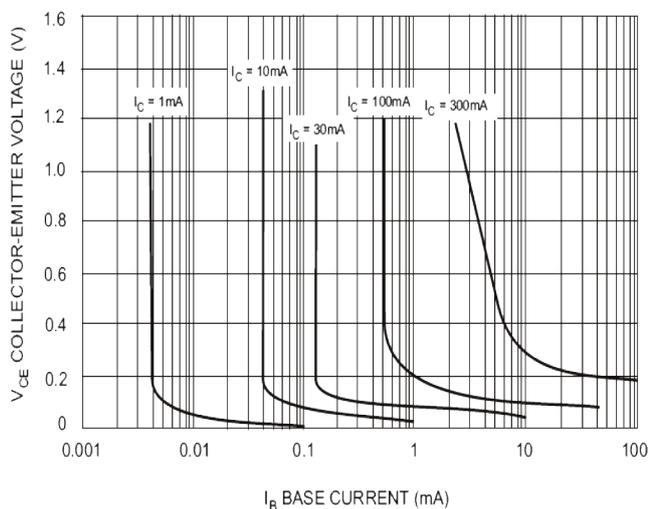


Fig. 2 Typical Collector Saturation Region

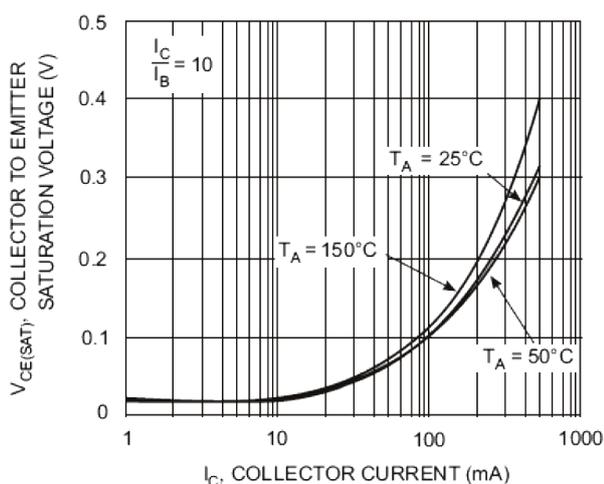


Fig. 3 Collector Emitter Saturation Voltage vs. Collector Current

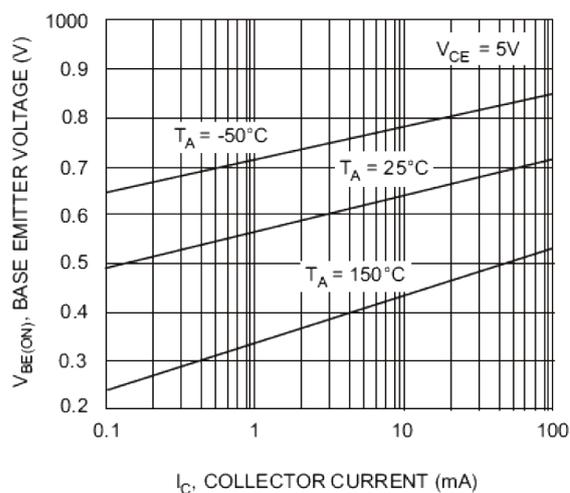


Fig. 4 Base-Emitter Voltage vs. Collector Current



# PNP Silicon Epitaxial Planar Transistor

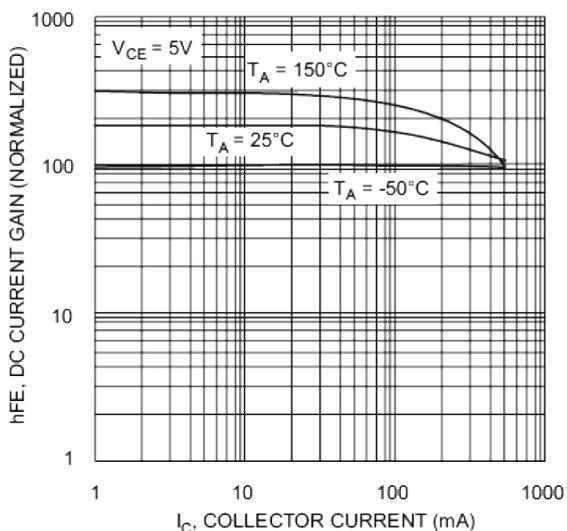


Fig. 5 DC Current Gain vs. Collector Current

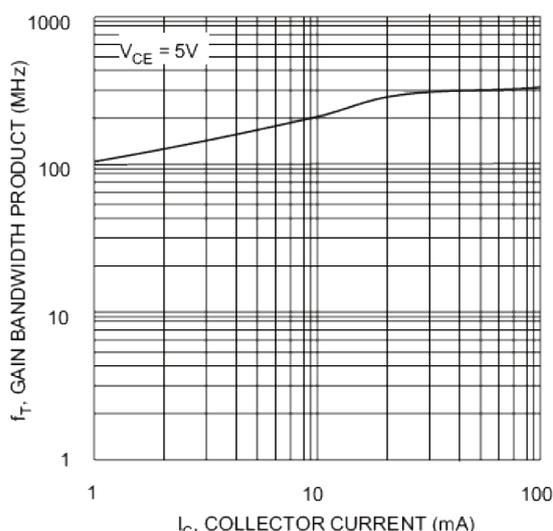
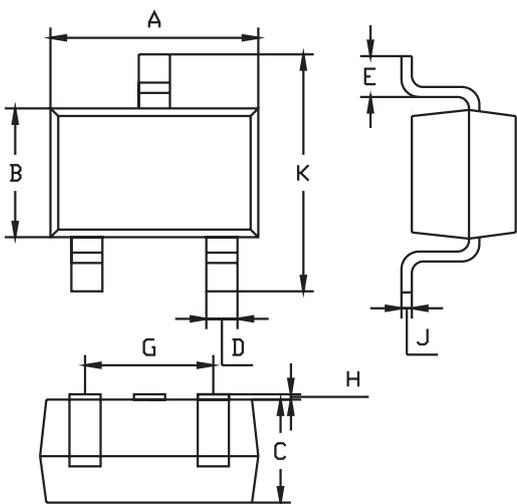


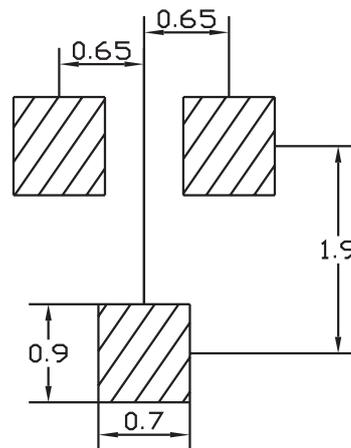
Fig. 6 Gain Bandwidth Product vs. Collector Current

## Package Outline



SOT-323		
Dim	Min	Max
A	1.8	2.2
B	1.15	1.35
C	1 Typical	
D	0.15	0.35
E	0.25	0.40
G	1.2	1.4
H	0.02	0.1
J	0.1 Typical	
K	2.1	2.3
All Dimensions in mm		

## Soldering Footprint



Dimensions : Millimetres

## Part Number Table

Description	Part Number
Transistor, Bipolar, PNP, -40V, -600mA, SOT-323-3	MMST4403-7-F

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