



HMBT5401

PNP EPITAXIAL PLANAR TRANSISTOR

Description

The HMBT5401 is designed for general purpose applications requiring high breakdown voltages.

Features

- High Collector-Emitter Breakdown Voltage ($BV_{CEO}=150V@I_C=1mA$)
- Complements to NPN Type HMBT5551

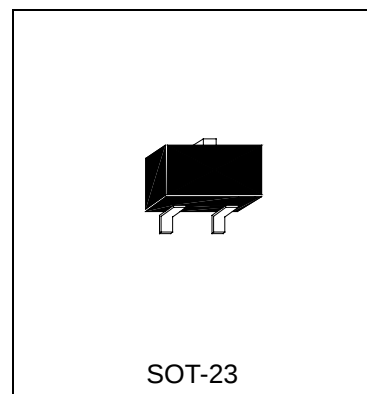
Absolute Maximum Ratings

- Maximum Temperatures
Storage Temperature -55 ~ +150 °C
Junction Temperature +150 °C Maximum
- Maximum Power Dissipation
Total Power Dissipation ($T_A=25^{\circ}C$) 225 mW
- Maximum Voltages and Currents ($T_A=25^{\circ}C$)
VCBO Collector to Base Voltage -160 V
VCEO Collector to Emitter Voltage -150 V
VEBO Emitter to Base Voltage -5 V
IC Collector Current -600 mA

Electrical Characteristics ($T_A=25^{\circ}C$)

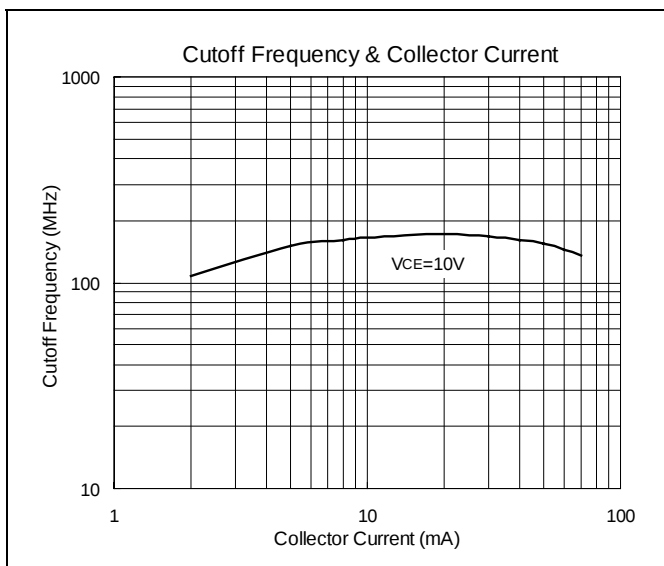
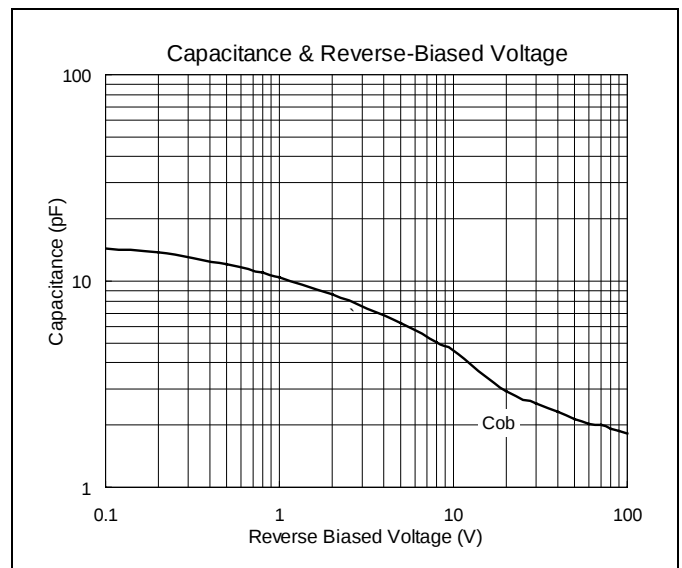
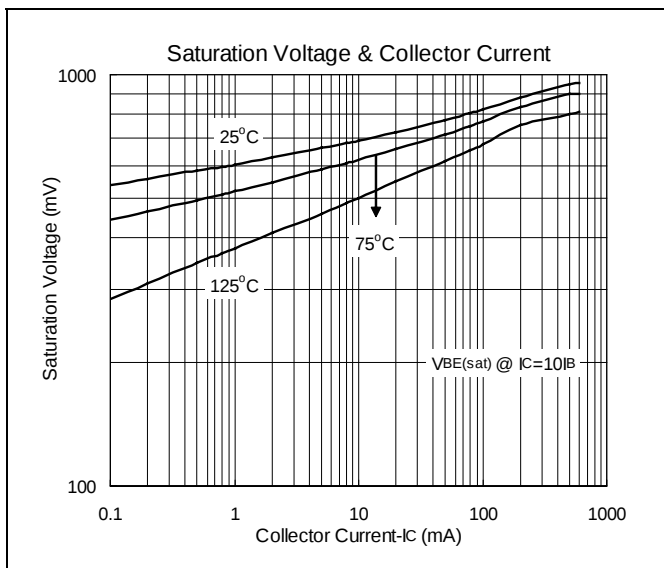
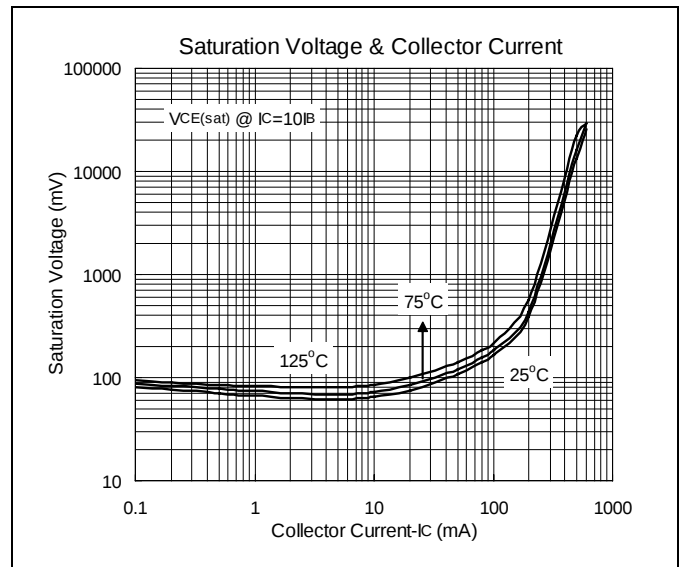
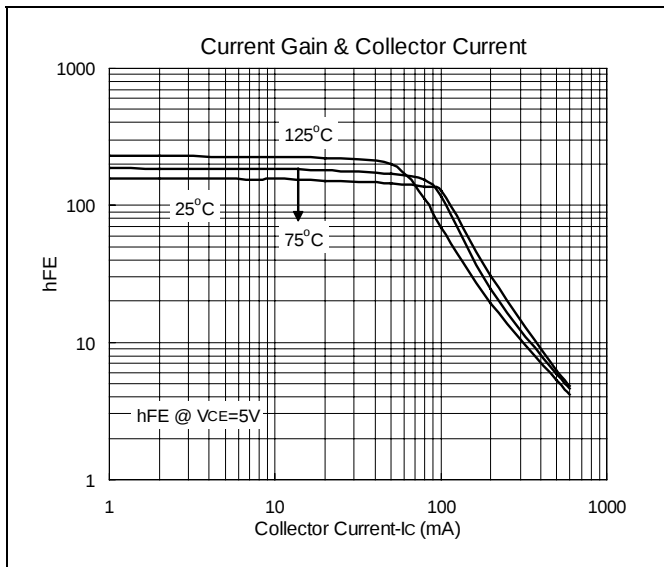
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	-160	-	-	V	$I_C=-100\mu A$
BV_{CEO}	-150	-	-	V	$I_C=-1mA$
BV_{EBO}	-5	-	-	V	$I_E=-10\mu A$
I_{CBO}	-	-	-50	nA	$V_{CB}=-120V$
$*V_{CE(sat)1}$	-	-	-200	mV	$I_C=-10mA, I_B=-1mA$
$*V_{CE(sat)2}$	-	-	-500	mV	$I_C=-50mA, I_B=-5mA$
$*V_{BE(sat)1}$	-	-	-1	V	$I_C=-10mA, I_B=-1mA$
$*V_{BE(sat)2}$	-	-	-1	V	$I_C=-50mA, I_B=-5mA$
$*h_{FE1}$	50	-	-		$V_{CE}=-5V, I_C=-1mA$
$*h_{FE2}$	60	-	240		$V_{CE}=-5V, I_C=-10mA$
$*h_{FE3}$	50	-	-		$V_{CE}=-5V, I_C=-50mA$
f_T	100	-	300	MHz	$V_{CE}=-10V, I_C=-10mA, f=100MHz$
Cob	-	-	6	pF	$V_{CB}=-10V, f=1MHz$

*Pulse Test: Pulse Width $\leq 380\mu s$, Duty Cycle $\leq 2\%$



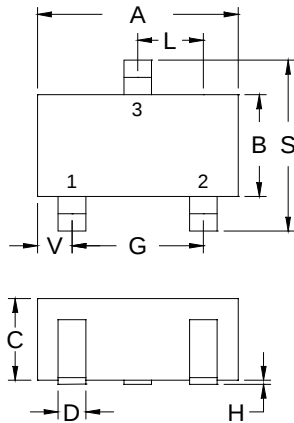


Characteristics Curve



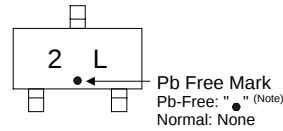


SOT-23 Dimension



3-Lead SOT-23 Plastic
Surface Mounted Package
HSMC Package Code: N

Marking:



Note: Pb-free product can distinguish by the green label or the extra description on the right side of the label.

Pin Style: 1.Base 2.Emitter 3.Collector

Material:

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	2.80	3.04
B	1.20	1.60
C	0.89	1.30
D	0.30	0.50
G	1.70	2.30
H	0.013	0.10
J	0.085	0.177
K	0.32	0.67
L	0.85	1.15
S	2.10	2.75
V	0.25	0.65

*: Typical, Unit: mm

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of HSMC.
- HSMC reserves the right to make changes to its products without notice.
- **HSMC semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- HSMC assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

Head Office And Factory:

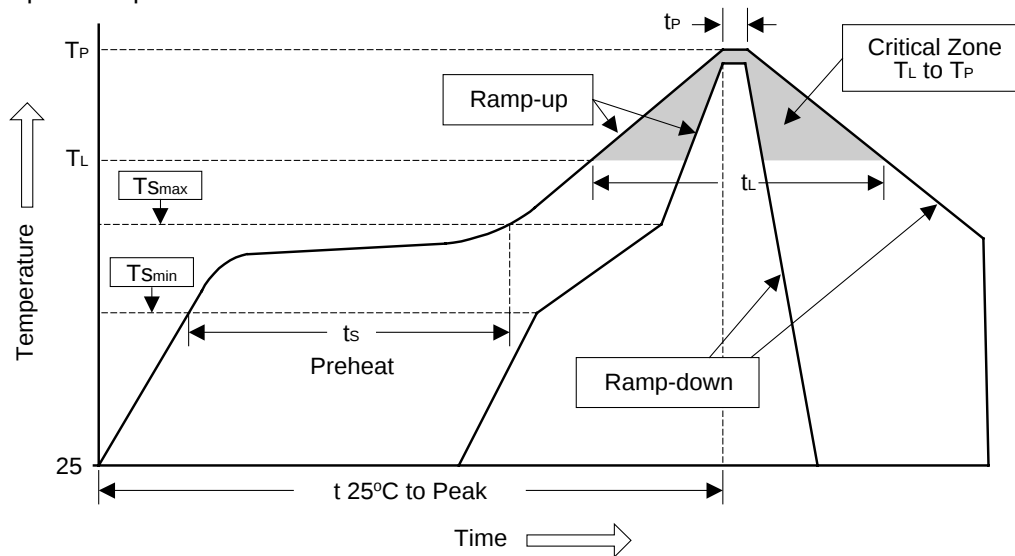
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F., No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
Tel: 886-3-5983621~5 Fax: 886-3-5982931



Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat		
- Temperature Min (T_{smin})	100°C	150°C
- Temperature Max (T_{smax})	150°C	200°C
- Time (min to max) (t_s)	60~120 sec	60~180 sec
T_{smax} to T_L		
- Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60~150 sec	60~150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10~30 sec	20~40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec