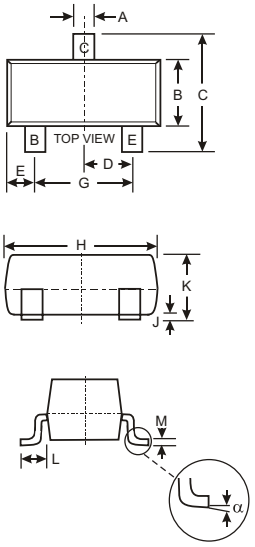
HAICHUANG SEMI

MMBT5401

PNP SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (MMBT5551)
- Ideal for Low Power Amplification and Switching
- Marking Code:2L



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

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	VCEO	-150	V
Collector-Base Voltage	VCBO	-160	V
Emitter-Base Voltage	VEBO	-5	V
Collector Current	I C	-600	mAdc

• THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board,(1) TA=25°C Derate above 25°C	PD	225 1.8	mW mW/°C
Thermal Resistance,Junction to Ambient	R ΘJA	556	°C/W
Total Device Dissipation Alumina Substrate,(2) TA=25°C Derate above 25°C	PD	300 2.4	mW mW/°C
Thermal Resistance,Junction to Ambient	RΘJA	417	°C/W
Junction and Storage Temperature	T j, Tstg	-55 to +150	°C

1. FR–5 = 1.0 x 0.75 x 0.062 in.
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage (IC =-1.0mA,IB=0)	V(BR)CEO	-150	-	-	V
Collector-Base Breakdown voltage (IC = -100μA,IE=0)	V(BR)CBO	-160 -	-	-	V
Emitter-Base Breakdown Voltage (IE = -10μA,IC=0)	V(BR)EBO	-5	-	-	V
Collector Cutoff Current (VCB = -120 V,IE=0) (VCB = -120 V,IE=0,TA=100℃)	ICBO	- -	- -	-50 -50	nA μA

ON CHARACTERISTICS

DC Current Gain (IC = –1.0mA, VCE = –5.0 V) (IC = –10 mA, VCE = –5.0 V) (IC = –50 mA, VCE = –5.0 V)	HFE	 50 100 50	 - - -	 - 300 -	
Collector-Emitter Saturation Voltage (IC = –10 mA, IB = –1.0 mA) (IC = –50 mA, IB = –5.0 mA)	VCE(S)	 - -	 - -	 -0.2 -0.5	V
Base–Emitter Saturation Voltage (IC = –10 mA, IB = –1.0 mA) (IC = –50 mA, IB = –5.0 mA)	VBE(S)	 - -	 - -	 -1 -1	V

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (IC = –10 mA, VCE = –10 V, f = 100 MHz)	fT	100	-	300	MHz
Output Capacitance (VCB = –10 V, IE = 0, f = 1.0 MHz)	Cobo	-	-	6	PF
Small–Signal Current Gain (IC = –1.0mA, VCE = –10V, f = 1.0 kHz)	hfe	40	-	200	
Noise Figure (IC =–200 μA,VCE= –5.0 V,Rs=10Ω, f=1.0 kHz)	NF	-	-	8	dB

CLASSIFICATION OF h_{FE}

Rank	L	H
Range	100-250	200-300

TYPICAL TRANSIENT CHARACTERISTICS

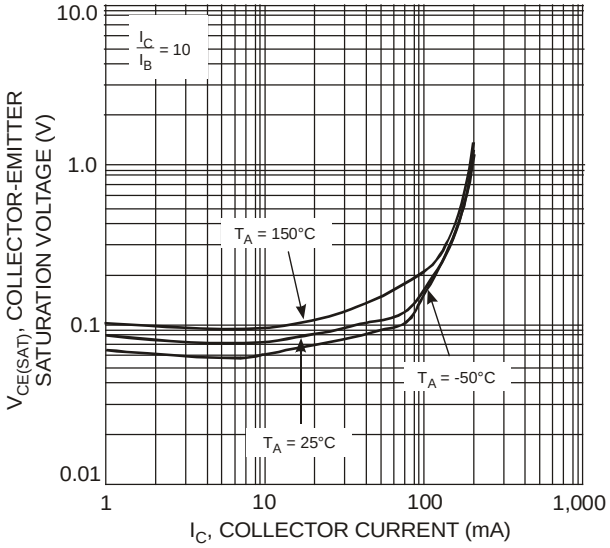


Fig. 1Typical Collector-Emitter Saturation Voltage vs. Collector Current

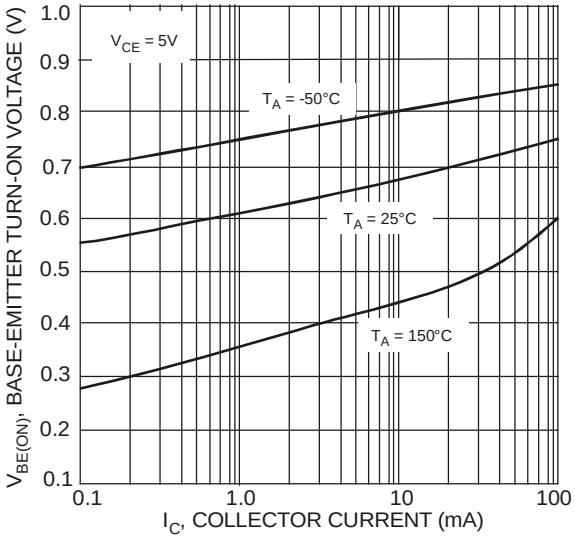


Fig. 2 Typical Base-Emitter Turn-On Voltage vs. Collector Current

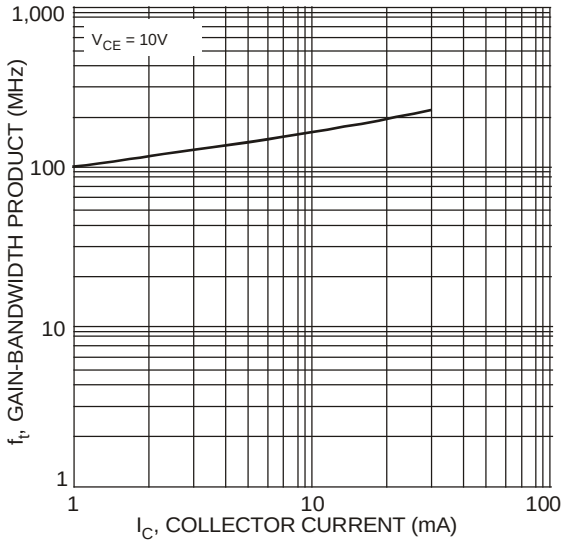


Fig. 3 Typical Gain-Bandwidth Product vs. Collector Current

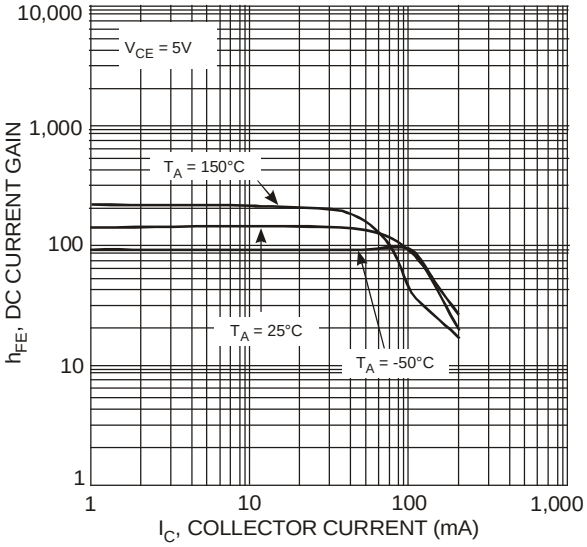


Fig. 4 Typical DC Current Gain vs. Collector Current

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