

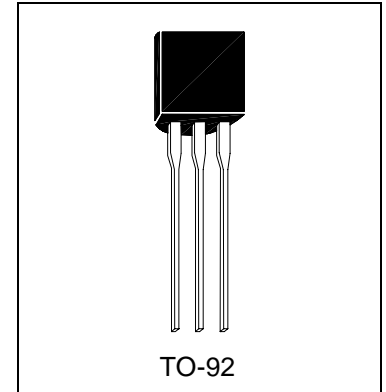


HA3669

NPN EPITAXIAL PLANAR TRANSISTOR

Description

The HA3669 is designed for using in power amplifier applications, power switching application.



Absolute Maximum Ratings (T_A=25°C)

- Maximum Temperatures
 - T_{stg} Storage Temperature..... -55 ~ +150 °C
 - T_j Junction Temperature +150 °C
- Maximum Power Dissipation
 - Total Power Dissipation (T_A=25°C) 750 mW
- Maximum Voltages and Currents
 - BV_{CBO} Collector to Base Breakdown Voltage..... 80 V
 - BV_{CEO} Collector to Emitter Breakdown Voltage..... 80 V
 - BV_{EBO} Emitter to Base Emitter Breakdown Voltage 5 V
 - I_C Collector Current (DC)..... 2 A

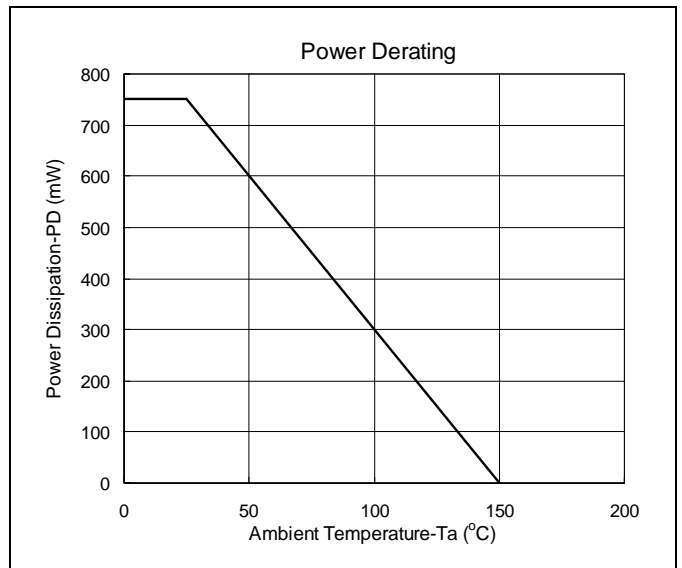
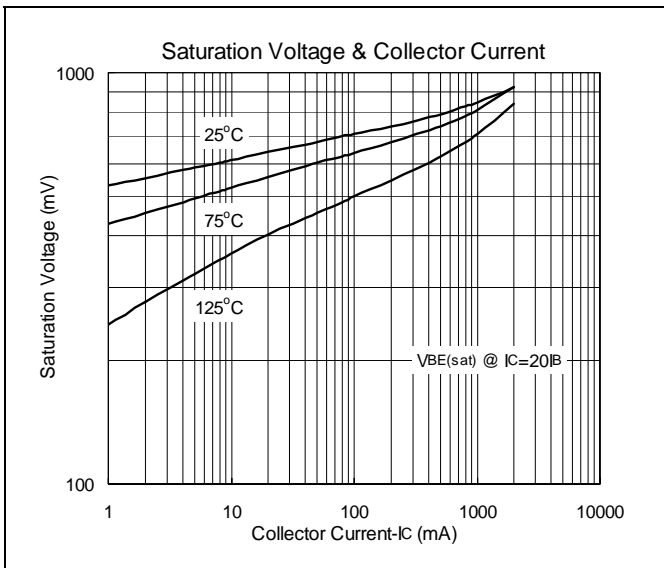
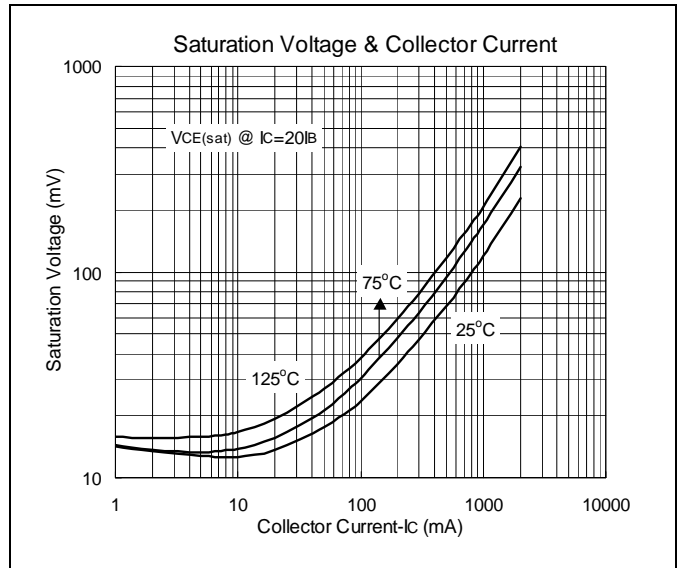
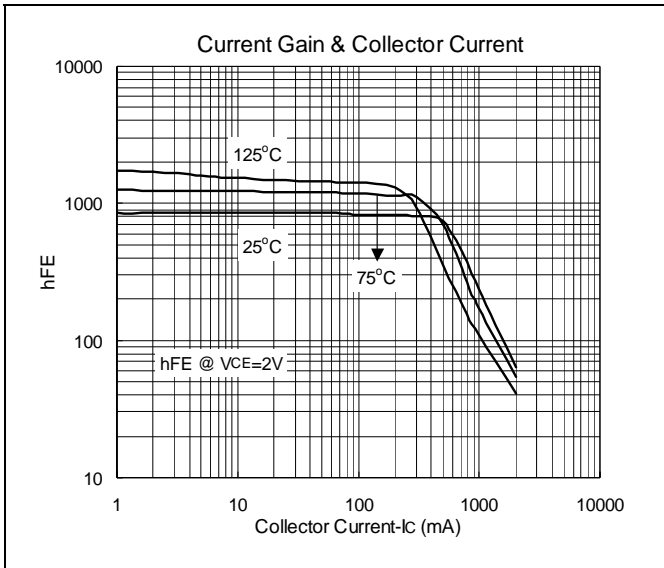
Electrical Characteristics (T_A=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	80	-	-	V	I _C =100uA
BV _{CEO}	80	-	-	V	I _C =10mA
BV _{EBO}	5	-	-	V	I _E =100uA
I _{CBO}	-	-	1000	nA	V _{CB} =80V
I _{EBO}	-	-	1000	nA	V _{EB} =5V
*V _{CE(sat)}	-	0.15	0.5	V	I _C =1A, I _B =50mA
*V _{BE(sat)}	-	0.9	1.2	V	I _C =1A, I _B =50mA
*h _{FE}	240	-	-		V _{CE} =2V, I _C =500mA
f _T	-	100	-	MHz	V _{CE} =2V, I _C =500mA
Cob	-	30	-	pF	V _{CB} =10V, f=1MHz
T _{on}	-	0.2	-	uS	I _{B1} =-I _{B2} =50mA, Duty Cycle≤1%
T _{stg}	-	1.0	-	uS	
T _f	-	0.2	-	uS	

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



Characteristics Curve





TO-92 Dimension

Marking:

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

H	2	N
3	9	0
6		

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	4.33	4.83
B	4.33	4.83
C	12.70	-
D	0.36	0.56
E	-	*1.27
F	3.36	3.76
G	0.36	0.56
H	-	*2.54
I	-	*1.27
$\alpha 1$	-	*5°
$\alpha 2$	-	*2°
$\alpha 3$	-	*2°

*: Typical, Unit: mm

3-Lead TO-92 Plastic Package
 HSMC Package Code: A

TO-92 Taping Dimension

DIM	Min.	Max.
A	4.33	4.83
D	3.80	4.20
D1	0.36	0.53
D2	4.33	4.83
F1,F2	2.40	2.90
H	15.50	16.50
H1	8.50	9.50
H2	-	1
H2A	-	1
H3	-	27
H4	-	21
L	-	11
L1	2.50	-
P	12.50	12.90
P1	5.95	6.75
P2	50.30	51.30
T	-	0.55
T1	-	1.42
T2	0.36	0.68
W	17.50	19.00
W1	5.00	7.00

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.

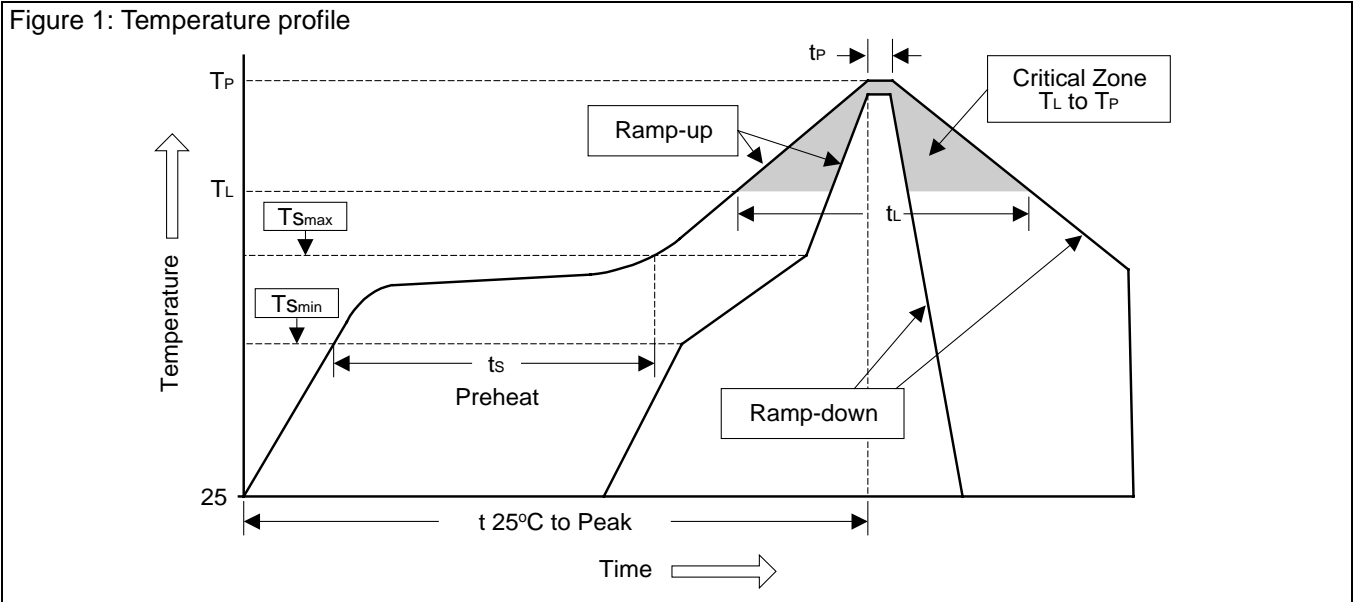
Head Office And Factory:

- **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



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	$<3^{\circ}\text{C}/\text{sec}$	$<3^{\circ}\text{C}/\text{sec}$
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	$<3^{\circ}\text{C}/\text{sec}$	$<3^{\circ}\text{C}/\text{sec}$
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	$<6^{\circ}\text{C}/\text{sec}$	$<6^{\circ}\text{C}/\text{sec}$
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