



HLB123T

NPN EPITAXIAL PLANAR TRANSISTOR

Description

The HLB123T 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 ($T_A=25^{\circ}\text{C}$)

- Maximum Temperatures
Storage Temperature $-50 \sim +150^{\circ}\text{C}$
Junction Temperature $+150^{\circ}\text{C}$ Maximum
- Maximum Power Dissipation
Total Power Dissipation ($T_A=25^{\circ}\text{C}$) 3.5 W
Total Power Dissipation ($T_C=25^{\circ}\text{C}$) 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

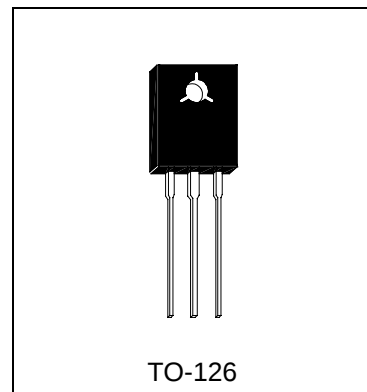
Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	600	-	-	V	$I_C=1\text{mA}$, $I_E=0$
BV_{CEO}	400	-	-	V	$I_C=10\text{mA}$, $I_B=0$
BV_{EBO}	8	-	-	V	$I_E=1\text{mA}$, $I_C=0$
I_{CBO}	-	-	10	μA	$V_{CB}=600\text{V}$, $I_E=0$
I_{EBO}	-	-	10	μA	$V_{BE}=9\text{V}$, $I_C=0$
$*V_{CE(sat)1}$	-	-	0.8	V	$I_C=0.1\text{A}$, $I_B=10\text{mA}$
$*V_{CE(sat)2}$	-	-	0.9	V	$I_C=0.3\text{A}$, $I_B=30\text{mA}$
$*V_{BE(sat)1}$	-	-	1.2	V	$I_C=0.1\text{A}$, $I_B=10\text{mA}$
$*V_{BE(sat)2}$	-	-	1.8	V	$I_C=0.3\text{A}$, $I_B=30\text{mA}$
$*h_{FE1}$	13	-	27		$I_C=0.3\text{A}$, $V_{CE}=5\text{V}$
$*h_{FE2}$	10	-	-		$I_C=0.5\text{A}$, $V_{CE}=5\text{V}$
$*h_{FE3}$	6	-	-		$I_C=1\text{A}$, $V_{CE}=5\text{V}$

*Pulse Test: Pulse Width $\leq 380\mu\text{s}$, Duty Cycle $\leq 2\%$

Classification Of h_{FE1}

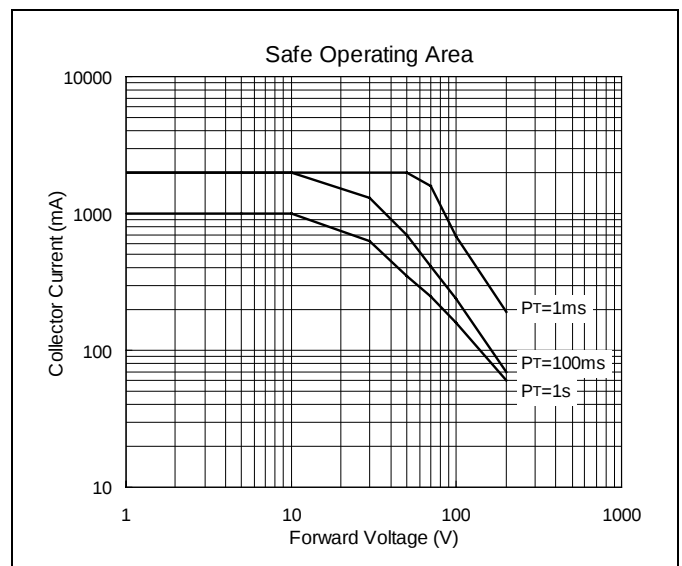
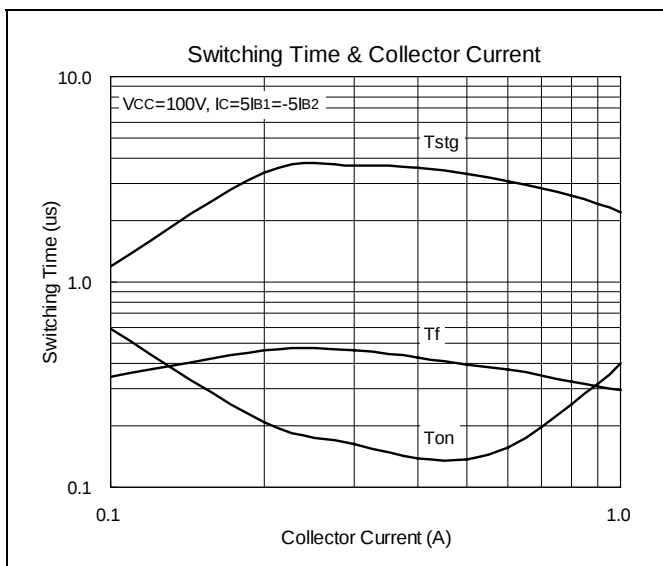
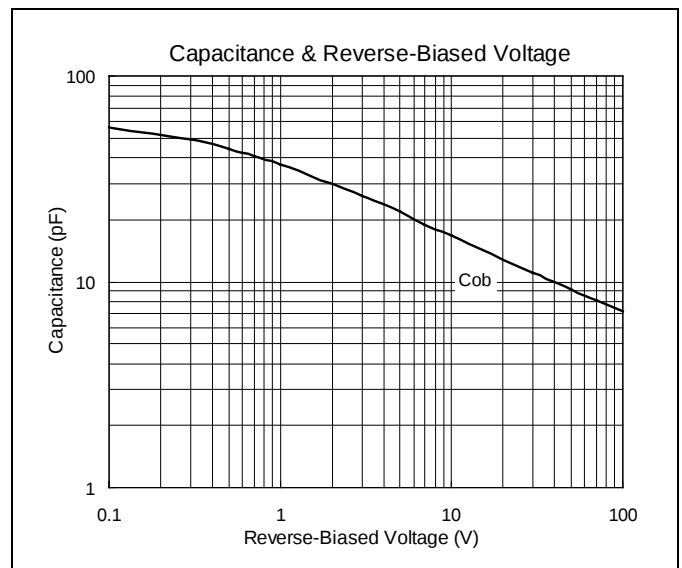
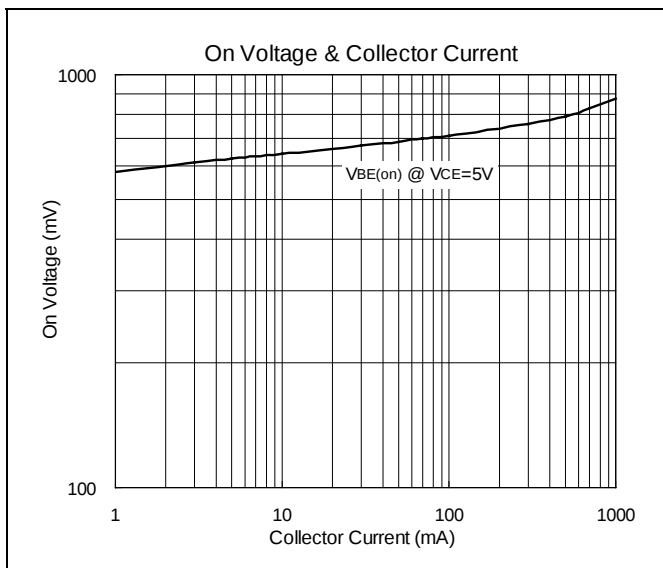
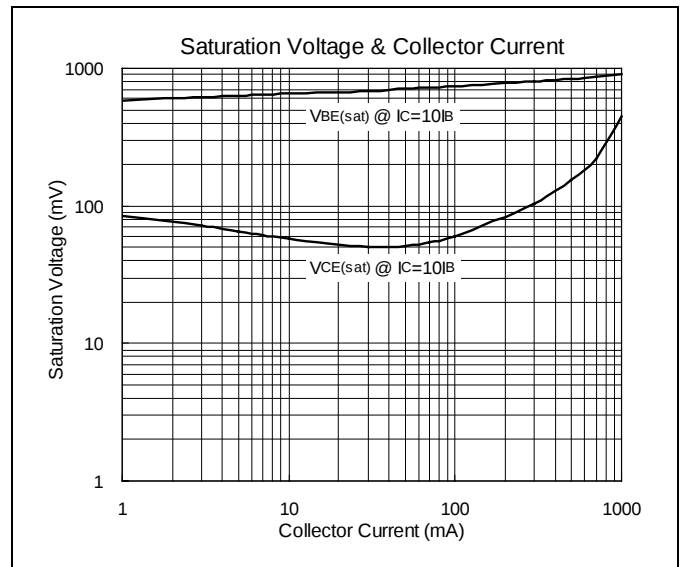
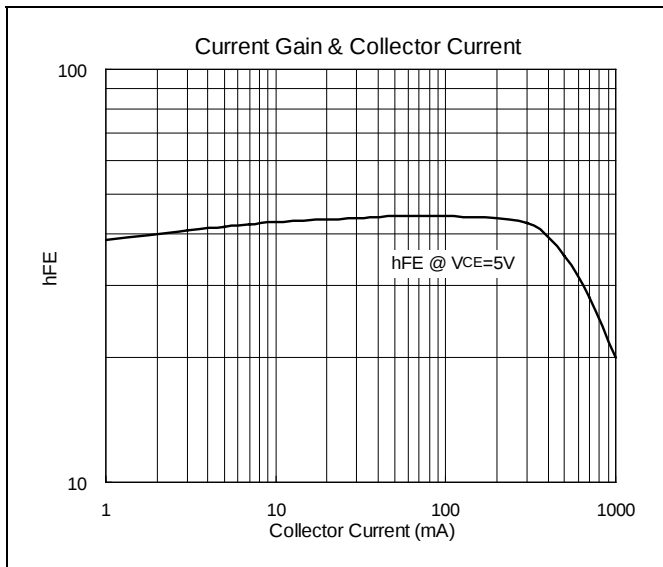
Rank	B2	B3
Range	13-22	18-27



TO-126

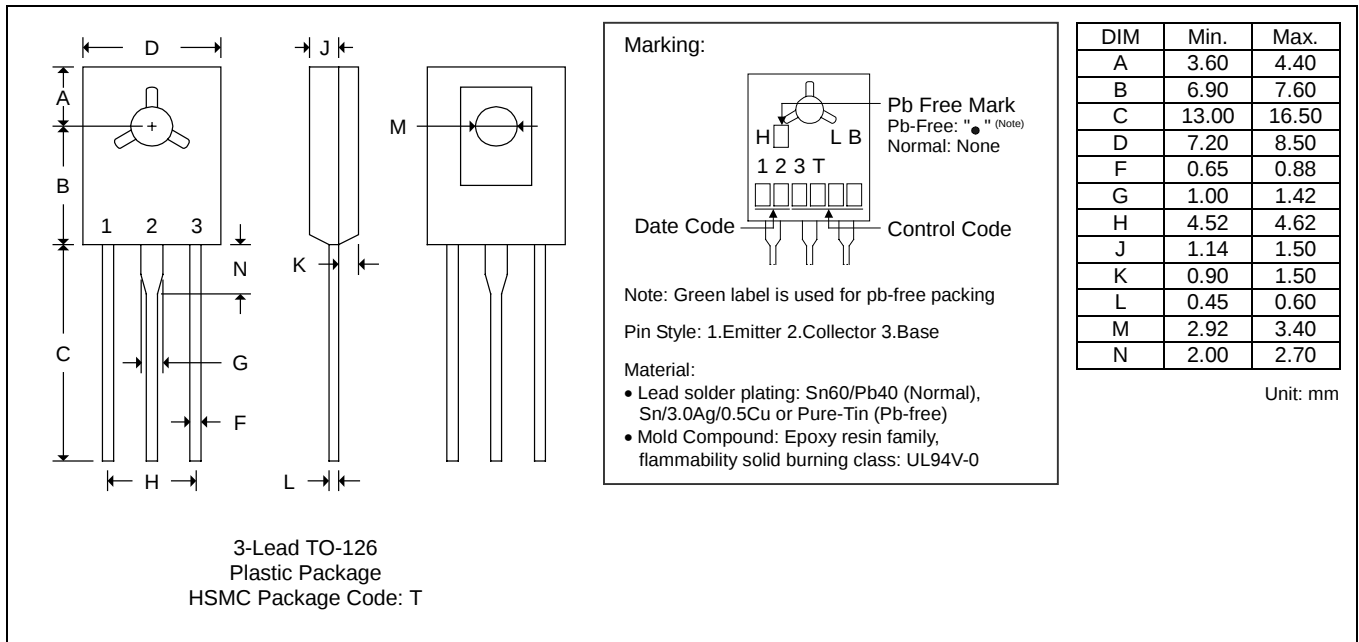


Characteristics Curve





TO-126 Dimension



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Head Office And Factory:

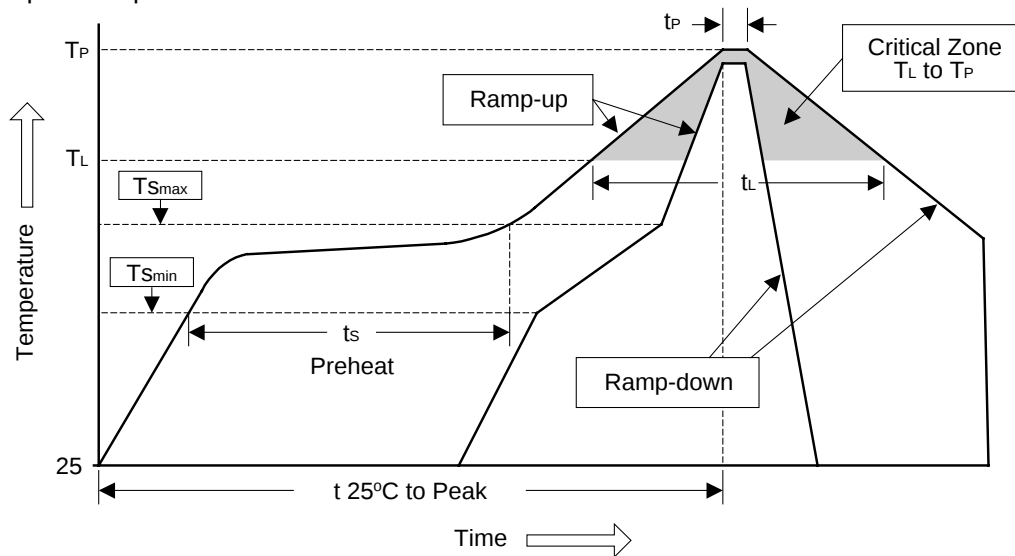
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F., No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
Tel: 886-3-5983621~5 Fax: 886-3-5982931



Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

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