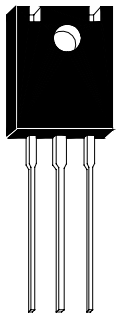
HLB123D

NPN EPITAXIAL PLANAR TRANSISTOR



TO-126ML

Description

The HLB123D is designed for high voltage. High speed switching inductive circuits and amplifier applications.

Features

- High Speed Switching
- Low Saturation Voltage
- High Reliability

Absolute Maximum Ratings (T_A=25°C)

- Maximum Temperatures
  - Storage Temperature ..... -50 ~ +150 °C
  - Junction Temperature ..... +150 °C Maximum
- Maximum Power Dissipation
  - Total Power Dissipation (T_C=25°C) ..... 30 W
- Maximum Voltages and Currents
  - BV_{CBO} Collector to Base Voltage ..... 600 V
  - BV_{CEO} Collector to Emitter Voltage ..... 400 V
  - BV_{EBO} Emitter to Base Voltage ..... 8 V
  - I_C Collector Current (DC) ..... 1 A
  - I_C Collector Current (Pulse) ..... 2 A

Electrical Characteristics (T_A=25°C)

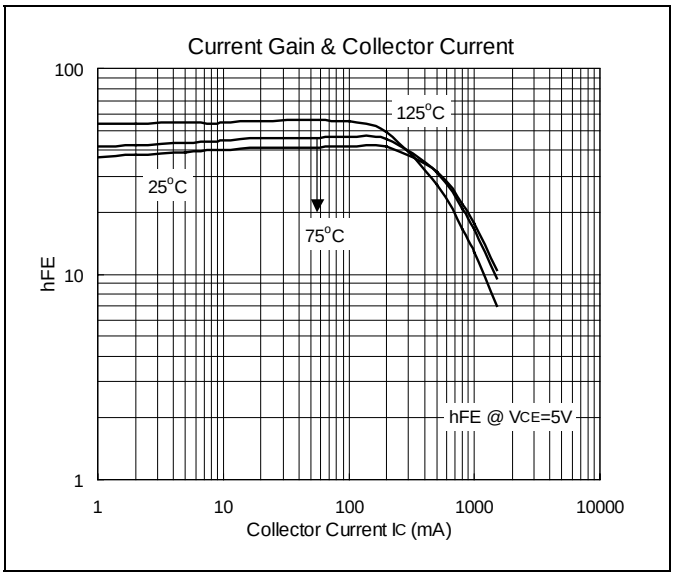
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	600	-	-	V	I_C=1mA, I_E=0
BV_{CEO}	400	-	-	V	I_C=10mA, I_B=0
BV_{EBO}	8	-	-	V	I_E=1mA, I_C=0
I_{CBO}	-	-	10	uA	V_{CB}=600V, I_E=0
I_{EBO}	-	-	10	uA	V_{BE}=9V, I_C=0
*$V_{CE(sat)1}$	-	-	0.8	V	I_C=0.1A, I_B=10mA
*$V_{CE(sat)2}$	-	-	0.9	V	I_C=0.3A, I_B=30mA
*$V_{BE(sat)1}$	-	-	1.2	V	I_C=0.1A, I_B=10mA
*$V_{BE(sat)2}$	-	-	1.8	V	I_C=0.3A, I_B=30Ma
*h_{FE1}	10	-	50		I_C=0.3A, V_{CE}=5V
*h_{FE2}	10	-	-		I_C=0.5A, V_{CE}=5V
*h_{FE3}	6	-	-		I_C=1A, V_{CE}=5V
T_{on}	-	0.4	1.1	uS	V_{CC}=100V, I_C=1A, I_{B1}=I_{B2}=0.2A
T_{stg}	-	2.4	4	uS	V_{CC}=100V, I_C=1A, I_{B1}=I_{B2}=0.2A
T_{off}	-	0.3	0.7	uS	V_{CC}=100V, I_C=1A, I_{B1}=I_{B2}=0.2A

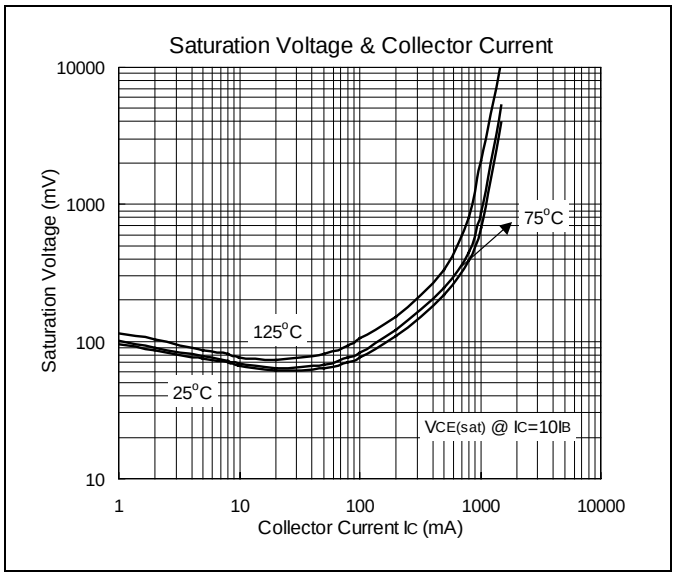
*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%

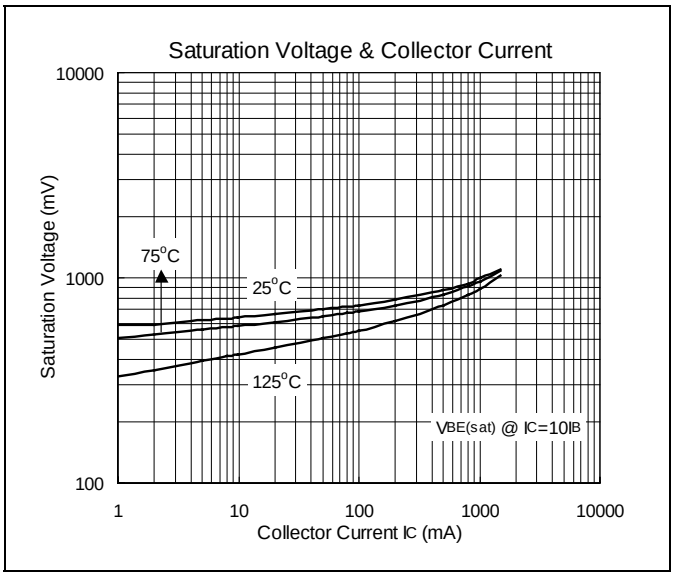
Classification Of hFE1

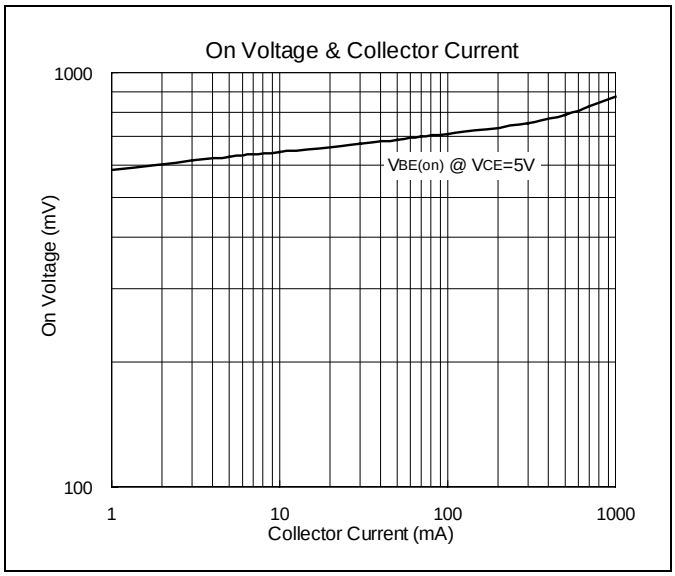
Rank	B1	B2	B3	B4	B5	B6	B7	B8
Range	10-17	13-22	18-27	23-32	28-37	33-42	38-47	43-50

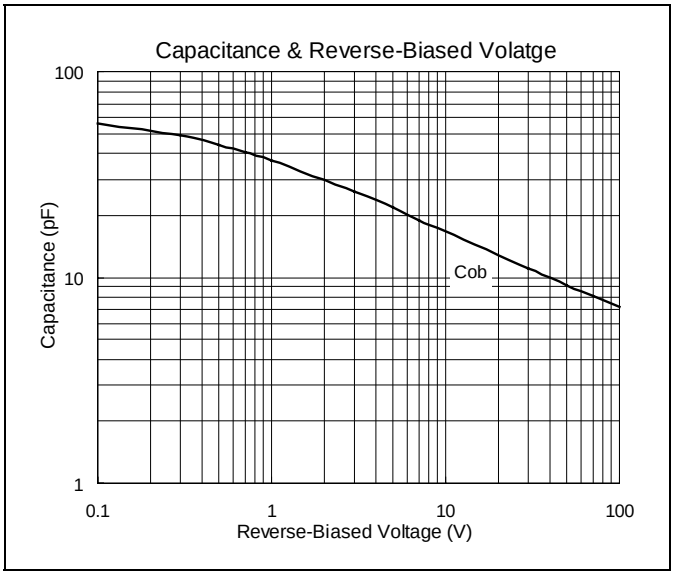
Characteristics Curve

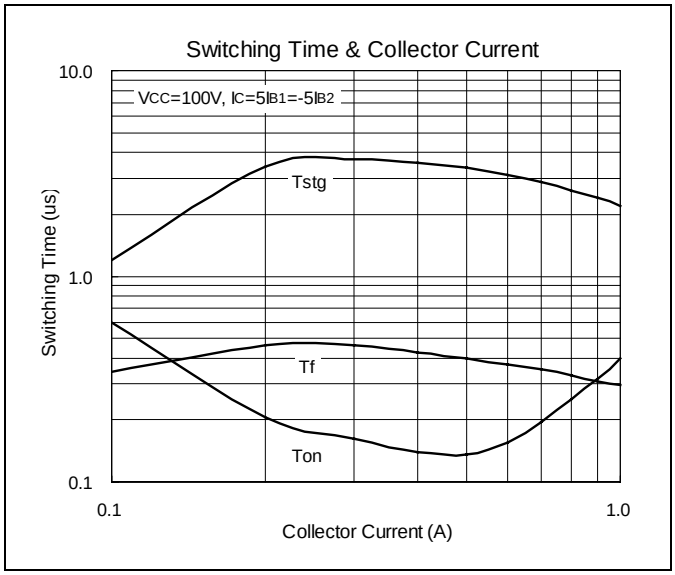


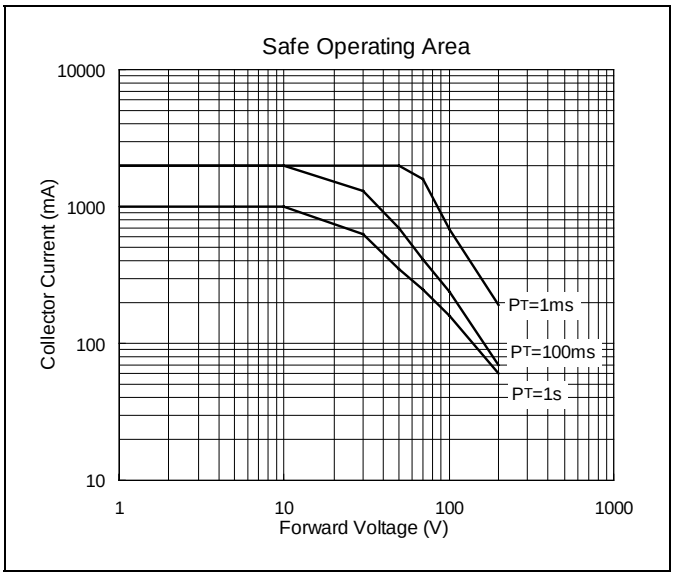




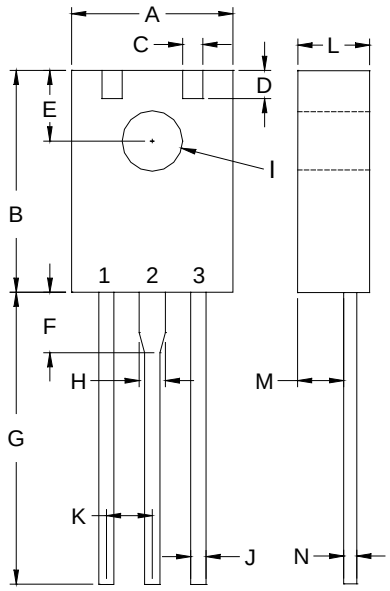




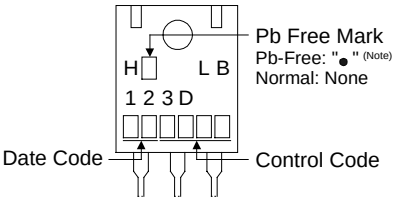



Safe Operating Area
10000
1000
100
10
Collector Current (mA)
1
10
100
1000
Forward Voltage (V)
PT=1ms
PT=100ms
PT=1s

TO-126ML Dimension



Marking:



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

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

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

Head Office And Factory:

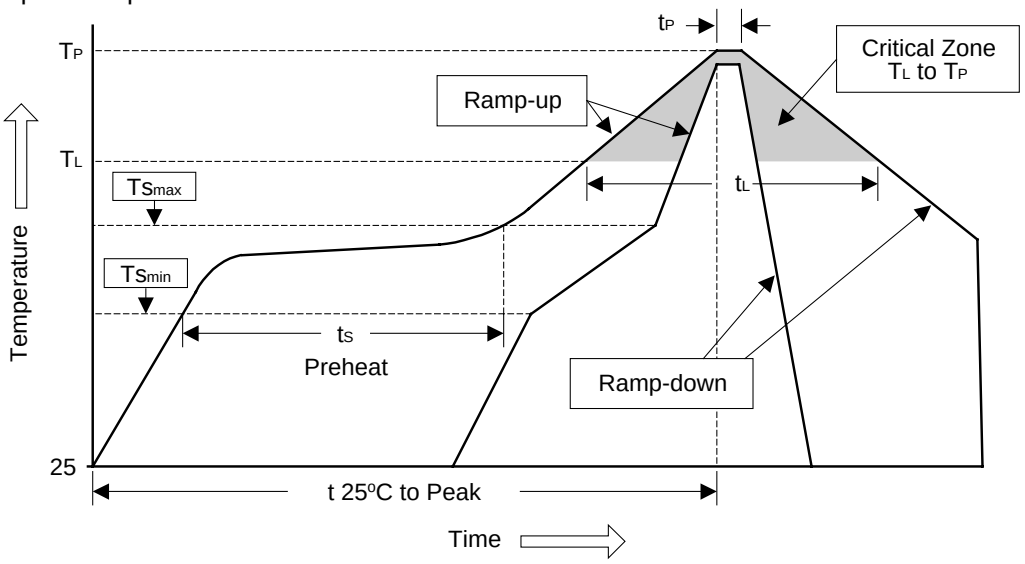
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F.,No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
  Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
  Tel: 886-3-5983621~5 Fax: 886-3-5982931

Soldering Methods for HSMC's Products

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

2. Reflow soldering of surface-mount devices

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	10sec ±1sec
Pb-Free devices.	260°C ±5°C	10sec ±1sec