

# UF4C120053B7S

## 1200V 53mO Normally-Off Gen4 SiCFET in D2PAK-7L

Package Type: D2PAK-7L  
Process Technology: SiC, Si  
Date Issued: 5/22/2024  
Document Number: UF4C120053B7S-PQ030 rev C

TEST NAME	TEST STANDARD AND CONDITIONS	# SAMPLES x # LOTS	TEST RESULTS
ESD Human Body Model (ESD HBM)	ANSI/ESDA/JEDEC JS-001, TA = 25 °C	3x3 lots	Class 3A
ESD Charge Device Model (ESD CDM)	ANSI/ESDA/JEDEC JS-002, TA = 25 °C	3x3 lots	Class C3
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020: Classification Temperature Tc = 245 °C	77pcs x 3 lots x 4 tests	MSL 1
High Temperature Gate Bias (HTGB)	JESD22-A108: T <sub>J</sub> = 175°C, V <sub>GS</sub> = +20V, 1000 hrs	77pcs x 3 lots	Pass
High Temperature Reverse Bias (HTRB)	MIL-STD-750-1 M1038 Method A: T <sub>J</sub> = 175°C, V <sub>DS</sub> = 80% V <sub>DS, MAX</sub> = 960V 1000 hrs	77pcs x 3 lots	Pass
High Humidity, High Temperature Reverse Bias (H3TRB) <sup>†</sup>	JESD22-A101C: T <sub>A</sub> = 85°C, 85% RH, V <sub>GS</sub> = 0V, V <sub>DS</sub> = 100V, 1000 hrs <i>Preconditioned to MSL 1 per JESD22-A113</i>	77pcs x 3 lots	Pass
Autoclave/Pressure Cooker Test (AC/PCT) <sup>†</sup>	JESD22-A102: 121°C, RH = 100%, 96 hrs, 15psig <i>Preconditioned to MSL 1 per JESD22-A113</i>	77pcs x 3 lots	Pass
Temperature Cycling (TC) <sup>†</sup>	JESD22-A104: 1000 cycles, -55°C to +150°C, 2 cycles/hour, <i>Preconditioned to MSL 1 per JESD22-A113</i>	77pcs x 3 lots	Pass
Intermittent Operating Life (IOL) <sup>†</sup>	MIL-STD-750 Method 1037: ΔT <sub>J</sub> ≥ 125°C, 3000 cycles (5 minutes on/ 5 minutes off) <i>Preconditioned to MSL 1 per JESD22-A113</i>	77pcs x 3 lots	Pass
Conclusion	<b>This part meets Qorvo's product qualification requirements, and the AEC-Q101 Rev D standard.</b>		

†: Indicates MSL Preconditioning and Reflow prior to reliability testing

### Qualification Samples:

UF4C120053B7S – 3 Lot

### Products Qualified by Similarity:

UF4C120070B7S

# UF4C120053B7S

## 1200V 53mO Normally-Off Gen4 SiCFET in D2PAK-7L

**Package Type:** D2PAK-7L  
**Process Technology:** SiC, Si  
**Qualification Number:** AW1048 ESD testing  
**Date Issued:** 10/18/2018  
**Document Number:** UF4C120053B7S-PQ030 rev B

<b>Model</b>	<b>HBM</b>	<b>All Pins Tested</b>
<b>Class Rating</b>	<b>Class 3A, &gt;4000V, &lt;8000 V</b>	
<b>Test Specification</b>	<b>JS-001 Table 2B</b>	

<b>Model</b>	<b>CDM</b>	<b>All Pins Tested</b>
<b>Class Rating</b>	<b>Class C3 Pass &gt;1000V</b>	
<b>Test Specification</b>	<b>JS-002</b>	

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## Reliability Evaluation

The FIT rate data presented below is determined according to JEDEC Standard JESD 85 and is calculated from the HTRB and HTGB Burn-In sample size.

**FIT = 2.608 failures per billion device hours**

**MTTF = 43,771.03 years**

From the equations:

$$\lambda_{Hours} = \frac{X^2(\alpha, \nu)}{2 \times D \times H \times A_f}$$

$$FIT = \lambda_{Hours} \times 10^9$$

$$MTTF_{hours} = 1/\lambda_{Hours}$$

and

$$A_f = e^{\frac{E_a}{k} \left( \frac{1}{T_{use}} - \frac{1}{T_{test}} \right)}$$

Where:

$X^2$  = Chi-Squared probability function for a given Confidence level ( $\alpha$ ) and Degree of Freedom ( $\nu=2r+2$ , where  $r$ = the number of failures in the test population)

$D$  = Number of Devices in the test population

$H$  = Test hours per device

$A_f$  = Acceleration Factor from the Arrhenius equation

$E_a$  = Activation Energy (eV),

$T_{use}$  = standardized use temperature

$T_{test}$  = Temperature of Stress Test

$k$  = Boltzmann's Constant

Our calculations are based on the HTGB and HTRB burn-in data.

$D$  = 231 pcs for each HTRB and HTGB

$H$  = 1000 hours for each HTRB and HTGB

$\alpha$  = 0.6 (60% Confidence Interval)

$r$  = 0 failures

$E_a$  = 0.7eV

$T_{use}$  = 55°C or 328K

$T_{test}$  = 175°C or 448K