

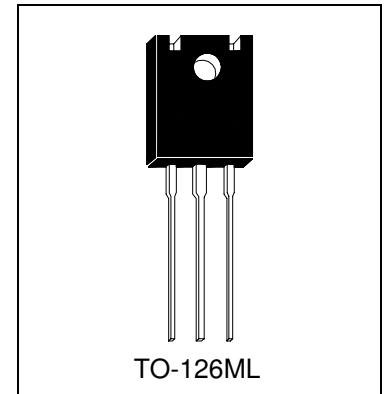


HSB649A

SILICON PNP EPITAXIAL PLANAR TRANSISTOR

Description

Low frequency power amplifier complementary pair with HSD669A.



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 1 W
 - Total Power Dissipation (T_C=25°C) 20 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

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}	60	-	200		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
Cob	-	27	-	pF	V _{CB} =-10V, f=1MHz, I _E =0

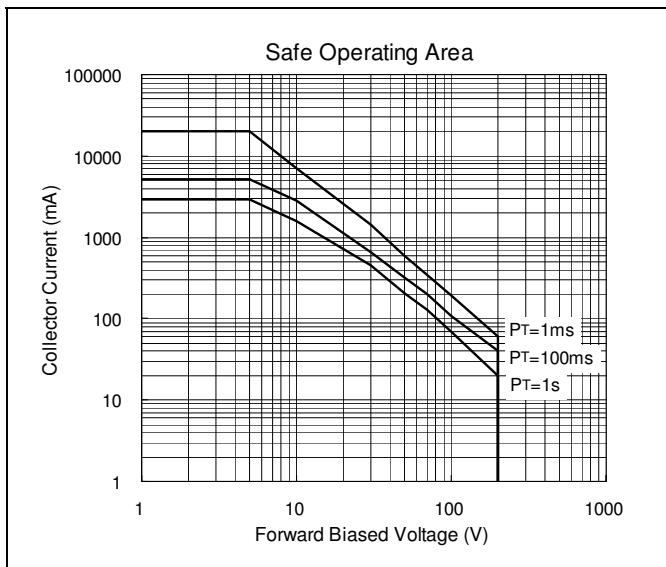
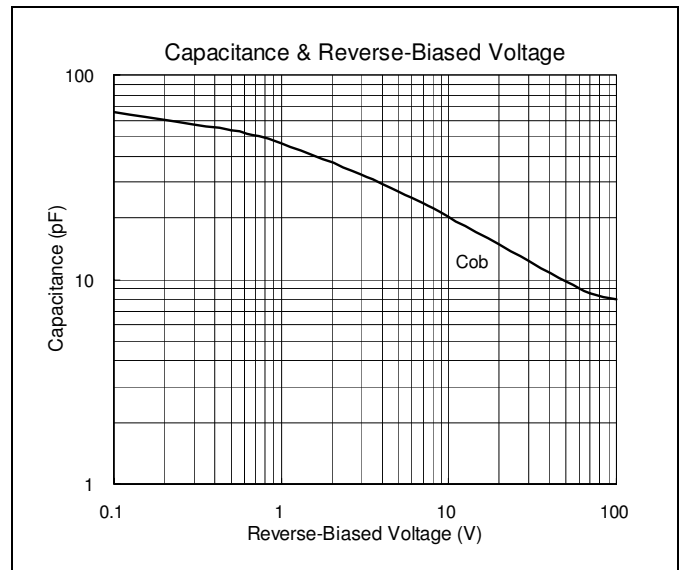
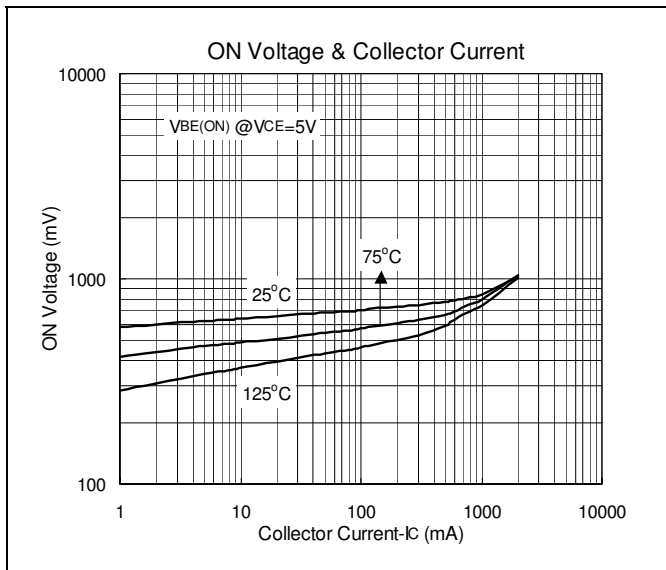
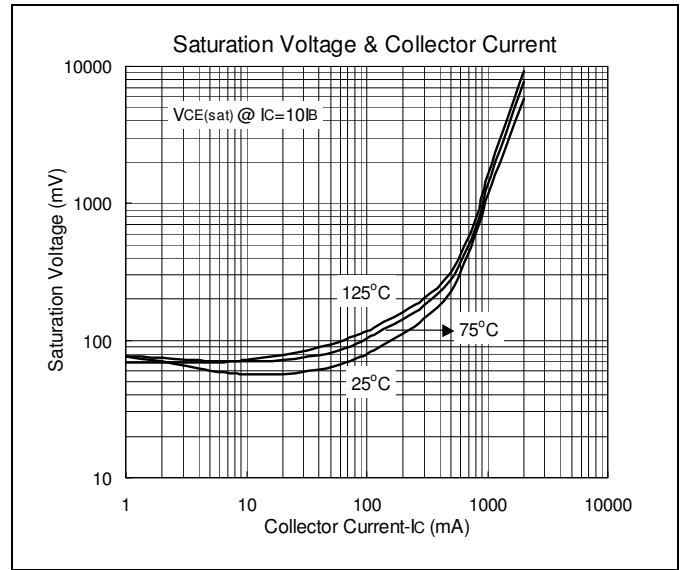
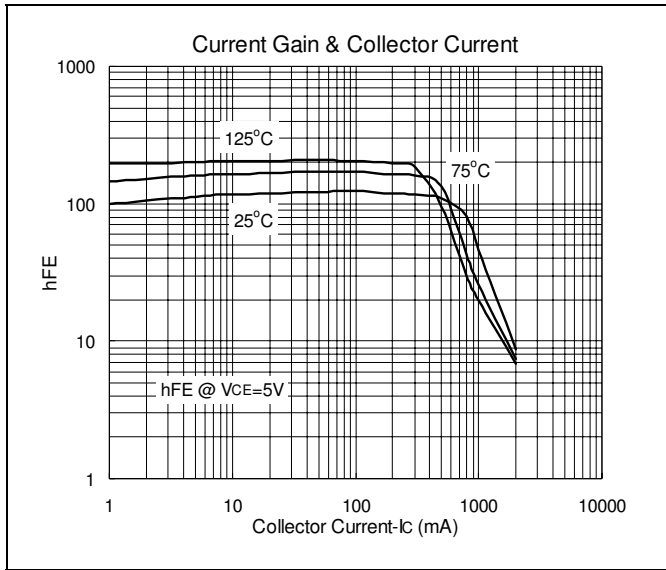
*Pulse Test: Pulse Width ≤380us, Duty Cycle ≤2%

Classification Of hFE1

Rank	B	C
Range	60-120	100-200



Characteristics Curve





TO-126ML Dimension

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	7.74	8.24
B	10.87	11.37
C	0.88	1.12
D	1.28	1.52
E	3.50	3.75
F	2.61	3.37
G	13	-
H	1.18	1.42
I	2.88	3.12
J	0.68	0.84
K	-	2.30
L	3.44	3.70
M	1.88	2.14
N	0.50	0.51

*: Typical, Unit: mm

3-Lead TO-126ML
 Plastic Package
 HSMC Package Code: D

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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°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