



Device Characterization Report

Device Engineering

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Chapter 1. Product Overview

This report documents the characterization results for **XR-9000** fabricated on the **5nm FinFET** process at **Example Foundry**.

Field	Value
Product	XR-9000
Process Node	5nm FinFET
Foundry	Example Foundry
Report Version	3.0
Author	Device Engineering
Date	April 2026
Classification	Company Confidential

1.1. Background

The **XR-9000** is a high-performance compute device designed for deployment in data center and edge inference workloads. This databook covers electrical characterization from silicon bring-up on the **5nm FinFET** node.

For support, contact device-eng@example.com.

1.2. Key Performance Targets

- **Frequency:** 4.2 GHz (nominal VDD, 25°C)
- **TDP:** 150 W
- **Process node:** 5nm FinFET
- **Foundry:** Example Foundry

Note: An appendix with raw measurement data is included at the end of this document.

Chapter 2. Electrical Measurements

This chapter presents key electrical measurements for **XR-9000** on **5nm FinFET**.

2.1. Frequency vs. Voltage

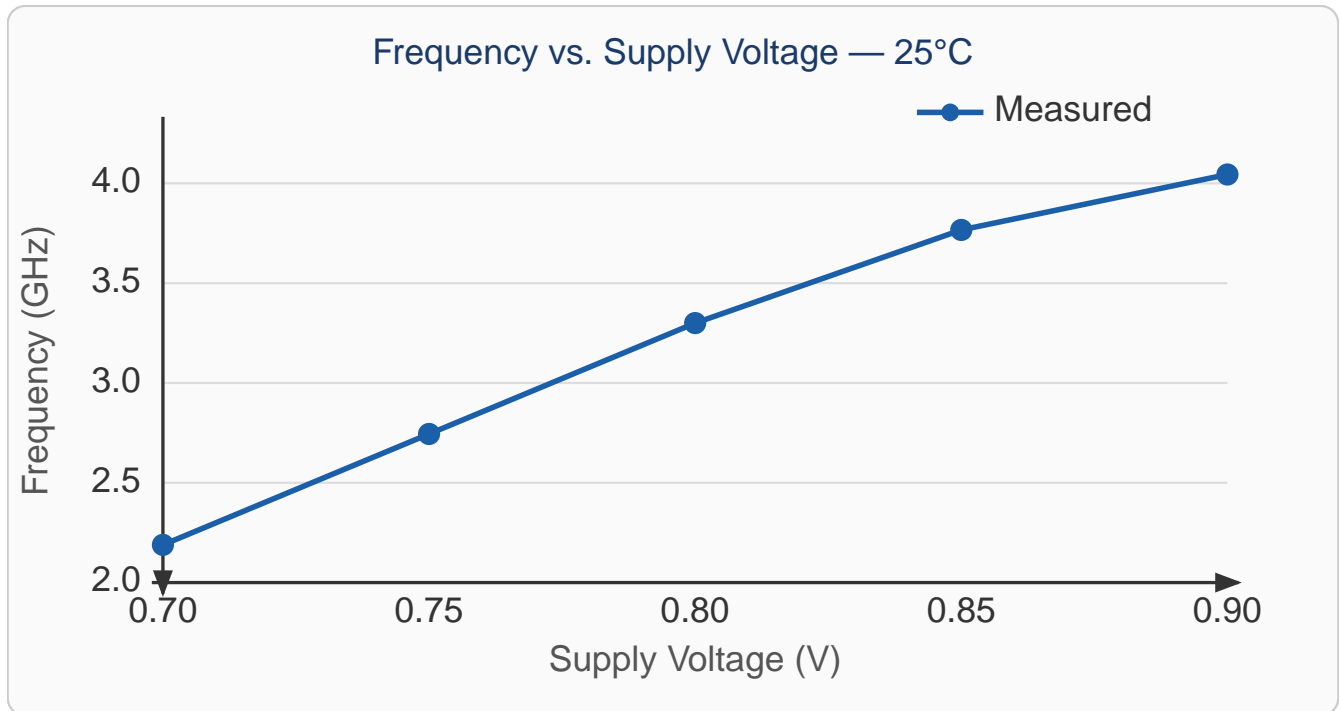


Figure 1. Frequency vs Voltage Curve

The chart above shows the frequency scaling behaviour across supply voltage for the **XR-9000** at 25°C.

2.2. Leakage Summary

Condition	Leakage (mA)
VDD = 0.75 V, 25°C	12.3
VDD = 0.75 V, 85°C	38.7
VDD = 0.85 V, 25°C	19.1
VDD = 0.85 V, 85°C	61.4

2.3. Speed Bin Distribution

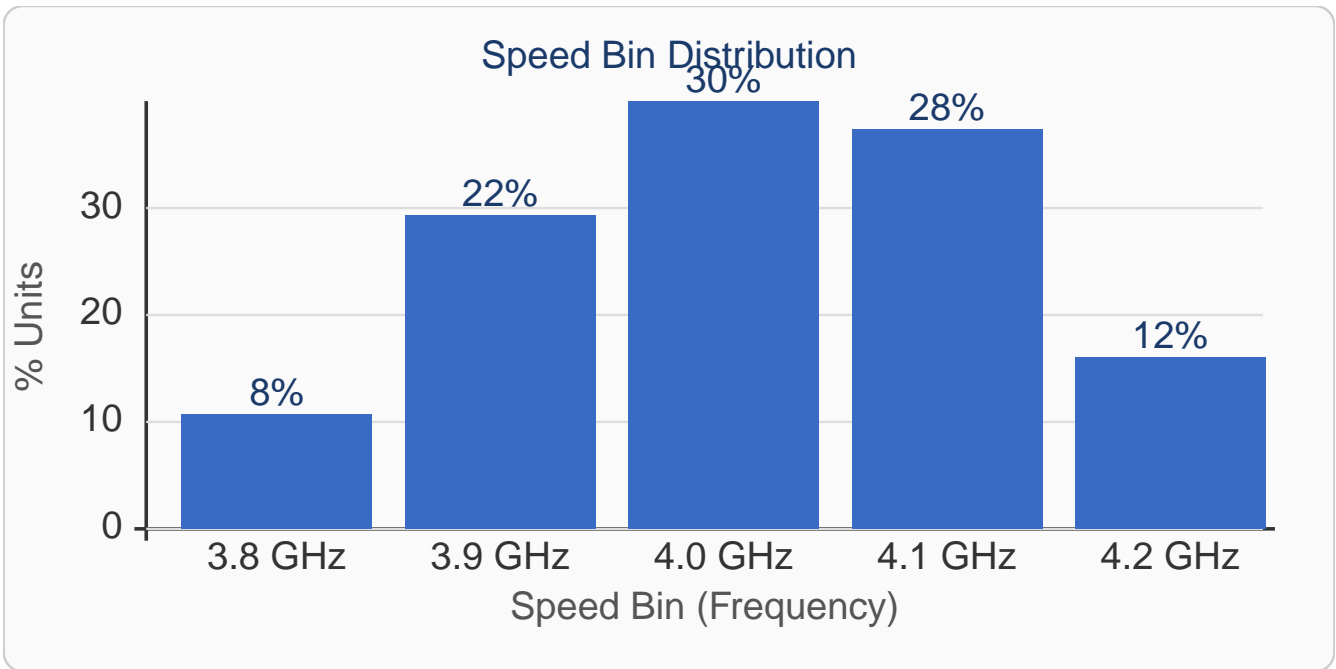


Figure 2. Speed Bin Distribution

Speed bins are determined at:

- **VDD nominal** (0.80 V)
- **Temperature**: 25°C
- **Test pattern**: SPEC_PERF_V3.0

2.4. Process Variation

The following table summarizes the spread observed across the characterization lot for **Example Foundry** 5nm FinFET:

Parameter	Min	Typical	Max	Unit
Gate length (Lg)	14.8	15.0	15.2	nm
Fin height (Hfin)	51.5	52.0	52.5	nm
Vt (nFET)	285	300	315	mV
Vt (pFET)	-315	-300	-285	mV

```
# Example analysis snippet used to generate these tables
import pandas as pd

df = pd.read_csv("char_data_XR-9000_v3.0.csv")
summary = df.groupby("condition")[["leakage_mA", "freq_GHz"]].describe()
print(summary)
```

2.5. Appendix: Raw Data Reference

Raw measurement files are archived at: </archive/XR-9000/v3.0/measurements/>

Contact device-eng@example.com for access.