EMBRACING THE NEW OPPORTUNITIES DRIVEN BY WIDE BANDGAP SEMICONDUCTORS

By Kevin Shen
Global electricity usage is growing faster than population…
…which is driven by electrification and digitization

**Transportation**

**Communication**

**Computation**
Power Density also keeps increasing in electronic devices. From the comparison of two iPhone models:

**Battery Size:**

- iPhone 1:
  - 1400mAh @ 135g

- iPhone 11:
  - 3100mAh @ 194g

Source: Apple
…with the increasing density of batteries
These all require better power semiconductors

<table>
<thead>
<tr>
<th>Wide Bandgap Semiconductors</th>
<th>Benefits to electronic systems</th>
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<tbody>
<tr>
<td>Higher thermal conductivity</td>
<td>Increased efficiency</td>
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<tr>
<td>Higher breakdown field</td>
<td>Reduced cooling system size</td>
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<td>WBG semiconductors help power electronics to increase efficiency and power density</td>
<td>Weight reduction</td>
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</table>
WBG semiconductors market is booming as a result

Source: IHS Markit
And is supported by industry development

- Defect density decreasing
- Wafer size increasing
- Design improving

- Higher Yield
- More stable supply
- Reduced cost
- Enhanced performance
Electric Vehicles
Power Supplies
While there are still challenges for WBG semiconductors opportunities remain and the future is bright.

- Cost “Parity” with Si-based counterparts
- Maturity in supply chain with current glocalization trend
- More focus on system-level improvements
While there are still challenges for WBG semiconductors opportunities remain and the future is bright.

1. Favorable policies to accelerate WBG adoption
2. More innovation to harness full potential of WBG semiconductors
3. Industry alliance and supply chain partnership to have better economy
4. Endless endeavor to improve product quality
THANK YOU!