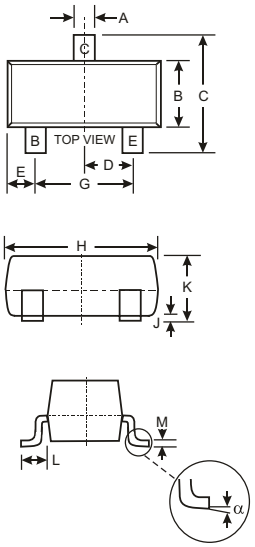
HAICHUANG SEMI

MMBT4401

NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction.
- Complementary PNP Type Available(MMBT4403).
- Ideal for Low Power Amplification and Switching.
- Marking Code:2X



SOT-23		
Dim	**Min**	**Max**
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

Maximum Ratings @ T_A = 25°C unless otherwise specified

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
Power Dissipation	P_d	300	mW
Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{Stg}	- 55 to + 150	°C

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Parameter	mbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100 μ A,I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA,I_B=0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100 μ A ,I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=50V,I_E=0			0.1	μ A
Collector cut-off current	I_{CEX}	V_{CE}=35V, V_{EB}=0.4V			0.1	μ A
Emitter cut-off current	I_{EBO}	V_{EB}=5V,I_C=0			0.1	μ A
DC current gain	h_{FE1}	V_{CE}=1V, I_C=0.1mA	20			
	h_{FE2}	V_{CE}=1V, I_C=1mA	40			
	h_{FE3}	V_{CE}=1V, I_C=10mA	80			
	h_{FE4}	V_{CE}=1V, I_C=150mA	100		300	
	h_{FE5}	V_{CE}=2V, I_C=500mA	40			
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			1.2	V
Transition frequency	f_T	V_{CE}=10V, I_C=20mA,f =100MHz	250			MHz
Delay time	t_d	V_{CC}=30V, $V_{BE(off)}$=-2V			15	ns
Rise time	t_r	I_C=150mA , I_{B1}=15mA			20	ns
Storage time	t_s	V_{CC}=30V, I_C=150mA			225	ns
Fall time	t_f	I_{B1}=I_{B2}=15mA			30	ns

TYPICAL TRANSIENT CHARACTERISTICS

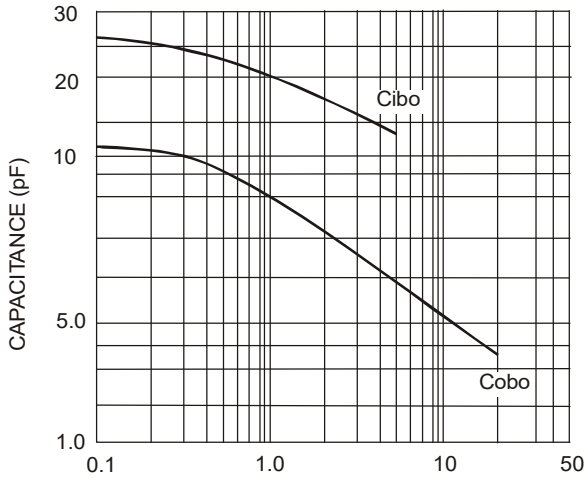


Fig. 1 Typical Capacitance

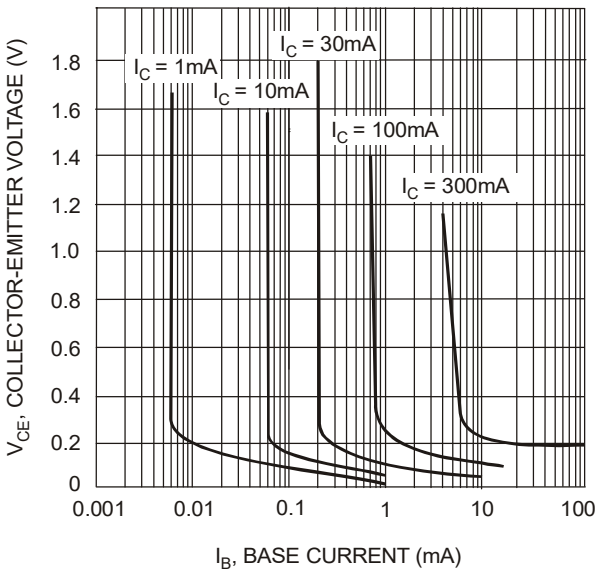


Fig. 2 Typical Collector Saturation Region

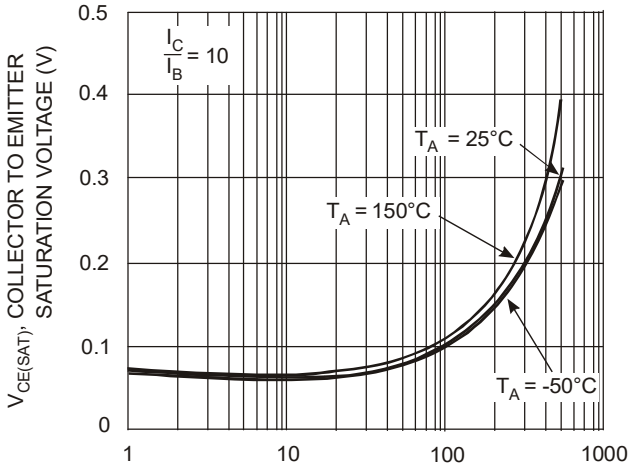


Fig. 3 Collector Emitter Saturation Voltage vs. Collector Current

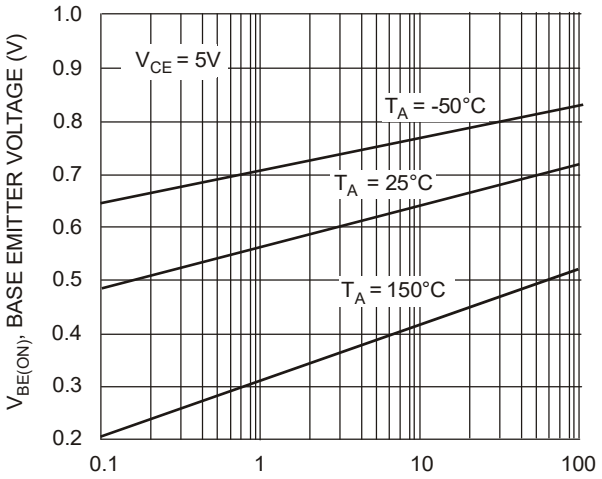


Fig. 4 Base Emitter Voltage vs. Collector Current

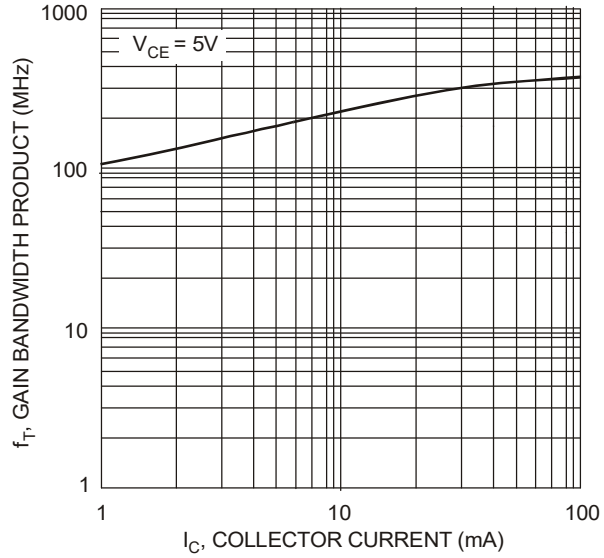


Fig. 5 Gain Bandwidth Product vs. Collector Current

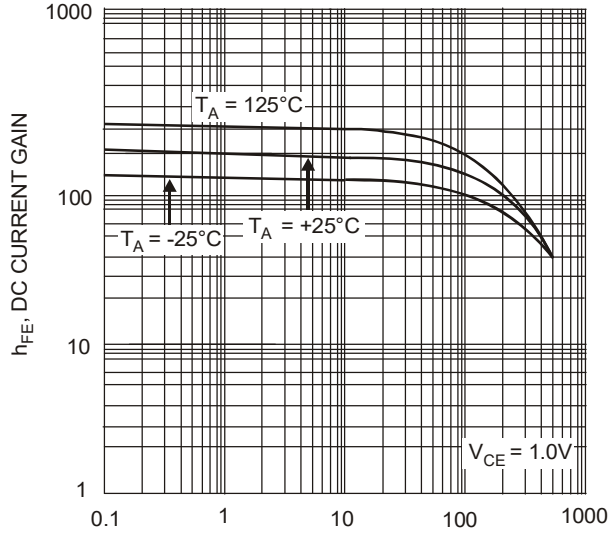


Fig. 6 Typical DC Current Gain vs Collector Current

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