



HLB120S

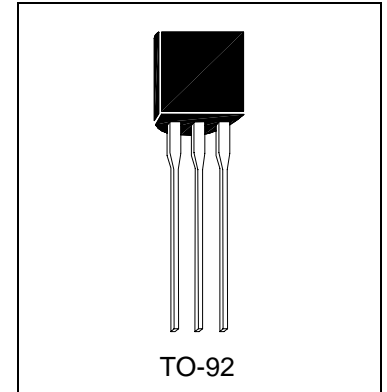
NPN Triple Diffused Planar Type High Voltage Transistors

Description

The HLB120S is a medium power transistor designed for use in switching applications.

Features

- High Breakdown Voltage
- Low Collector Saturation Voltage
- Fast Switching Speed



Absolute Maximum Ratings

- Maximum Temperatures
 - Storage Temperature -55 ~ +150 °C
 - Junction Temperature +150 °C Maximum
- Maximum Power Dissipation
 - Total Power Dissipation (T_A=25°C) 625 mW
 - Total Power Dissipation (T_C=25°C) 7 W
- Maximum Voltages and Currents (T_A=25°C)
 - V_{CBO} Collector to Base Voltage 500 V
 - V_{CEO} Collector to Emitter Voltage 400 V
 - V_{EBO} Emitter to Base Voltage 6 V
 - I_C Collector Current (DC) 100 mA
 - I_C Collector Current (Pulse)..... 200 mA
 - I_B Base Current (DC)..... 20 mA
 - I_B Base Current (Pulse)..... 40 mA

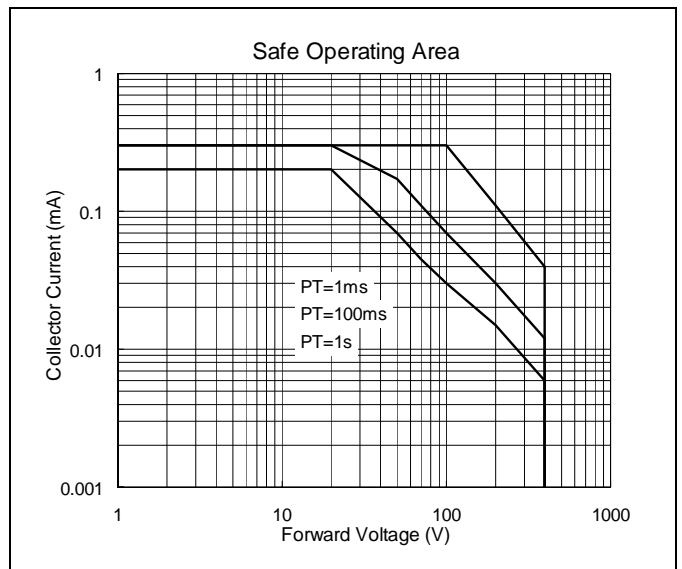
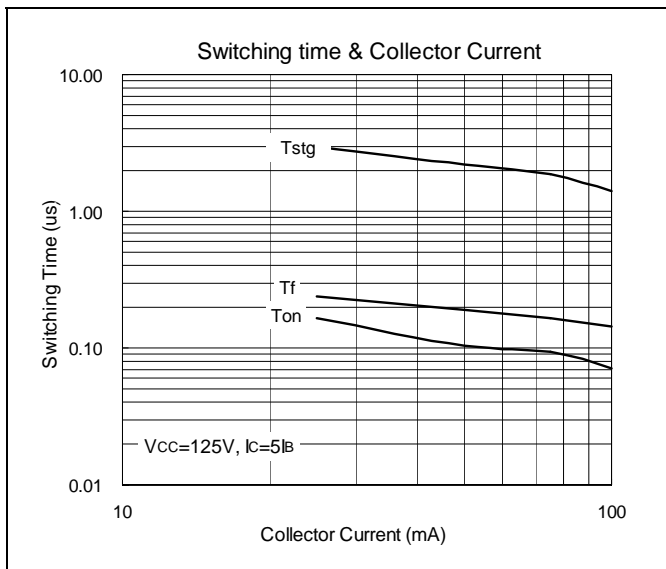
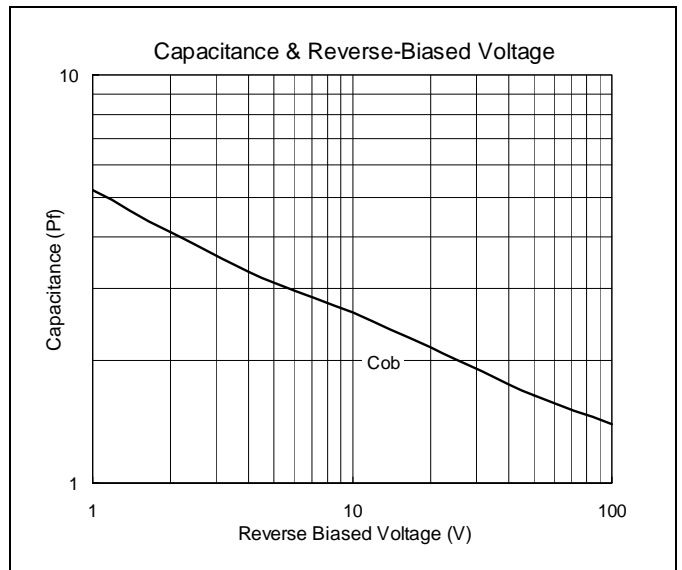
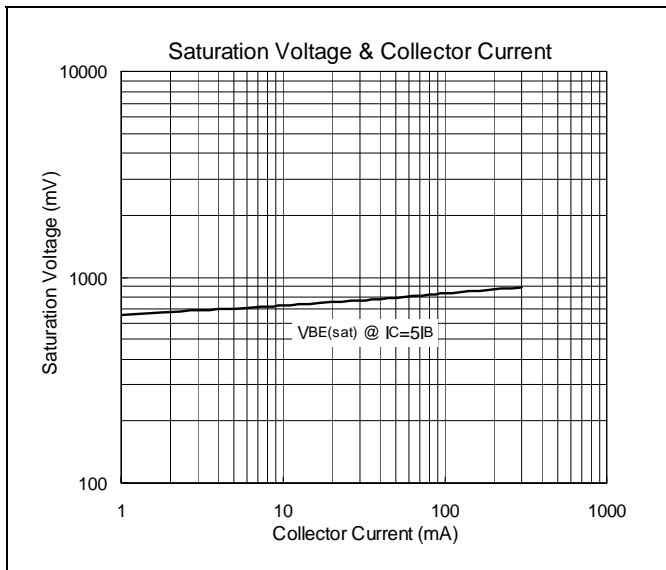
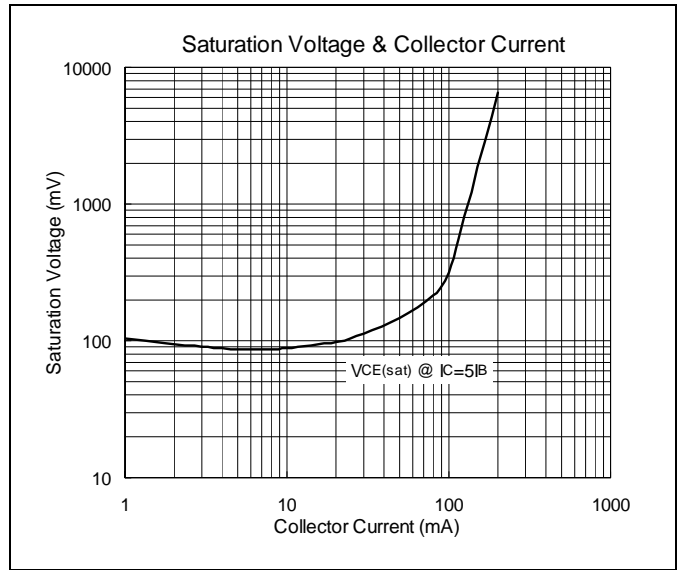
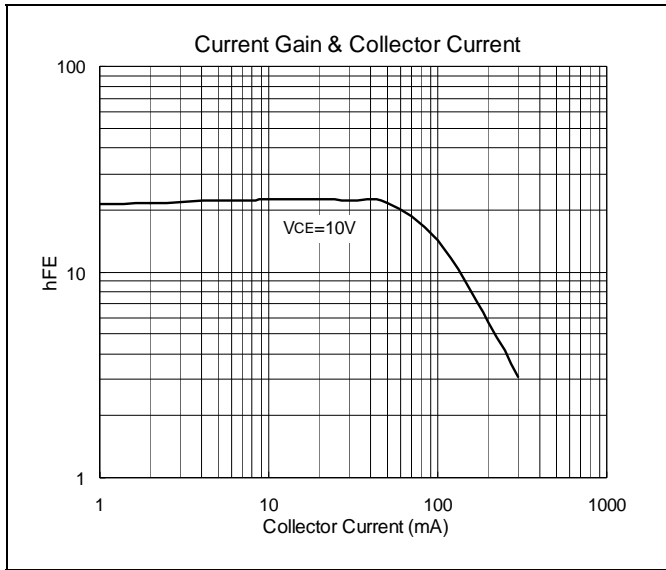
Electrical Characteristics (T_A=25°C)

Symbol	Min.	Typ.	Max	Unit	Test Conditions
BV _{CBO}	500	-	-	V	I _C =100uA, I _E =0
BV _{CEO}	400	-	-	V	I _C =10mA, I _B =0
BV _{EBO}	6	-	-	V	I _E =10uA, I _C =0
I _{CBO}	-	-	10	uA	V _{CB} =450V
I _{CEO}	-	-	10	uA	V _{CE} =400V, I _B =0
I _{EBO}	-	-	10	uA	V _{EB} =6V, I _C =0
*V _{CE(sat)1}	-	-	400	mV	I _C =50mA, I _B =10mA
*V _{CE(sat)2}	-	-	750	mV	I _C =100mA, I _B =20mA
*V _{BE(sat)}	-	-	1	V	I _C =50mA, I _B =10mA
*h _{FE1}	8	-	-		V _{CE} =10V, I _C =10mA
*h _{FE2}	10	-	36		V _{CE} =10V, I _C =50mA

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



Characteristics Curve





TO-92 Dimension

Marking:

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

H	L	B
1	2	0 S

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	4.33	4.83
B	4.33	4.83
C	12.70	-
D	0.36	0.56
E	-	*1.27
F	3.36	3.76
G	0.36	0.56
H	-	*2.54
I	-	*1.27
$\alpha 1$	-	*5°
$\alpha 2$	-	*2°
$\alpha 3$	-	*2°

*: Typical, Unit: mm

3-Lead TO-92 Plastic Package
 HSMC Package Code: A

TO-92 Taping Dimension

DIM	Min.	Max.
A	4.33	4.83
D	3.80	4.20
D1	0.36	0.53
D2	4.33	4.83
F1,F2	2.40	2.90
H	15.50	16.50
H1	8.50	9.50
H2	-	1
H2A	-	1
H3	-	27
H4	-	21
L	-	11
L1	2.50	-
P	12.50	12.90
P1	5.95	6.75
P2	50.30	51.30
T	-	0.55
T1	-	1.42
T2	0.36	0.68
W	17.50	19.00
W1	5.00	7.00

Unit: mm

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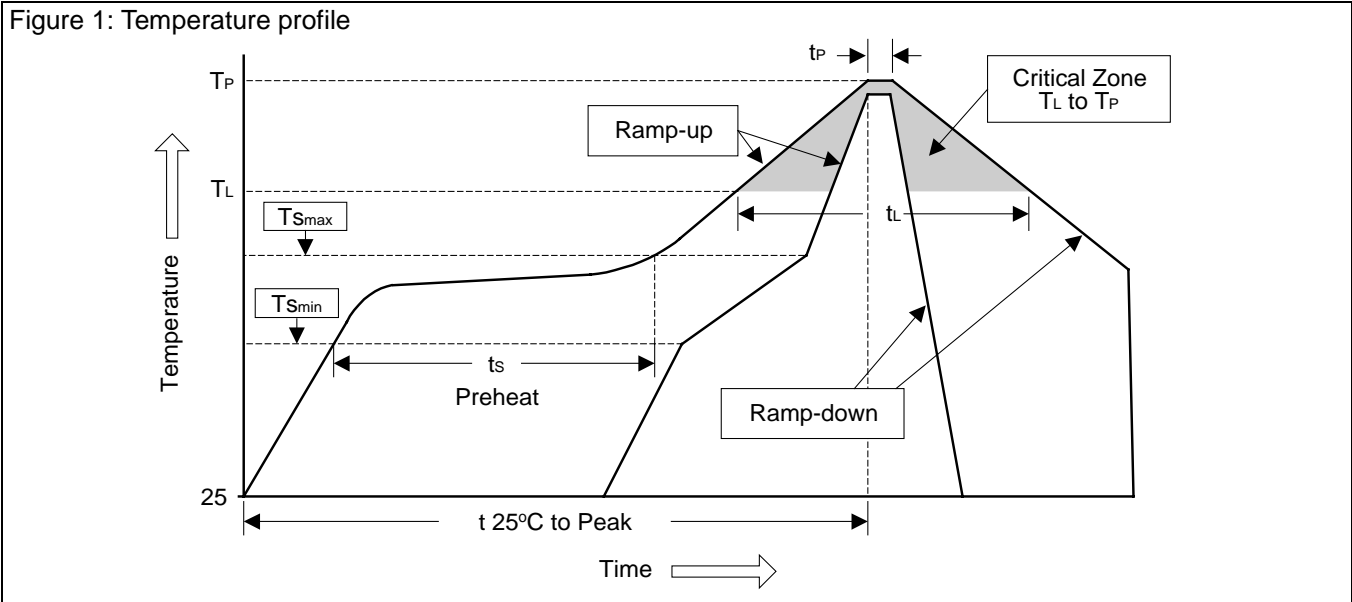
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Soldering Methods for HSMC's Products

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



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