



HM112

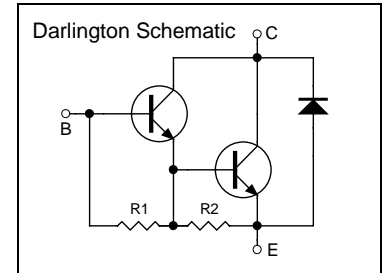
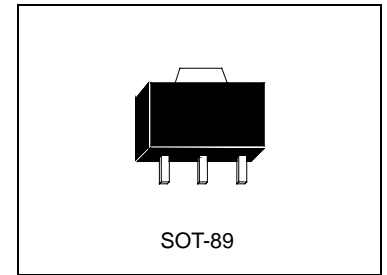
NPN EPITAXIAL PLANAR TRANSISTOR

Description

The HM112 is designed for use in general purpose amplifier and low-speed switching applications.

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) 1.2 W
 - Total Power Dissipation
(Printed circuit board 2mm thick, collector plating 1cm² square or larger) 1.6 W
- Maximum Voltages and Currents
 - BV_{CBO} Collector to Base Voltage 100 V
 - BV_{CEO} Collector to Emitter Voltage 100 V
 - BV_{EBO} Emitter to Base Voltage 5 V
 - I_C Collector Current (Continue) 4 A
 - I_C Collector Current (Peak) 6 A



Thermal Characteristic

Symbol	Characteristic	Max.	Unit
R _{θja}	Thermal Resistance, junction to ambient (T _A =25°C)	104	°C/W

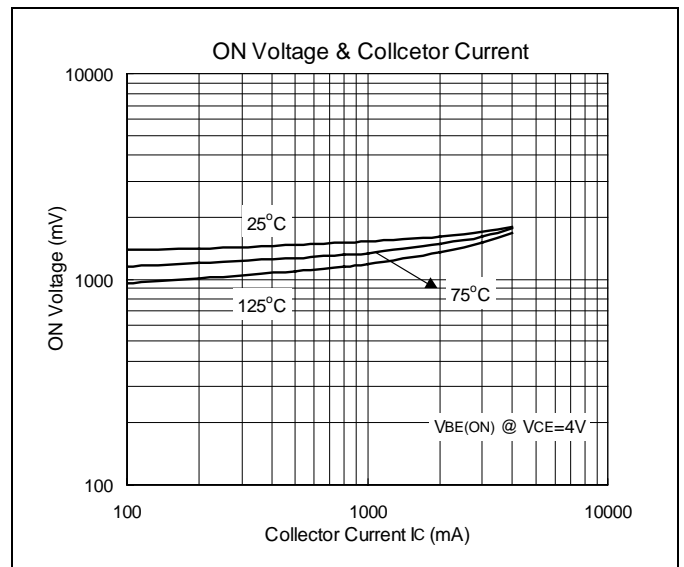
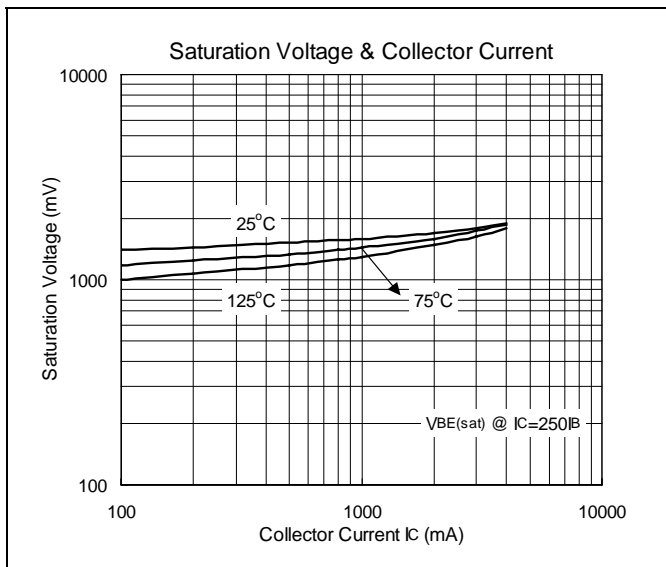
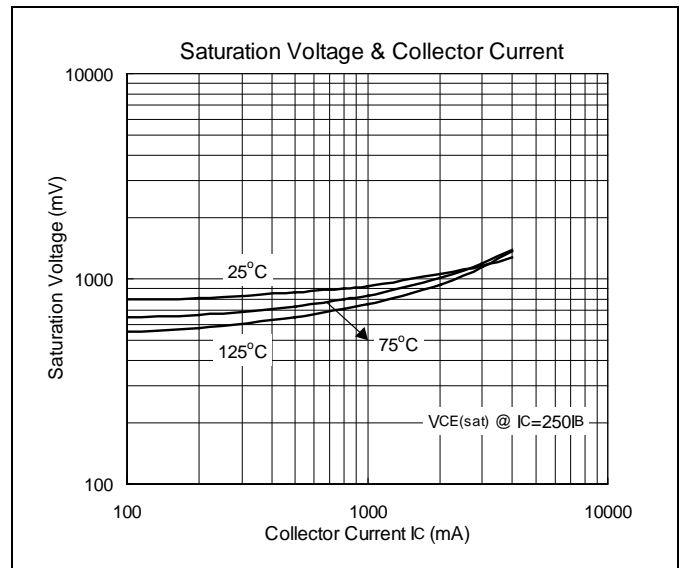
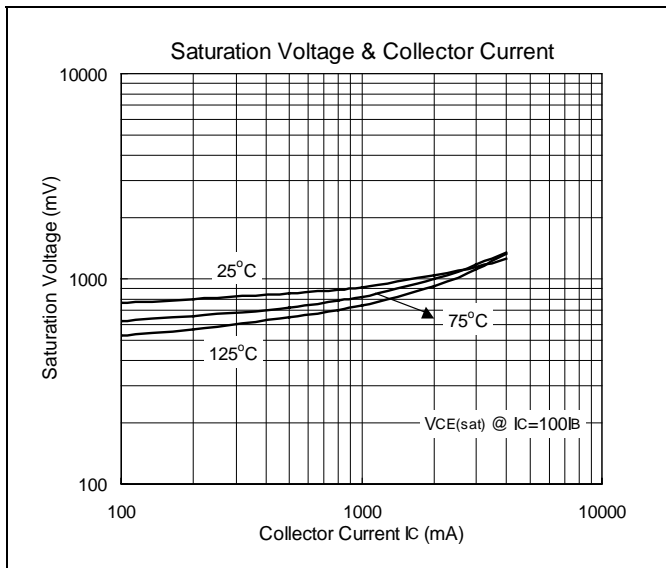
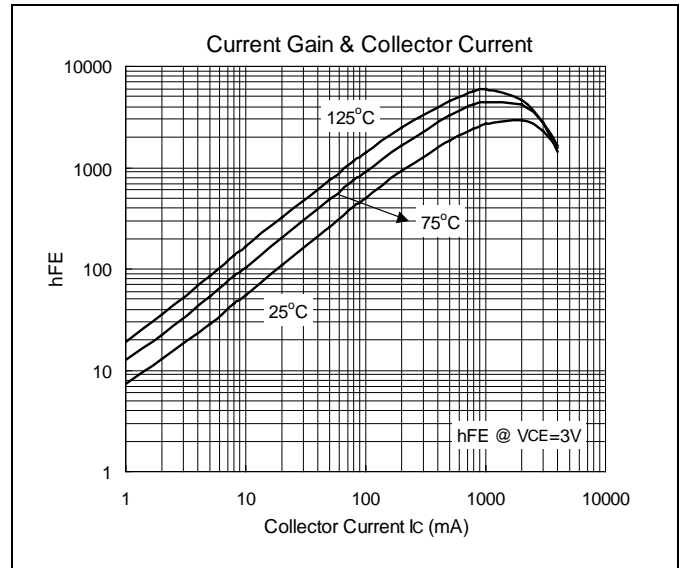
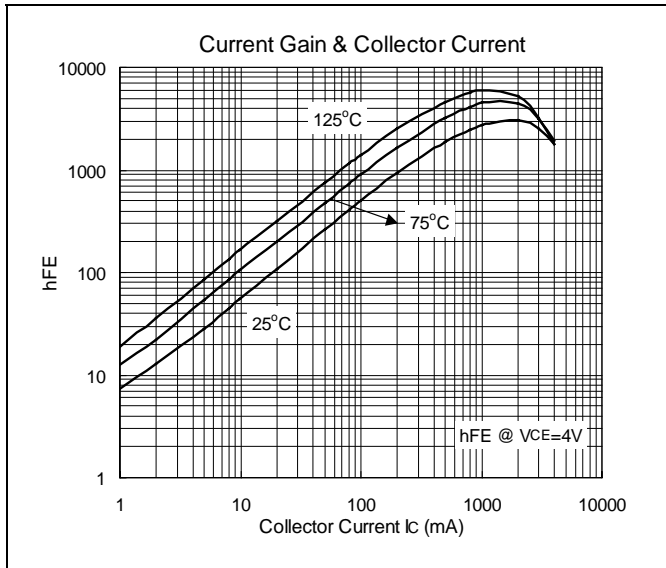
Electrical Characteristics (T_A=25°C)

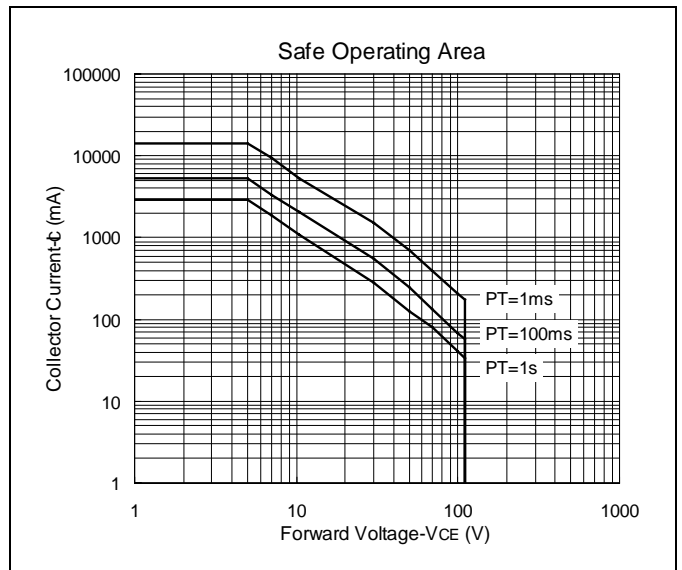
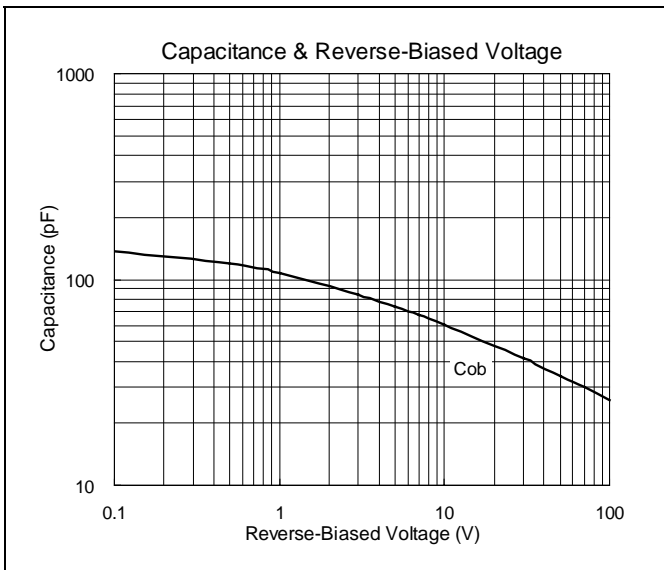
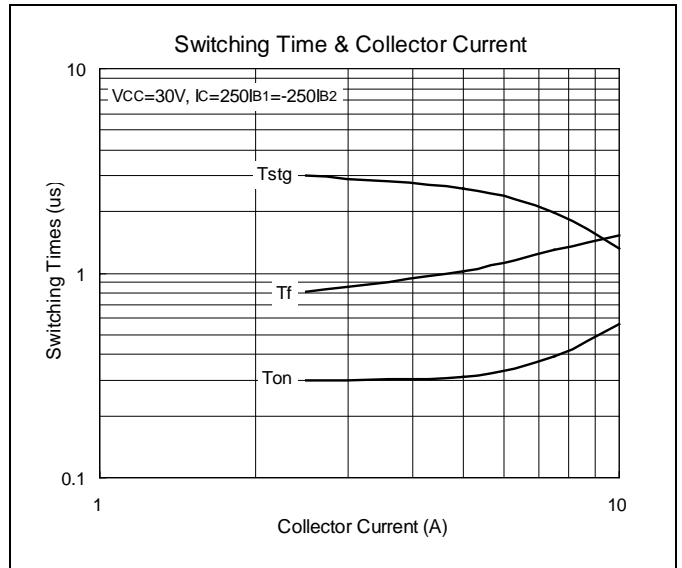
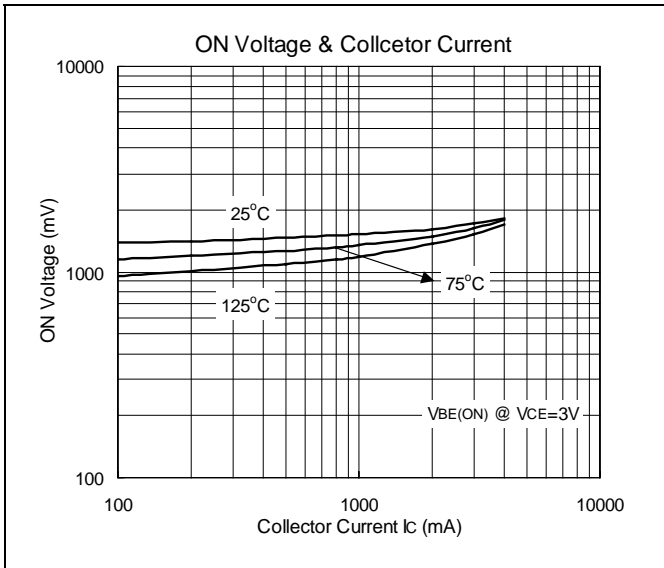
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	100	-	-	V	I _C =1mA
BV _{CEO}	100	-	-	V	I _C =30mA
I _{CBO}	-	-	1	mA	V _{CB} =100V
I _{CEO}	-	-	2	mA	V _{CE} =50V
I _{EBO}	-	-	2	mA	V _{EB} =5V
*V _{CE(sat)}	-	-	2.5	V	I _C =2A, I _B =8mA
*V _{BE(on)}	-	-	2.8	V	I _C =2A, V _{CE} =4V
*h _{FE1}	1	-	-	K	I _C =1A, V _{CE} =4V
*h _{FE2}	500	-	-		I _C =2A, V _{CE} =4V
Cob	-	-	200	pF	V _{CB} =10V, f=0.1MHz

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



Characteristics Curve







SOT-89 Dimension

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

Marking:

Date Code Control Code

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

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

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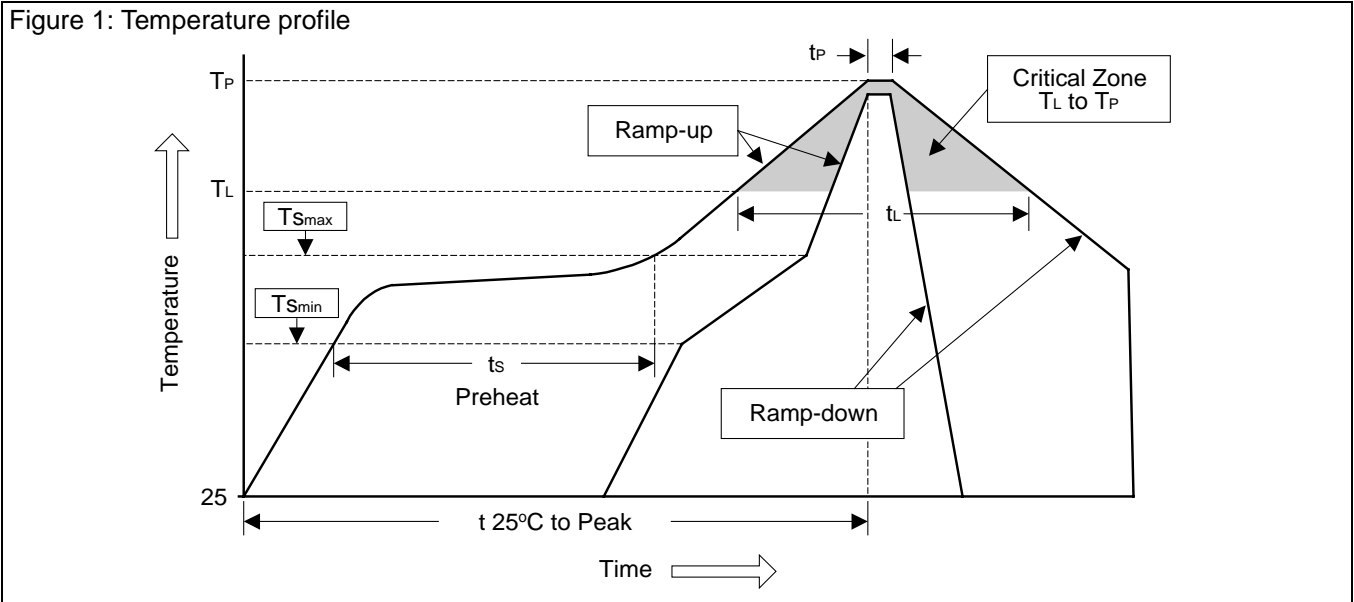
Head Office And Factory:

- **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)	$<3^{\circ}\text{C}/\text{sec}$	$<3^{\circ}\text{C}/\text{sec}$
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