

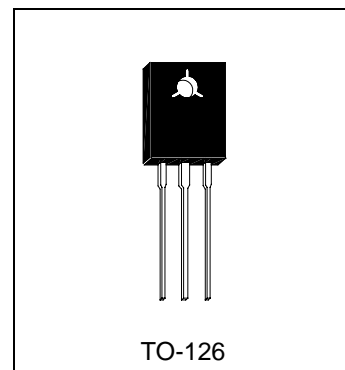


HBD437T

COMPLEMENTARY SILICON POWER TRANSISTORS

Description

The HBD437T is silicon epitaxial-base NPN power transistor in TO-126 plastic package, intended for use in medium power linear and switching applications. The complementary PNP type is HBD438T.



Absolute Maximum Ratings (T_A=25°C)

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-Base Voltage (I _E =0)	45	V
V _{CES}	Collector-Emitter Voltage (V _{BE} =0)	45	V
V _{CEO}	Collector-Emitter Voltage (I _B =0)	45	V
V _{EBO}	Emitter-Base Voltage (I _C =0)	5	V
I _C	Collector Current	4	A
I _{CM}	Collector Peak Current (t≤10ms)	7	A
I _B	Base Current	1	A
P _D	Total Dissipation at T _C =25°C	25	W
	Total Dissipation at T _A =25°C	1.5	W
T _{stg}	Storage Temperature	-55 to 150	°C
T _j	Max. Operating Junction Temperature	150	°C

Thermal Data

R _{thj-case}	Thermal Resistance Junction-case (Max.)	5	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient (Max.)	83	°C/W

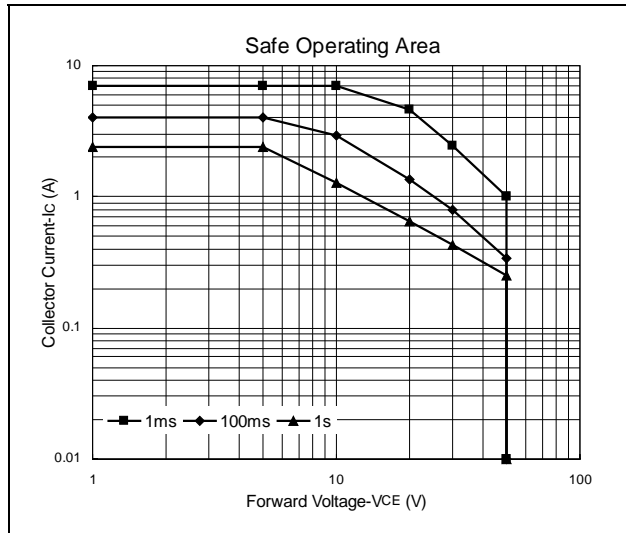
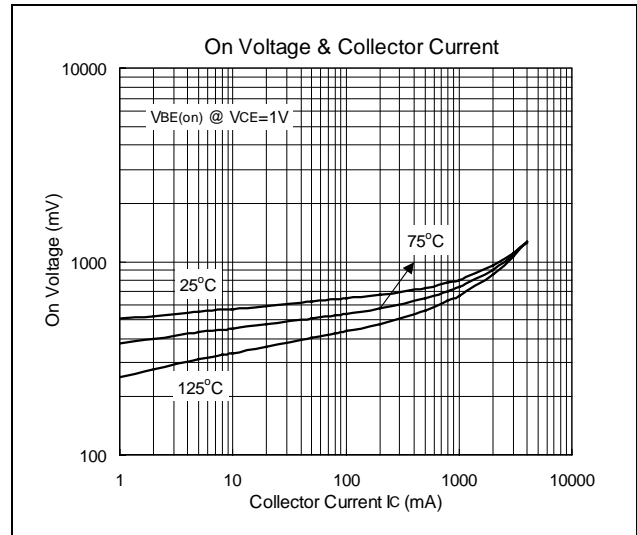
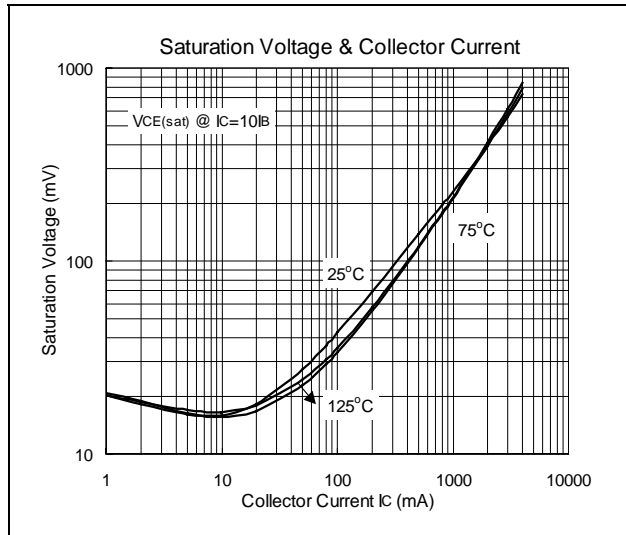
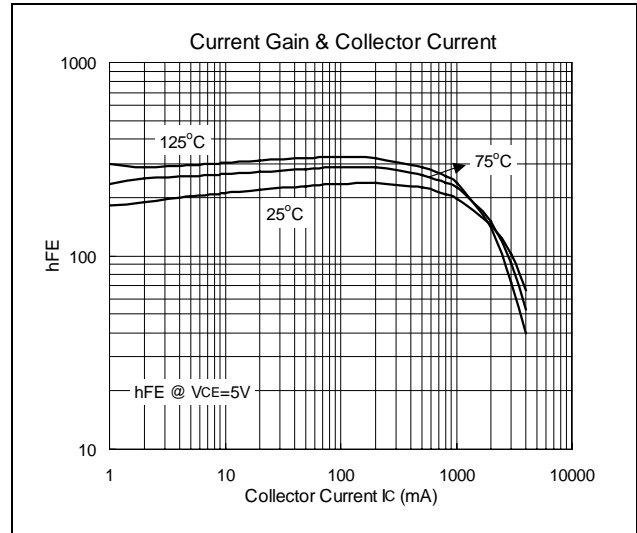
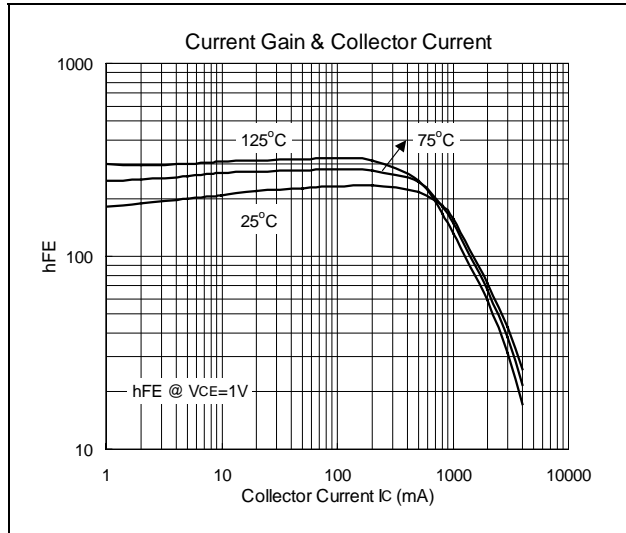
Electrical Characteristics (T_A=25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CBO}	Collector Cut-off Current (I _E =0)	V _{CB} =45V	-	-	100	uA
I _{CES}	Collector Cut-off Current (V _{BE} =0)	V _{CE} =45V	-	-	100	uA
I _{EBO}	Emitter Cut-off Current (I _C =0)	V _{EB} =5V	-	-	1	mA
*V _{CEO(sus)}	Collector-Emitter Sustaining Voltage (I _B =0)	I _C =100mA	45	-	-	V
*V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C =2A, I _B =0.2A	-	0.4	0.6	V
*V _{BE}	Base-Emitter Voltage	I _C =10mA, V _{CE} =5V	-	0.58	-	V
		I _C =2A, V _{CE} =1V	-	-	1.2	V
*h _{FE}	DC Current Gain	I _C =10mA, V _{CE} =5V	30	130	-	
		I _C =0.5A, V _{CE} =1V	85	140	-	
		I _C =2A, V _{CE} =1V	40	-	-	
f _T	Transition Frequency	I _C =0.25A, V _{CE} =1V	3	-	-	MHz

*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%



Characteristics Curve





TO-126 Dimension

3-Lead TO-126
Plastic Package
HSMC Package Code: T

Marking:

Pb Free Mark
 Pb-Free: "●" (Note)
 Normal: None

Date Code Control Code

Note: Green label is used for pb-free packing

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

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	3.60	4.40
B	6.90	7.60
C	13.00	16.50
D	7.20	8.50
F	0.65	0.88
G	1.00	1.42
H	4.52	4.62
J	1.14	1.50
K	0.90	1.50
L	0.45	0.60
M	2.92	3.40
N	2.00	2.70

Unit: mm

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Head Office And Factory:

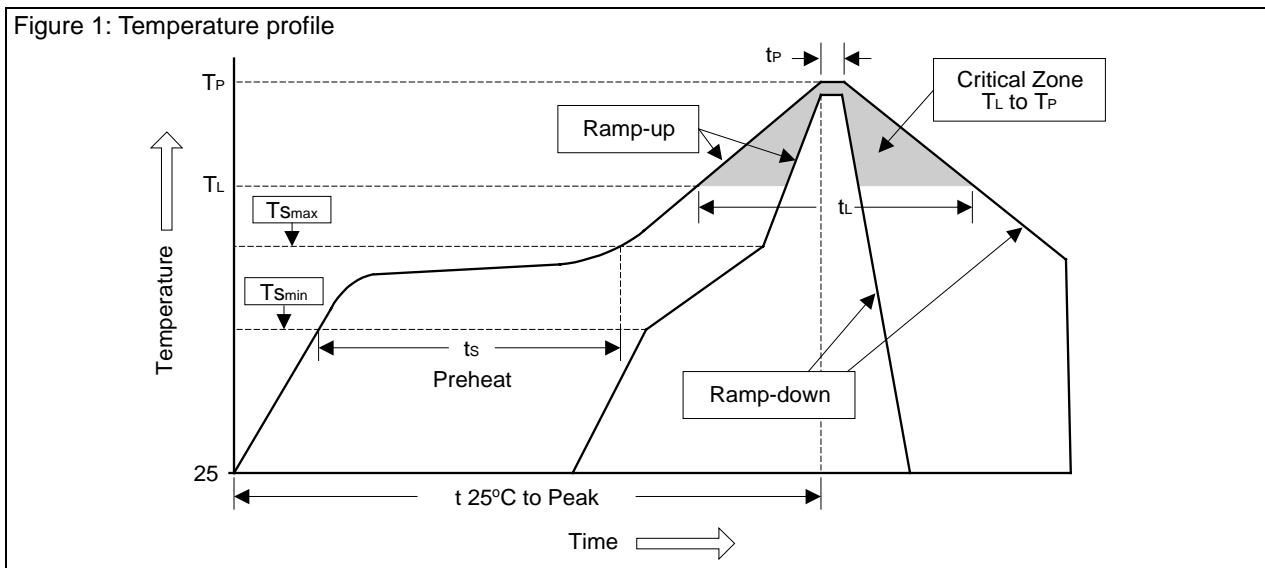
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Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%

2. Reflow soldering of surface-mount devices



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