Amorphous octa-silicon high frequency inverter

Can a silicon carbide substrate enhance amorphous indium tin oxide?
Here we show that the electrical and thermal transport properties of amorphous indium tin oxide can be enhancedusing a silicon carbide substrate. Using this approach,we create top-gate transistors that have a channel length of 120 nm and exhibit negligible performance degradation under high electric fields and temperatures of up to 125 °C.

What are amorphous oxide semiconductors?
Amorphous oxide semiconductors (AOSs) are of potential use in the development of back-end-of-line-compatible electronicssuch as logic 1,2,dynamic random-access memory 3,4,5,6,7 and radio-frequency (RF) 8,9,10 devices due to their excellent electrical properties at a low thermal budget.

Can amorphous oxide semiconductors be used as thin channel materials?
Amorphous oxide semiconductors could be used as thin channel materialsin future back-end-of-line-compatible electronics. However,thin body amorphous materials suffer from Joule heating due to the strong scattering of electrons and phonons from extensive local disorder,which can lead to device failure in high-speed power-intensive applications.

How amorphous indium tin oxide can be enhanced?
The electrical and thermal transport properties of amorphous indium tin oxide can be enhanced by using a silicon carbide substrate,leading to indium tin oxide power amplifiers with an output power density of 0.69 W mm-1 and a power-added efficiency of 24.1% at 12 GHz.

This article provides a comprehensive review of Silicon Carbide (SiC) based inverters designed for High-Speed (HS) drive applications, which require higher output ...

Recent research and development efforts in SiC inverters for electric drive applications highlight a strong focus on achieving high power density, high efficiency, and high ...

The vibration test of silicon steel, amorphous and nanocrystalline magnetic rings shows that the magnetostriction of amorphous materials is much larger than that of silicon ...

Here, we demonstrate high index Amorphous Silicon Carbide (a-SiC) films deposited at 150 C and verify the high performance of the platform by fabricating standard ...

The electrical and thermal transport properties of amorphous indium tin oxide can be enhanced by using a silicon carbide substrate, leading to indium tin oxide power amplifiers ...

Therefore, this paper presents an experimental investigation of the iron loss characteristics of an amorphous ring core under the silicon ...

An unprecedented amorphous silicon carbide (a-SiC) thin film exhibits the highest ultimate tensile strength recorded for any nanostructured amorphous material, surpassing 10 ...

Therefore, this paper presents an experimental investigation of the iron loss characteristics of an amorphous ring core under the silicon carbide (SiC) inverter excitation at ...

Integration of hydrogenated amorphous silicon field effect transistors (a-Si FET''s) has been investigated. It is shown that the new inverter which consists of an n-channel ...

The electrical and thermal transport properties of amorphous indium tin oxide can be enhanced by using a silicon carbide substrate, ...

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