HTIP112

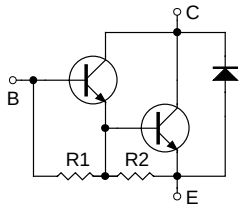
NPN EPITAXIAL PLANAR TRANSISTOR

TO-220

Description

The HTIP112 is designed for use in general purpose amplifier and low-speed switching applications.

Darlington Schematic



Absolute Maximum Ratings (T_A=25°C)

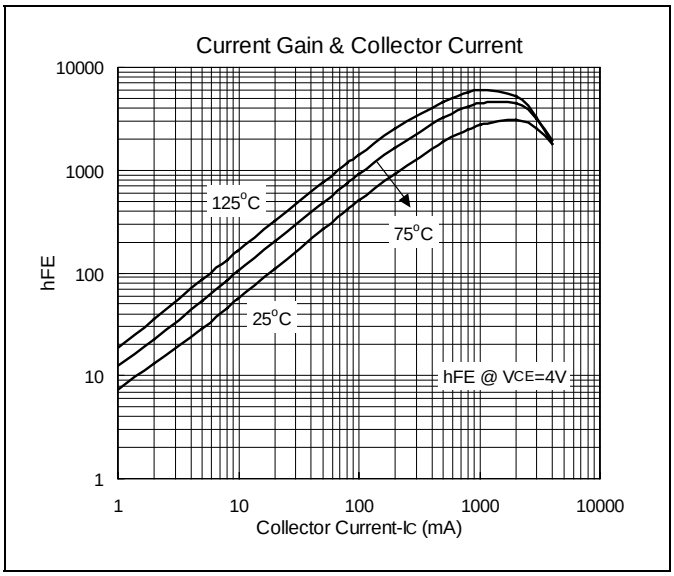
- Maximum Temperatures
  - Storage Temperature ..... -55 ~ +150 °C
  - Junction Temperature ..... +150 °C Maximum
- Maximum Power Dissipation
  - Total Power Dissipation (T_C=25°C) ..... 50 W
  - Total Power Dissipation (T_A=25°C) ..... 2 W
- Maximum Voltages and Currents
  - BV_{CBO} Collector to Base Voltage ..... 100 V
  - BV_{CEO} Collector to Emitter Voltage ..... 100 V
  - BV_{EBO} Emitter to Base Voltage ..... 5 V
  - I_C Collector Current (Continue) ..... 4 A
  - I_C Collector Current (Peak) ..... 6 A

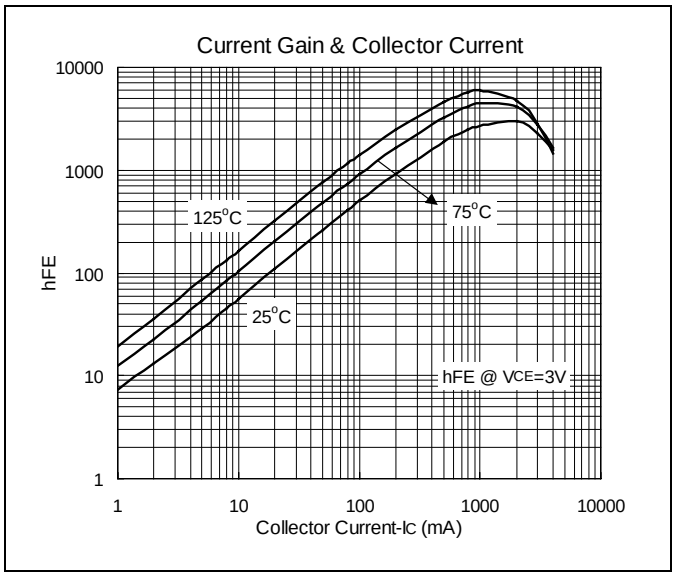
Electrical Characteristics (T_A=25°C)

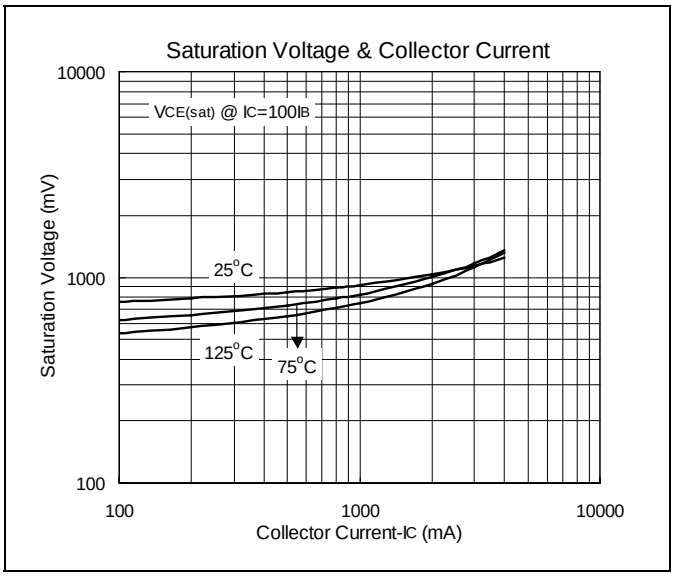
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	100	-	-	V	I_C=1mA
I_{CBO}	-	-	1	mA	V_{CB}=100V
I_{CEO}	-	-	2	mA	V_{CE}=50V
I_{EBO}	-	-	2	mA	V_{EB}=5V
*$V_{CE(sat)}$	-	-	2.5	V	I_C=2A, I_B=8mA
*$V_{BE(on)}$	-	-	2.8	V	I_C=2A, V_{CE}=4V
*h_{FE1}	1	-	-	K	I_C=1A, V_{CE}=4V
*h_{FE2}	500	-	-		I_C=2A, V_{CE}=4V
Cob	-	-	200	pF	V_{CB}=10V, f=0.1MHz

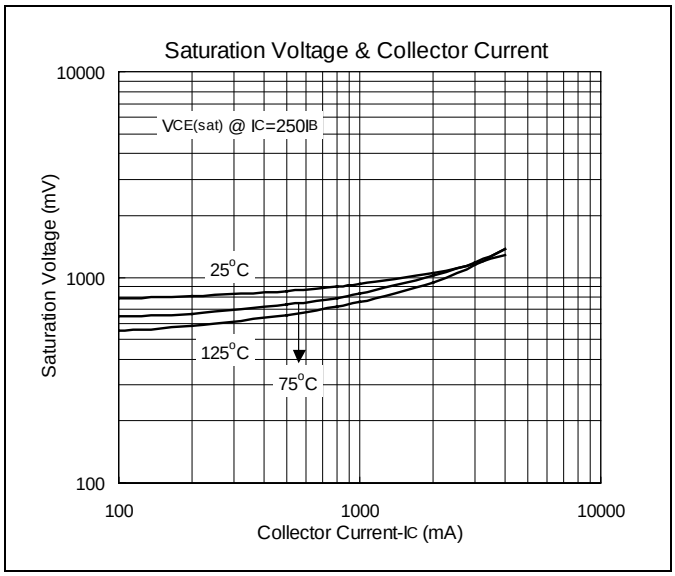
*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%

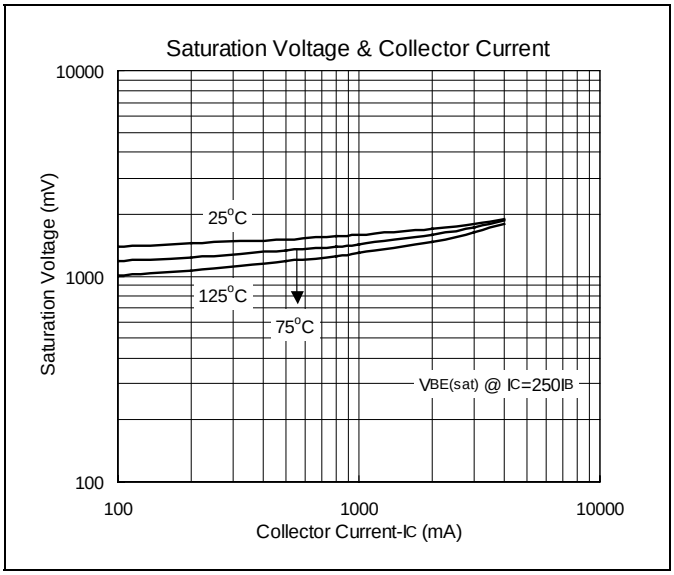
Characteristics Curve

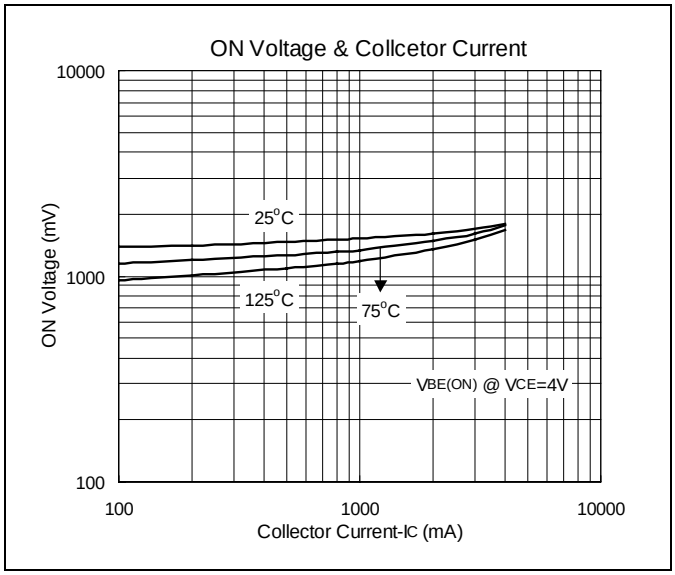


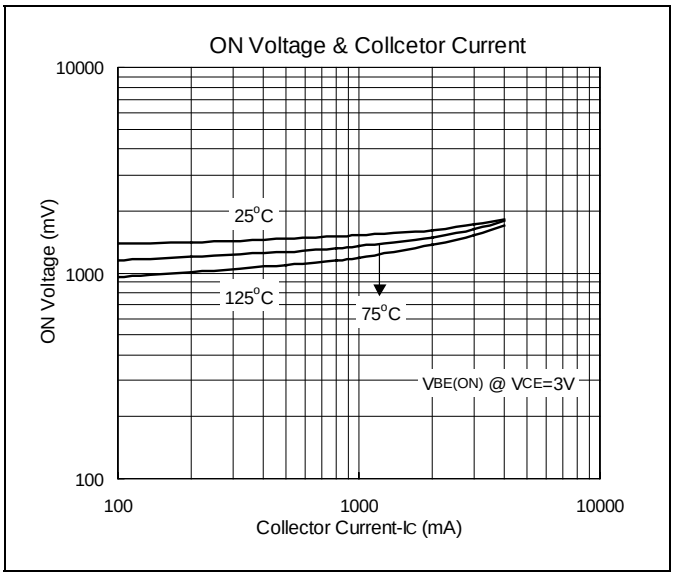


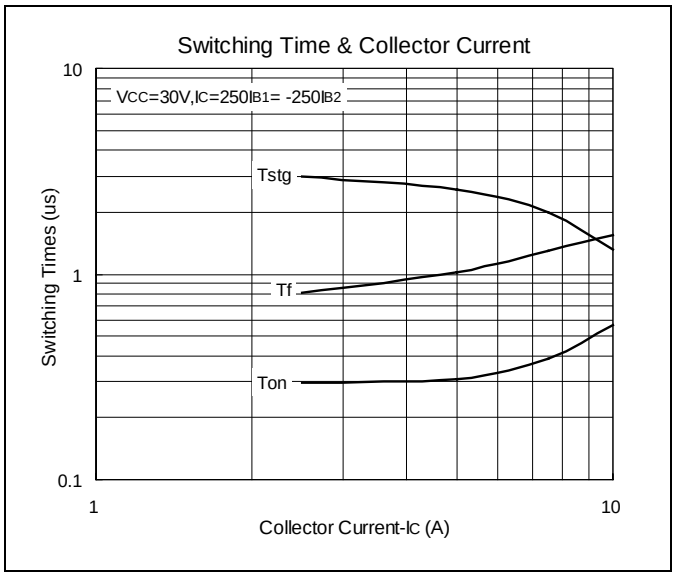


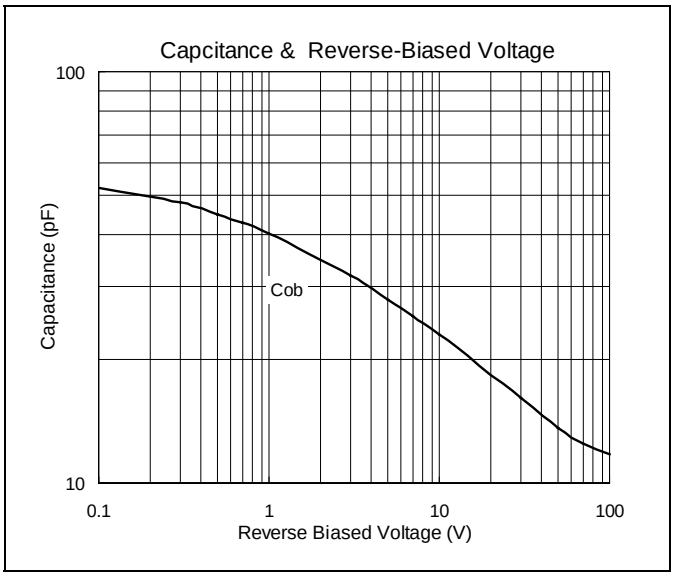


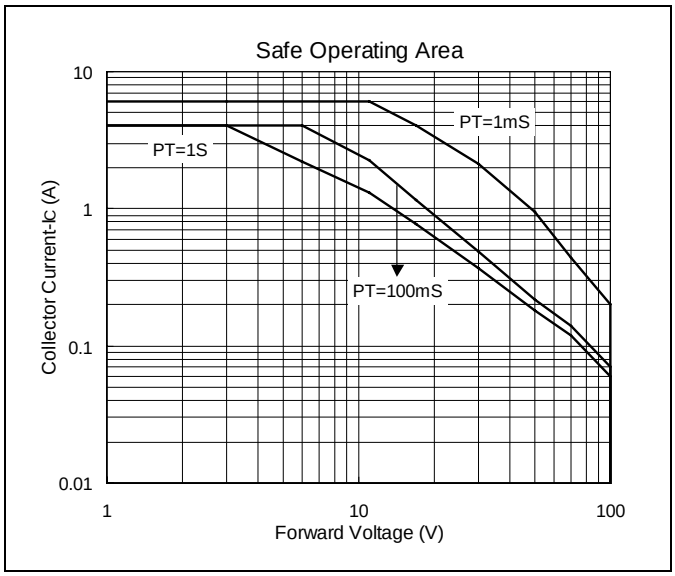




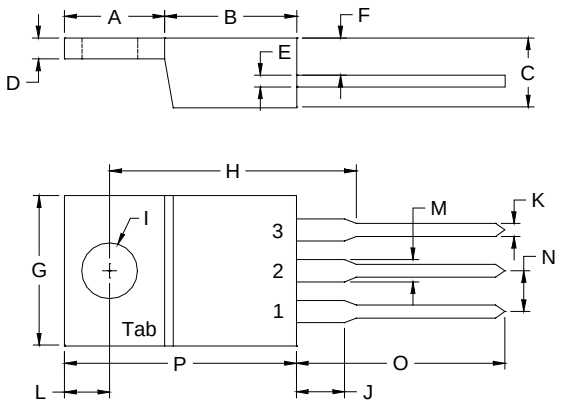

ON Voltage & Collcetor Current
10000
1000
100
ON Voltage (mV)
25°C
125°C
75°C
VBE(ON) @ VCE=3V
100
1000
10000
Collector Current-Ic (mA)


Switching Time & Collector Current
10
1
0.1
Switching Times (us)
VCC=30V,IC=250IB1= -250IB2
Tstg
Tf
Ton
1
10
Collector Current-Ic (A)


Capcitance & Reverse-Biased Voltage
100
10
Capacitance (pF)
Cob
0.1
1
10
100
Reverse Biased Voltage (V)

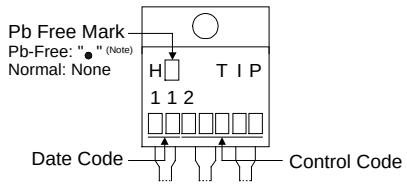

Safe Operating Area
10
1
0.1
0.01
Collector Current-Ic (A)
PT=1mS
PT=1S
PT=100mS
1
10
100
Forward Voltage (V)

TO-220AB Dimension



3-Lead TO-220AB
Plastic Package
HSMC Package Code: E

Marking:



Note: Green label is used for pb-free packing

Pin Style: 1.Base 2 & Tab.Collector 3.Emitter

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	5.58	7.49
B	8.38	8.90
C	4.40	4.70
D	1.15	1.39
E	0.35	0.60
F	2.03	2.92
G	9.66	10.28
H	-	*16.25
I	-	*3.83
J	3.00	4.00
K	0.75	0.95
L	2.54	3.42
M	1.14	1.40
N	-	*2.54
O	12.70	14.27
P	14.48	15.87

*: Typical, Unit: mm

Head Office And Factory:

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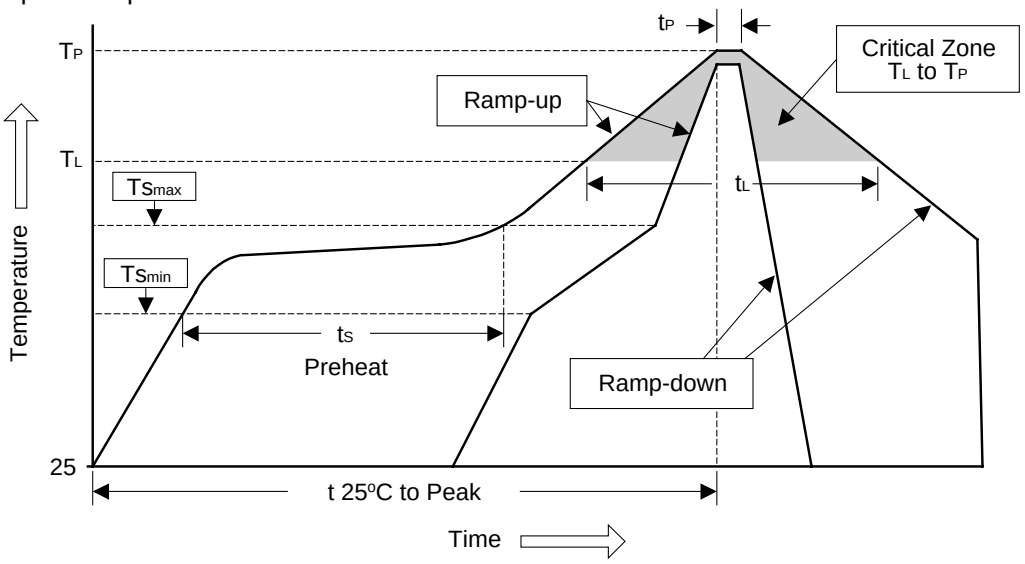
  Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
  Tel: 886-3-5983621~5 Fax: 886-3-5982931

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