



## InP HBT Wafers: Next-generation materials and technology for high-speed, low-power applications.

### Specifications

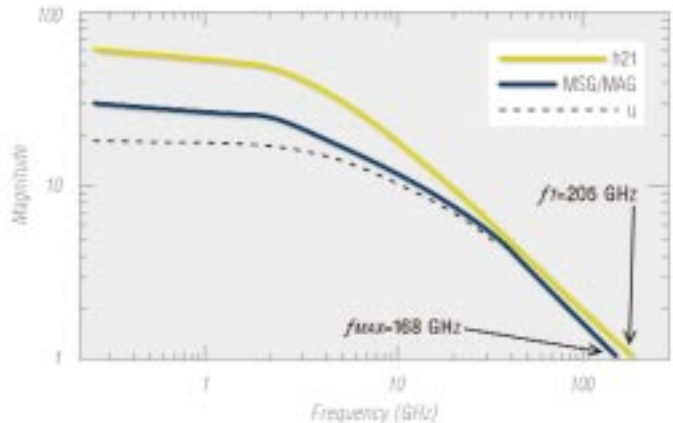
- 50, 75, and 100 mm
- Carbon-doped InGaAs
- MOCVD production
- Digital and power applications

### Features and Performance

- InP emitter
- Carbon doping for high reliability
- SHBT and DHBT
  - InGaAsP capability for advanced DHBT structures
  - Graded-base for higher gain and speed performance
- Quick-lot HBT fab and characterization available for maximum yield and quality

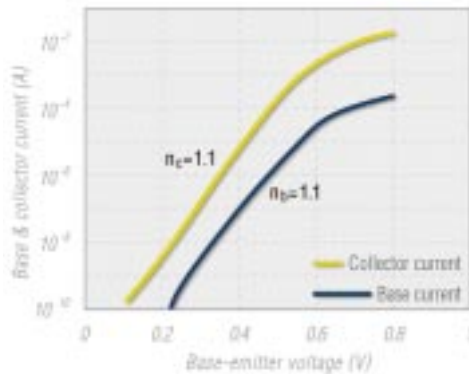
Designed to meet the demands of tomorrow's high-speed 3G wireless and OC-768 networking technologies, Epiworks' InP heterojunction bipolar transistors (HBT) combine high-frequency performance with ultra-low power consumption. Manufacturer of the world's first 100 mm carbon-doped InP HBTs, EpiWorks continues to innovate by delivering advanced DHBTs and graded-base HBTs, in addition to our leading SHBTs.

### Figure of merit extrapolation



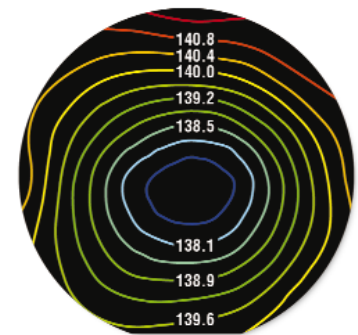
High-frequency performance for a small-area HBT with a 2500 Angstrom collector and a 600 Angstrom base, showing  $f_1 > 200$  GHz and  $f_{max} > 160$  GHz.

### Gummel plot for InP/InGaAs SHBT



InP/InGaAs SHBT with a  $60 \times 60 \mu\text{m}^2$  emitter fabricated at EpiWorks on a 100 mm substrate.

### Resistivity map for a 100 mm carbon-doped InGaAs layer



Carbon-doped InGaAs layer with typical uniformity of less than 3%.

EpiWorks offers customers high-level interaction with leading researchers, next-generation GaAs and InP materials technology, device expertise, and a high-yield, reliable product. In addition to our quality EpiHBT™ wafers, EpiWorks also offers a range of products featuring advanced material systems for wireline and wireless applications, including our EpiDetector™, EpiFET™, and EpiLaser™ lines.

### EpiWorks characterization of InP HBT wafers

Parameter	Measurement technique	Standard tolerance of specified value
Sheet resistance	Contactless resistivity	± 5%
Layer thickness	Profilometer, X-ray diffraction	± 10%
Carrier concentration	Hall measurement	± 10%
Large-area device data (Beta, $R_{sb}$ , $R_{ese}$ , $V_{be}$ , $BV_{ceo}$ , $BV_{ebo}$ , $BV_{cbo}$ , $n_c$ , $n_b$ )	Full wafer, large-area device process/test	—
Defect density (0.5 to 25 $\mu\text{m}^2$ )	Surfscan	< 50 $\text{cm}^{-2}$