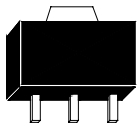
HM669A

NPN EPITAXIAL PLANAR TRANSISTOR



SOT-89

Description

Low frequency power amplifier complementary pair with HM649A

Absolute Maximum Ratings (T_A=25°C)

- Maximum Temperatures
  - Storage Temperature ..... -55 ~ +150 °C
  - Junction Temperature ..... +150 °C Maximum
- Maximum Power Dissipation
  - Total Power Dissipation (T_A=25°C) ..... 1 W
  - Total Power Dissipation (T_C=25°C) ..... 10 W
- Maximum Voltages and Currents
  - BV_{CBO} Collector to Base Voltage ..... 180 V
  - BV_{CEO} Collector to Emitter Voltage ..... 160 V
  - BV_{EBO} Emitter to Base Voltage ..... 5 V
  - I_C Collector Current (DC) ..... 1.5 A
  - I_C Collector Current (Pulse) ..... 3 A

Thermal Characteristic

Symbol	Characteristic	Max.	Unit
$R_{\theta ja}$	Thermal Resistance, junction to ambient (T_A=25°C)	125	°C/W
$R_{\theta jc}$	Thermal Resistance, junction to case (T_C=25°C)	12.5	°C/W

Electrical Characteristics (T_A=25°C)

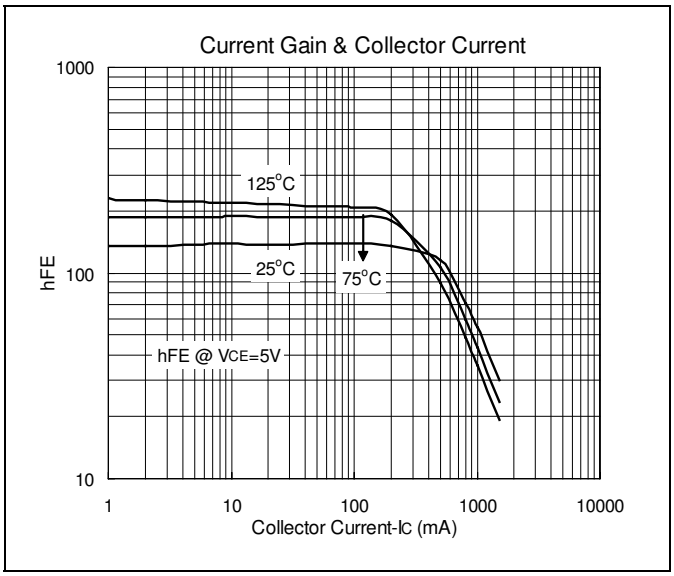
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	180	-	-	V	I_C=1mA, I_E=0
BV_{CEO}	160	-	-	V	I_C=10mA, I_B=0
BV_{EBO}	5	-	-	V	I_E=1mA, I_C=0
I_{CBO}	-	-	10	uA	V_{CB}=160V, I_E=0
*$V_{CE(sat)}$	-	-	1	V	I_C=500mA, I_B=50mA
$V_{BE(on)}$	-	-	1.5	V	I_C=150mA, V_{CE}=5V
*h_{FE1}	100	-	320		I_C=150mA, V_{CE}=5V
*h_{FE2}	30	-	-		I_C=500mA, V_{CE}=5V
f_T	-	140	-	MHz	I_C=150mA , V_{CE}=5V

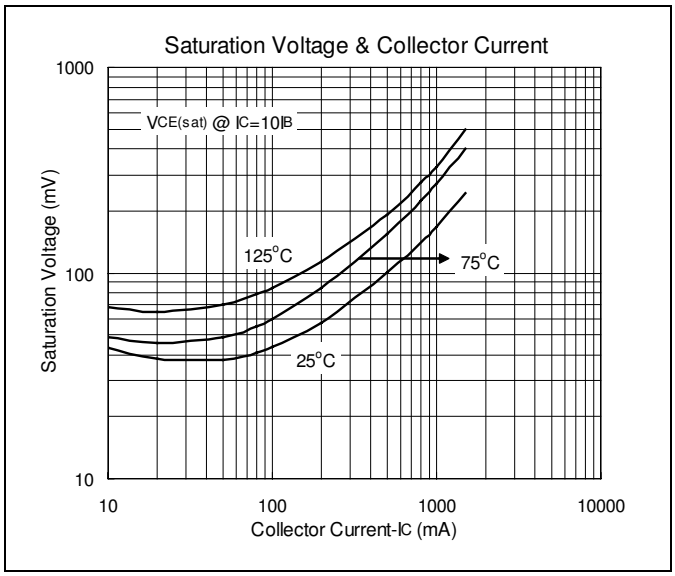
*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%

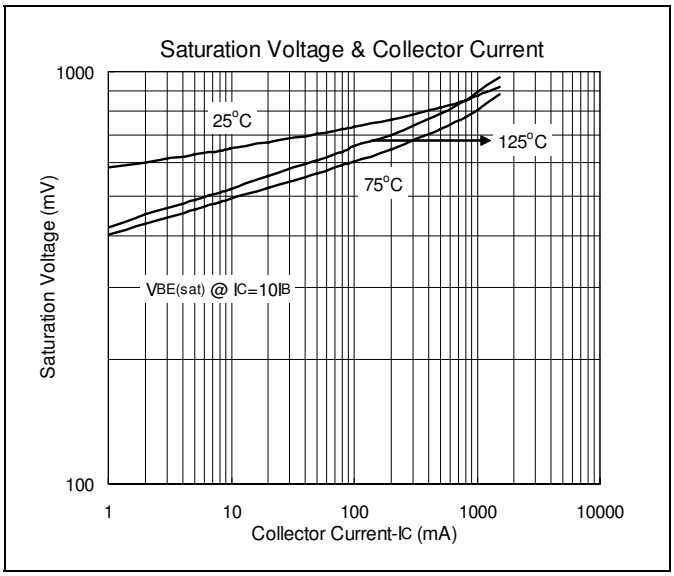
Classification Of hFE1

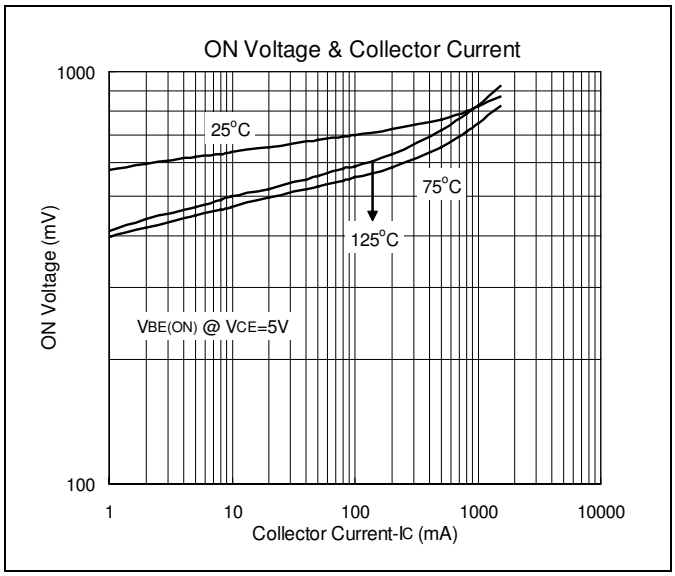
Rank	C	D
Range	100-200	180-320

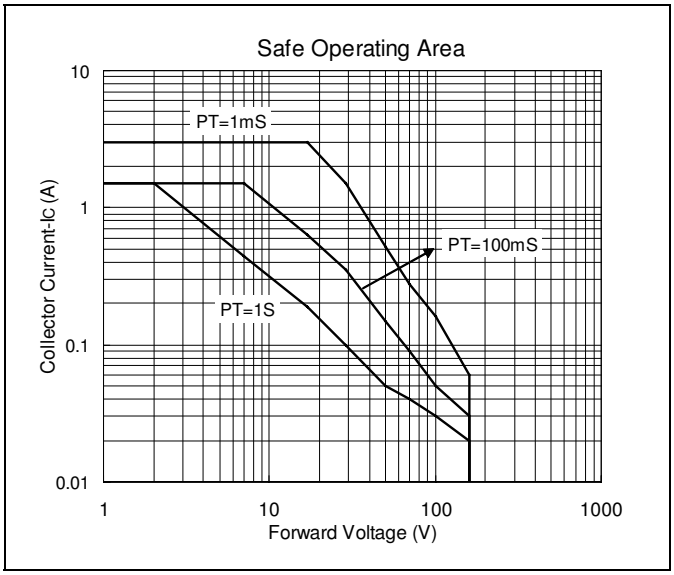
Characteristics Curve



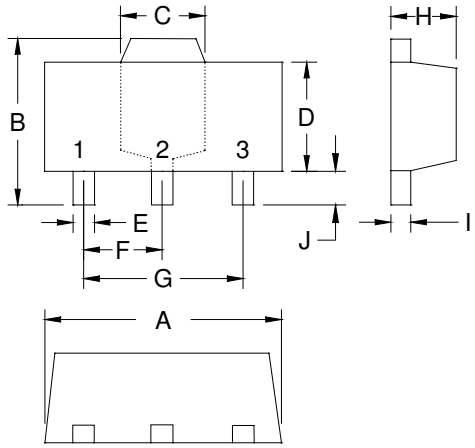






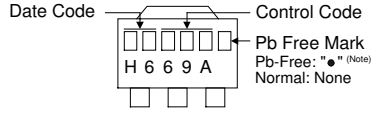


SOT-89 Dimension



3-Lead SOT-89 Plastic
Surface Mounted Package
HSMC Package Code: M

Marking:



Note: Green label is used for pb-free packing

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

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	4.40	4.60
B	4.05	4.25
C	1.50	1.70
D	2.40	2.60
E	0.36	0.51
F	*1.50	-
G	*3.00	-
H	1.40	1.60
I	0.35	0.41

*: Typical, Unit: mm

Head Office And Factory:

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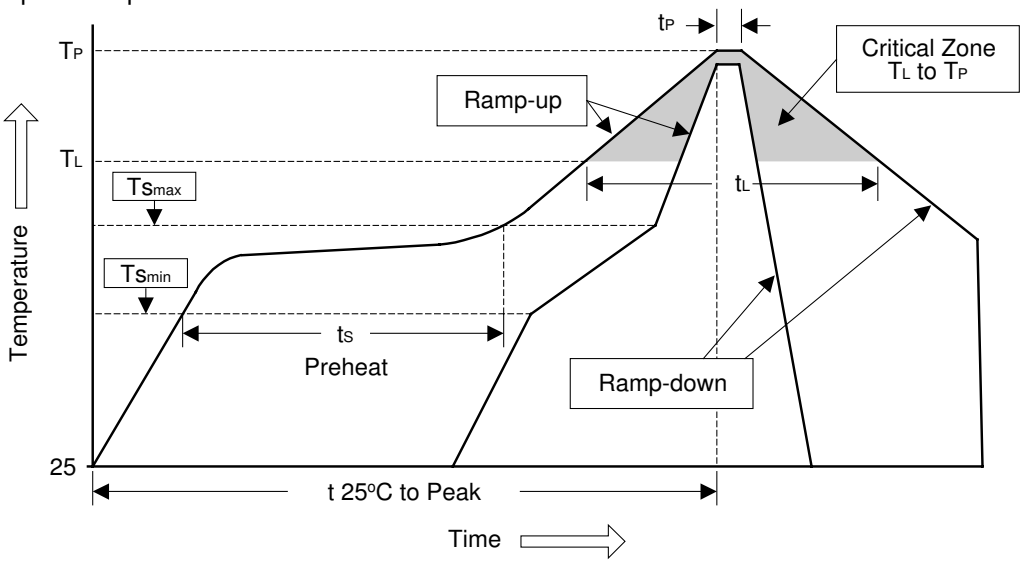
  Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
  Tel: 886-3-5983621~5 Fax: 886-3-5982931

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 (Ts_{min}) - Temperature Max (Ts_{max}) - Time (min to max) (ts)	 100°C 150°C 60~120 sec	 150°C 200°C 60~180 sec
Tsmax to T_L - Ramp-up Rate	 <3°C/sec	 <3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	 183°C 60~150 sec	 217°C 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