



HLB124E

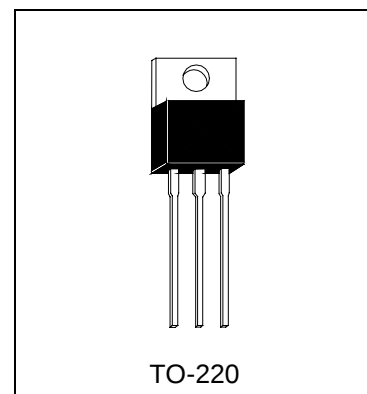
NPN EPITAXIAL PLANAR TRANSISTOR

Description

The HLB124E is designed for high voltage, high speed switching inductive circuits, and amplifier applications.

Features

- High Speed Switching
- Low Saturation Voltage
- High Reliability



TO-220

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)

- Maximum Temperatures
Storage Temperature -55 ~ +150 °C
Junction Temperature +150 °C
- Maximum Power Dissipation
Total Power Dissipation ($T_C=25^\circ\text{C}$) 35 W
- Maximum Voltages and Currents ($T_A=25^\circ\text{C}$)
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) 2 A
I_C Collector Current (Pulse) 4 A
I_B Base Current (DC) 1 A
I_B Base 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 =1mA
BV _{CEO}	400	-	-	V	I _C =10mA
BV _{EBO}	8	-	-	V	I _E =1mA
I _{CBO}	-	-	10	uA	V _{CB} =600V
I _{EBO}	-	-	10	uA	V _{EB} =9V, I _C =0
*V _{CE(sat)1}	-	-	0.3	V	I _C =0.1A, I _B =10mA
*V _{CE(sat)2}	-	-	0.8	V	I _C =0.3A, I _B =30mA
*V _{BE(sat)1}	-	-	0.9	V	I _C =0.1A, I _B =10mA
*V _{BE(sat)2}	-	-	1.2	V	I _C =0.3A, I _B =30mA
*h _{FE1}	10	-	40		V _{CE} =5V, I _C =0.3A
*h _{FE2}	10	-	-		V _{CE} =5V, I _C =0.5A
*h _{FE3}	6	-	-		V _{CE} =5V, I _C =1A
f _T	15	-	-	MHz	V _{CE} =10V, I _C =0.3, f=1MHz

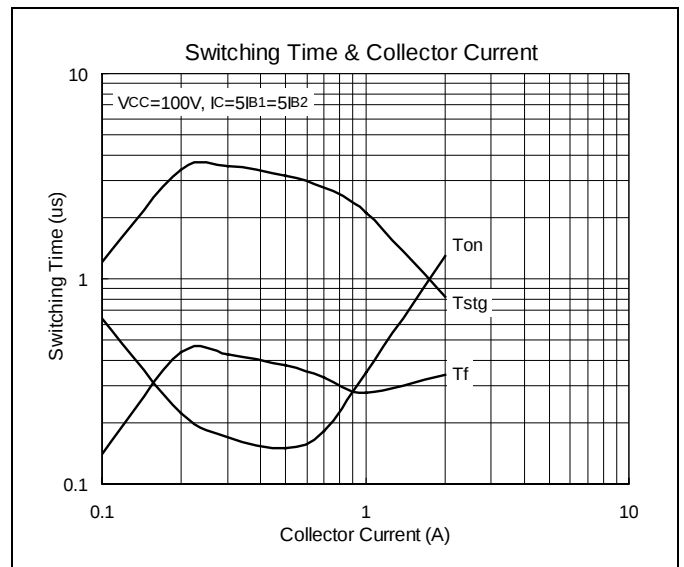
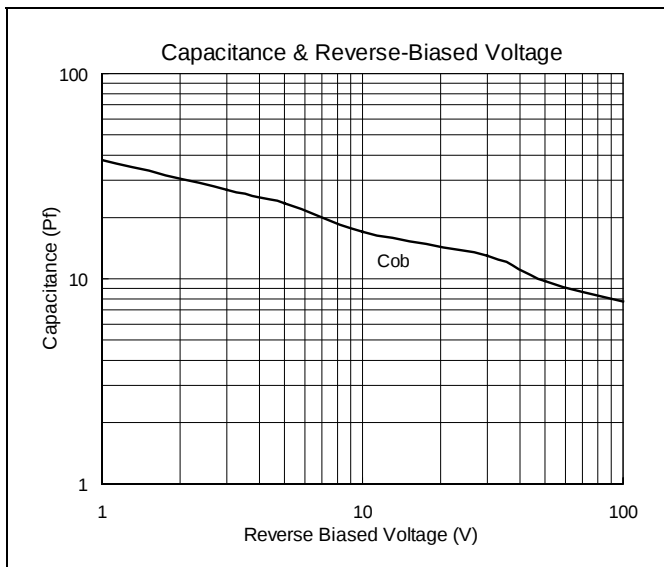
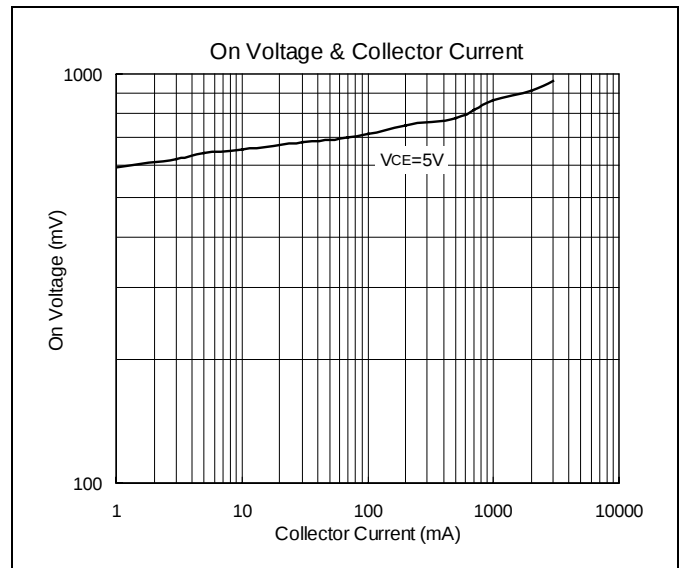
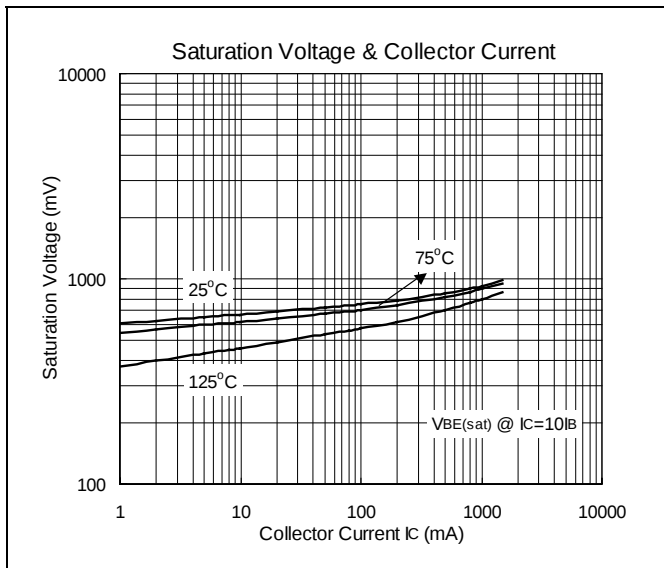
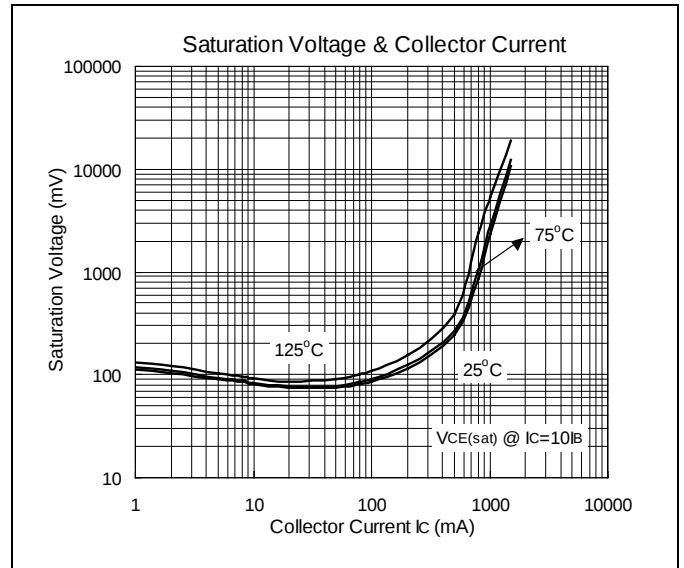
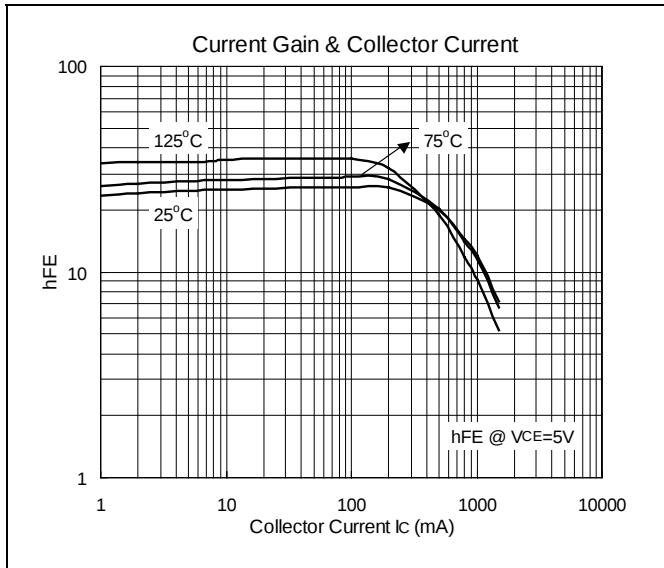
*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%

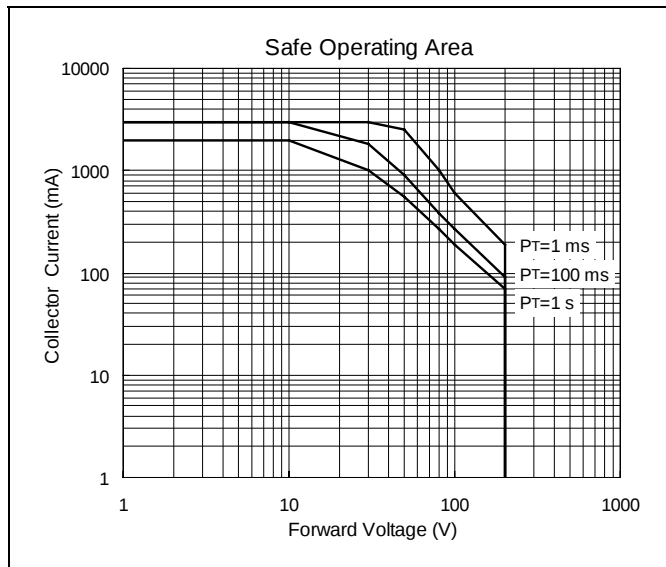
Classification of hFE1

Rank	B1	B2	B3	B4	B5	B6
Range	10~17	13~22	18~27	23~32	28~37	33~40



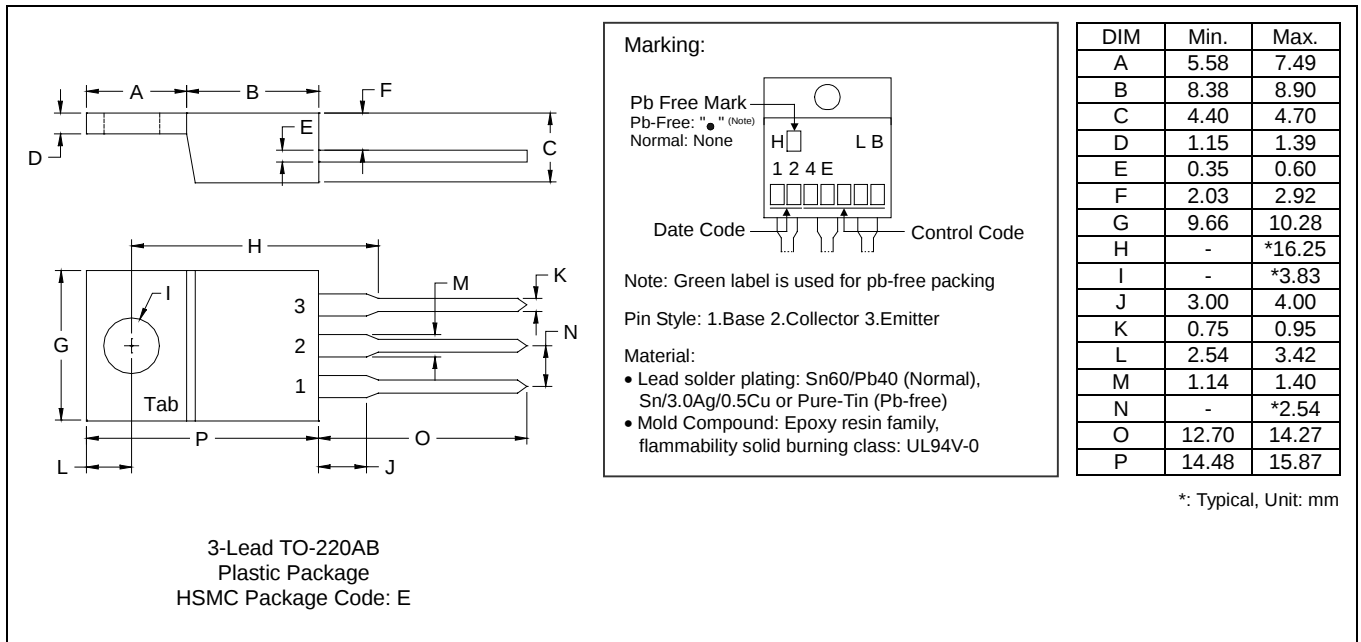
Characteristics Curve







TO-220AB Dimension



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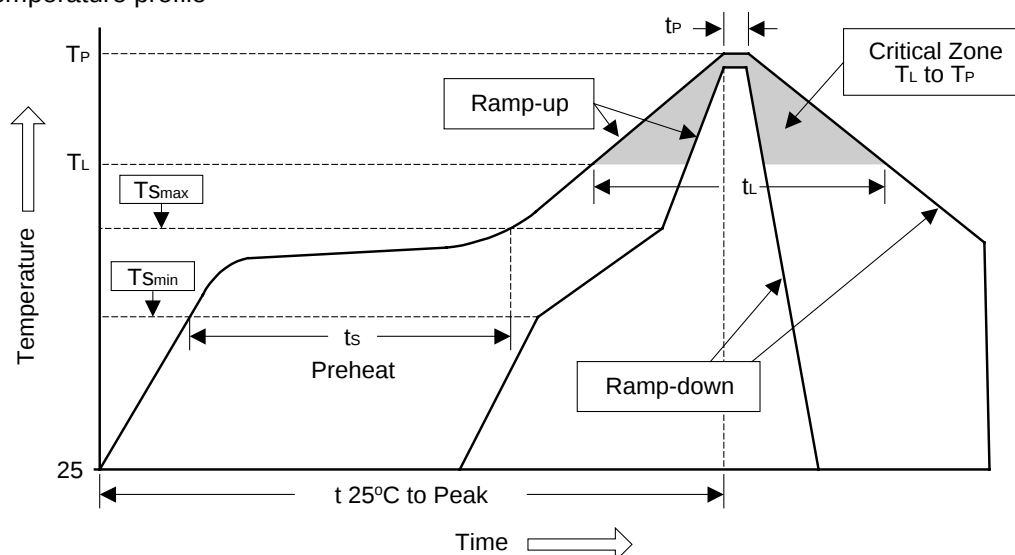
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Soldering Methods for HSMC's Products

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	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec