



HE8050S

NPN EPITAXIAL PLANAR TRANSISTOR

Description

The HE8050S is designed for general purpose amplifier applications.

Absolute Maximum Ratings

- Maximum Temperatures
Storage Temperature -55 ~ +150 °C
Junction Temperature +150 °C Maximum
- Maximum Power Dissipation
Total Power Dissipation ($T_A=25^{\circ}\text{C}$) 625 mW
- Maximum Voltages and Currents ($T_A=25^{\circ}\text{C}$)
 V_{CBO} Collector to Base Voltage 25 V
 V_{CEO} Collector to Emitter Voltage 20 V
 V_{EBO} Emitter to Base Voltage 5 V
 I_C Collector Current 700 mA

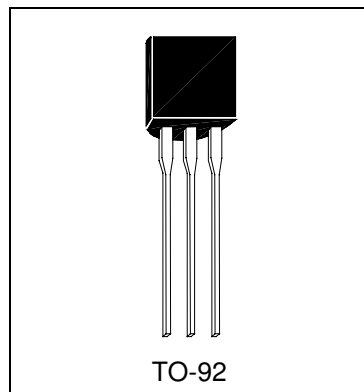
Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	25	-	-	V	$I_C=10\mu\text{A}$, $I_E=0$
BV_{CEO}	20	-	-	V	$I_C=1\text{mA}$, $I_B=0$
BV_{EBO}	5	-	-	V	$I_E=10\mu\text{A}$, $I_C=0$
I_{CBO}	-	-	1	μA	$V_{CB}=20\text{V}$, $I_E=0$
I_{EBO}	-	-	100	nA	$V_{EB}=5\text{V}$, $I_C=0$
$*V_{CE(sat)}$	-	-	0.5	V	$I_C=0.5\text{A}$, $I_B=50\text{mA}$
$V_{BE(on)}$	-	-	1	V	$V_{CE}=1\text{V}$, $I_C=150\text{mA}$
$*h_{FE1}$	100	-	500		$V_{CE}=1\text{V}$, $I_C=150\text{mA}$
$*h_{FE2}$	-	140	-		$V_{CE}=1\text{V}$, $I_C=500\text{mA}$
f_T	150	-	-	MHz	$V_{CE}=10\text{V}$, $I_C=20\text{mA}$, $f=100\text{MHz}$
Cob	-	-	10	pF	$V_{CB}=10\text{V}$, $f=1\text{MHz}$, $I_E=0$

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

Classifications of h_{FE}

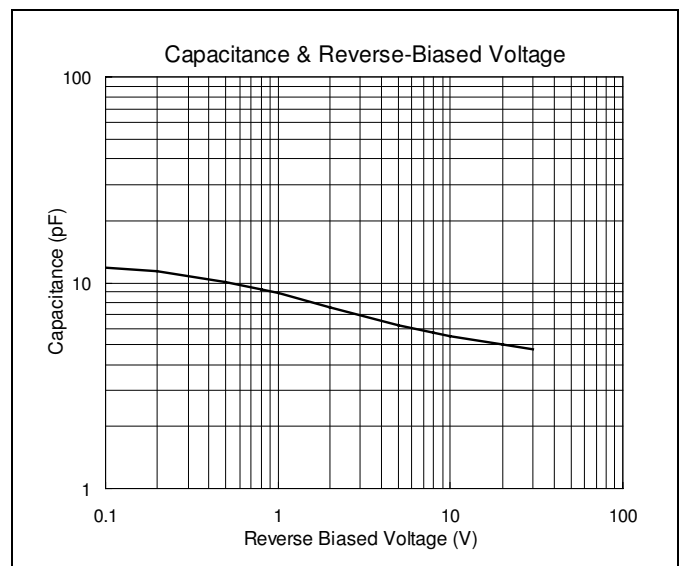
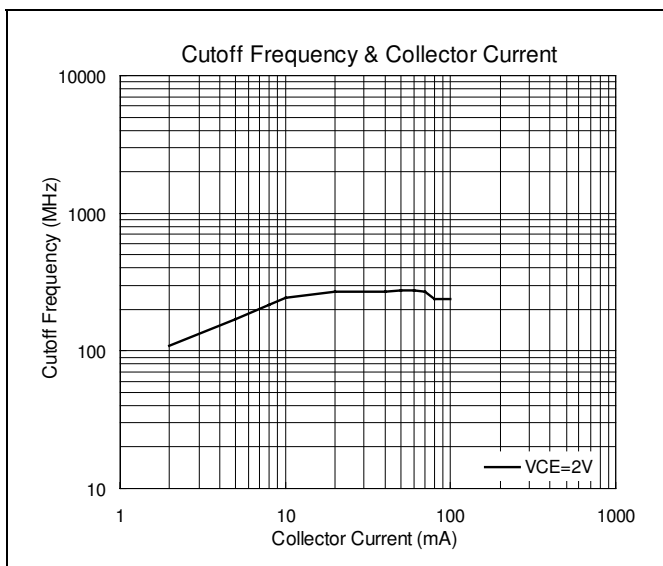
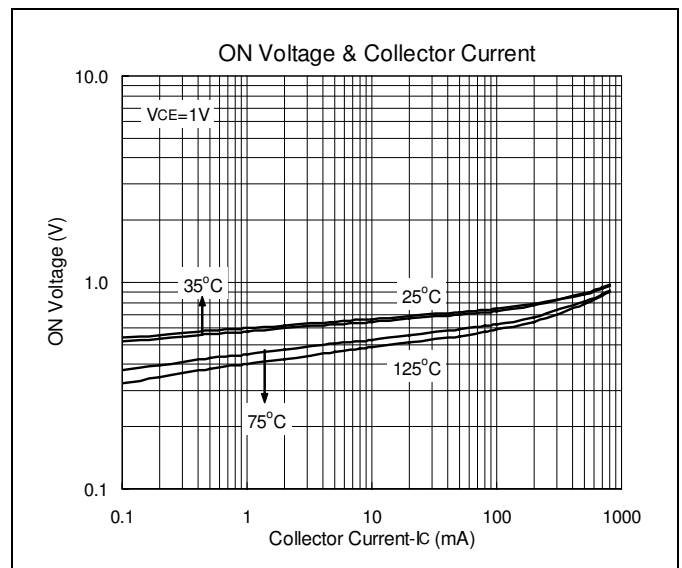
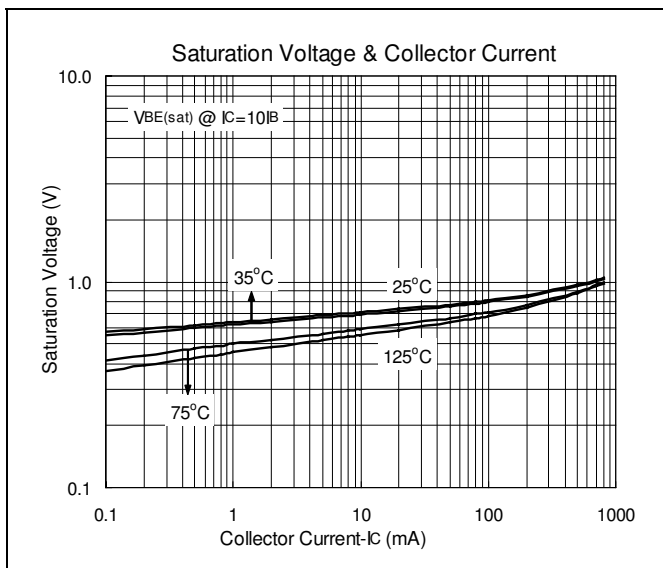
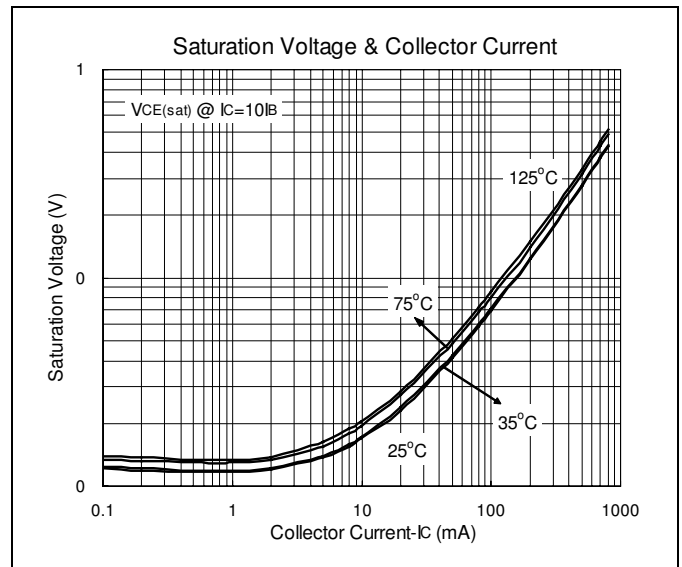
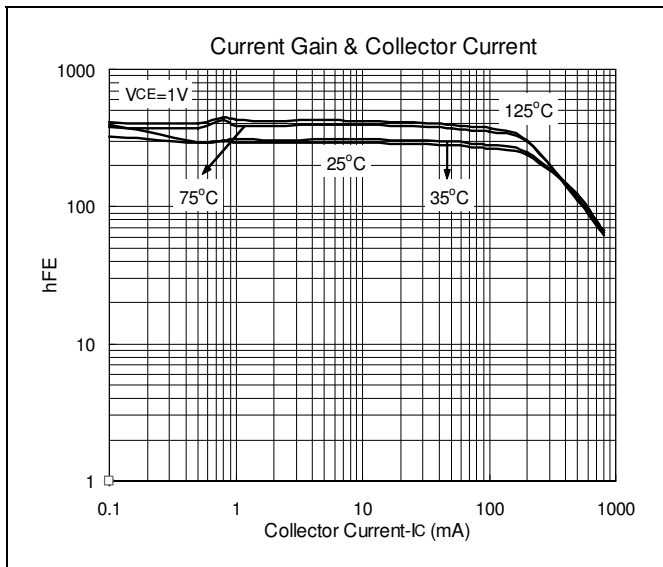
Rank	C	C1	D	D1	E
h_{FE1}	100-200	100-200	160-300	160-300	250-500
h_{FE2}	-	>50	-	>50	-

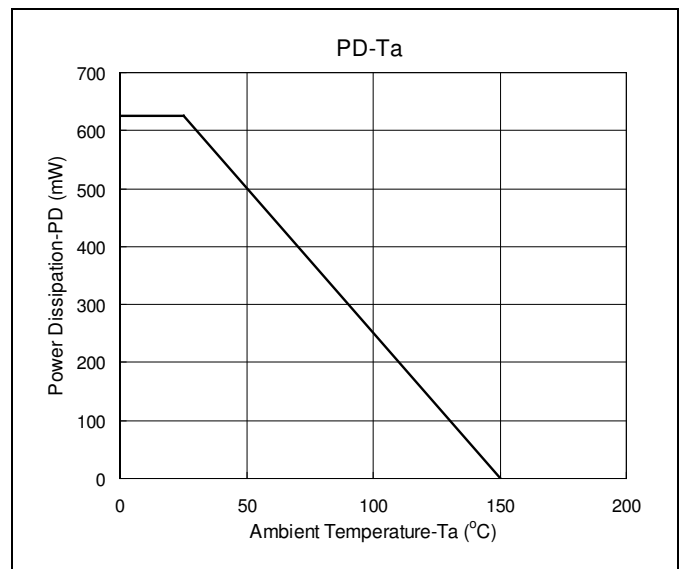
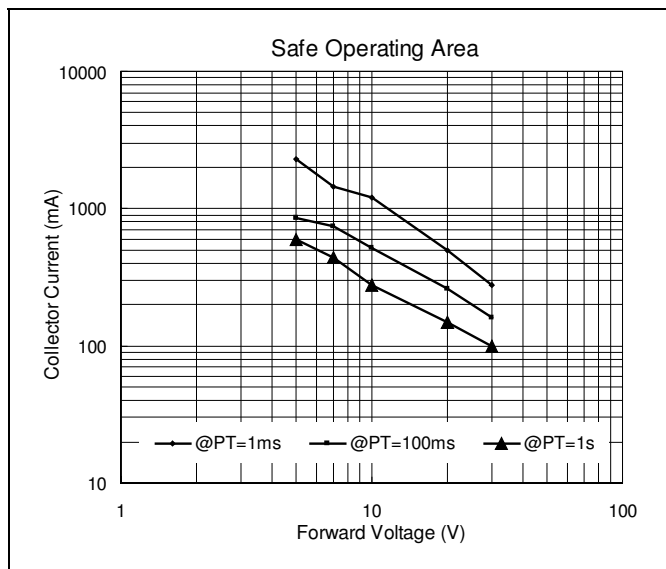


TO-92



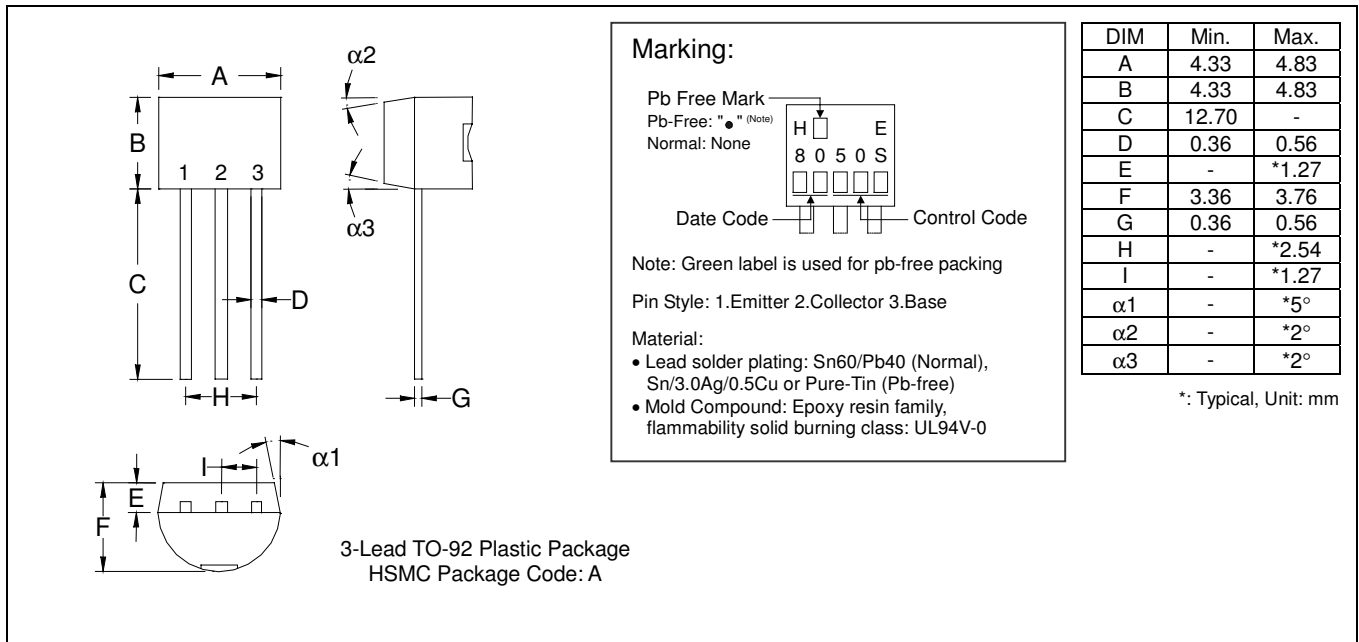
Characteristics Curve



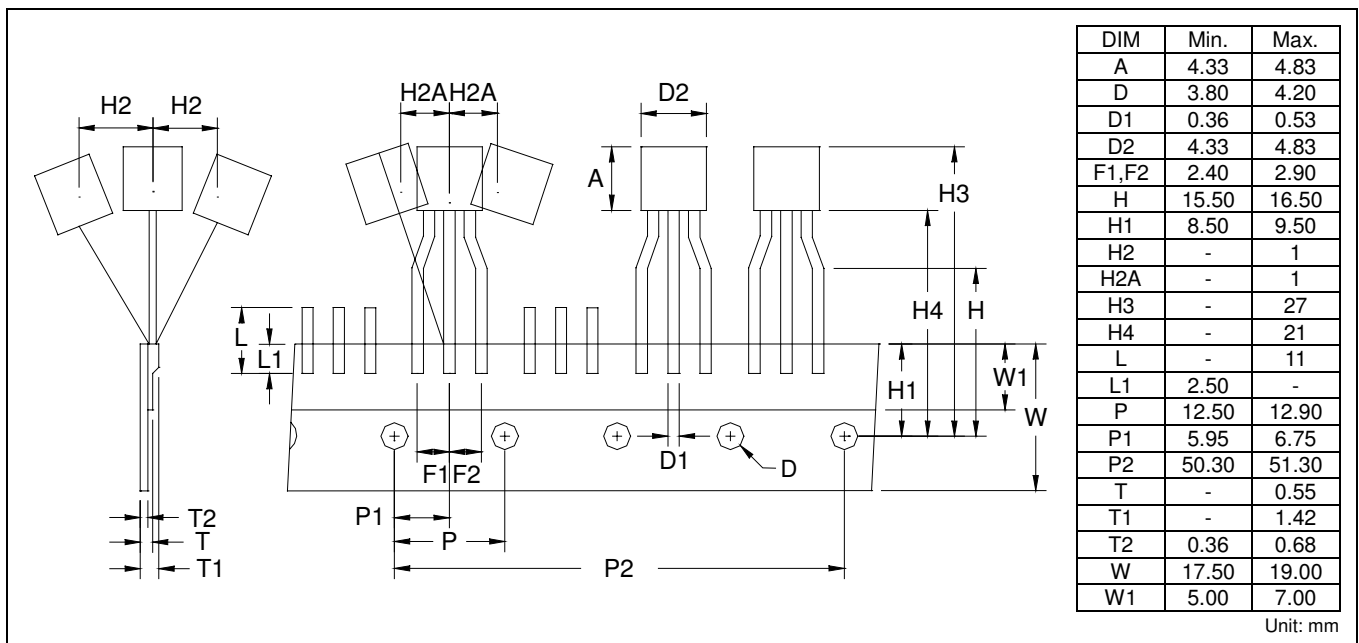




TO-92 Dimension



TO-92 Taping Dimension



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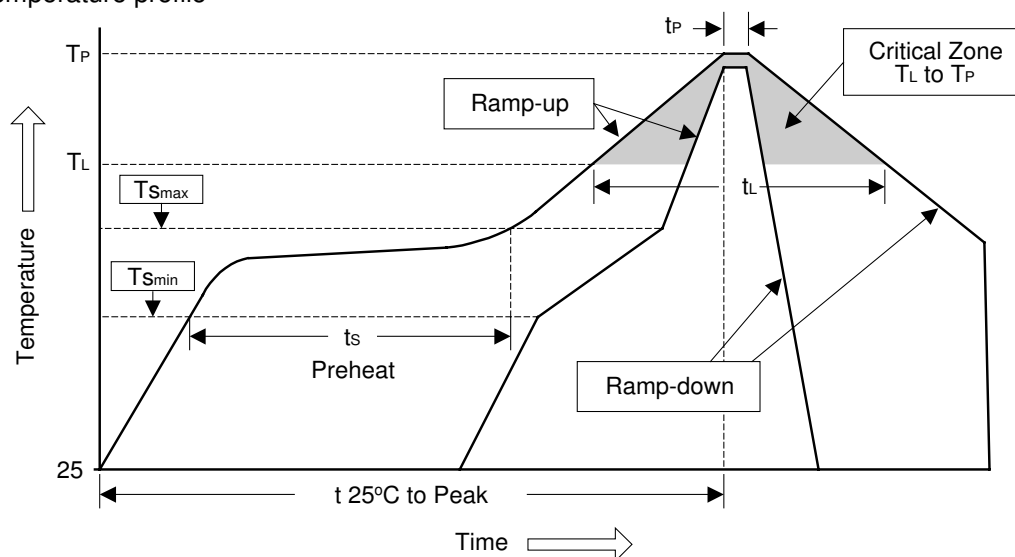


Soldering Methods for HSMC's Products

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