HJB
Complementary Bipolar Process

Data Sheet DS00105 / June 2010

HJB is a double polysilicon trench isolated complementary bipolar process for RF applications in the range 900MHz to 2.4GHz.

Key parameters (minimum geometry device)		
	NPN	PNP
fT	19 GHz	15GHz
CJC	3.5 fF	4 fF
CJE	5.5fF	4.5fF
Bvceo	> 4.5V	>4.5V

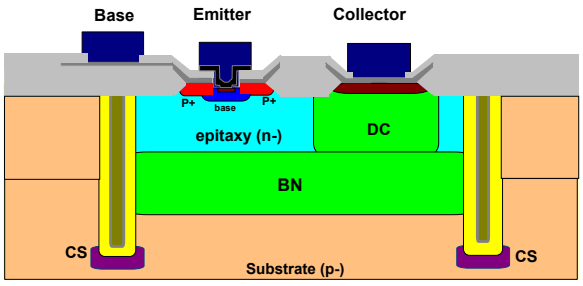
Applications

- **High Speed amplifiers**
- **TV Tuners**
- **Frequency Scalers**
- **High Speed Logic**

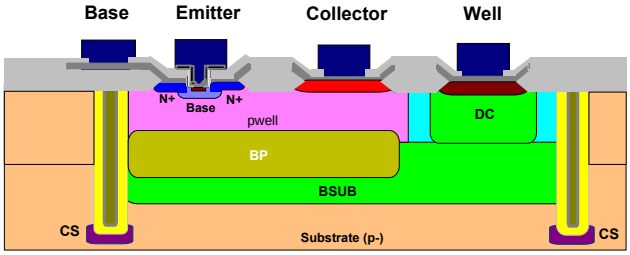
Key Process Feature

- **Integrated inductors (optional)**
- **Varactor diodes - 0.5 fF/µm²**
- **Polysilicon resistors - 110/155/1400 Ohms/sq**
- **Schottky Diodes - V_f=0.5 V**
- **MIM capacitors - 0.5 fF/µm² (optional)**
- **MIS capacitors - 2.75 fF/µm²**
- **Two level or three level metal option**

npn cross section



vpnp cross section



npn parameters (0.6 x 4.0um emitter)			
parameter	Condition	Value	Units
fT	Ic=0.7mA Vce=2V	19	GHz
HFE	Ic=10µA Vce=2V	174	
VAF		63	V
BVCEO	Ic=1µA	>4.5	V
BVCBO	Ic=1µA	>8.0	V
CJE	Vbe=0	14	fF
CJC	Vbc=0	7.5	fF
CJS	Vcs=0	19	fF

Vertical pnp parameters (0.6 X 4.0µm emitter)			
parameter	Condition	Value	Units
fT	Ic=0.2mA Vce=2V	15	GHz
HFE	Ic=1µA Vcb=0	70	
VAF		19	V
BVCEO	Ic=1µA	>12	V
BVCBO	Ic=1µA	>8.0	V
CJE	Vbe=0	11	fF
CJC	Vbc=0	10	fF
CJS*	Vcs=0	29	fF
*pnp collector-isolation junction			

Polysilicon Resistor Values		
parameter	Value	Units
LoP	155 ± 20	Ω
LoN	110 ± 20	Ω
HiP	1.4 ± 0.2	kΩ

Design Rules		
Feature	Min µm	Spacing µm
Emitter	0.6 X 1.6	
LoP, LoN resistor	1.2	0.8
Contact	1.0 X 1.6	1.4
1st Layer metal	1.4	1.0
2nd layer metal	1.4	1.0
3rd layer metal	3.0	2.0

Data Sheet DS00105 / June 2010

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