I-V Characterization of Amorphous Silicon A

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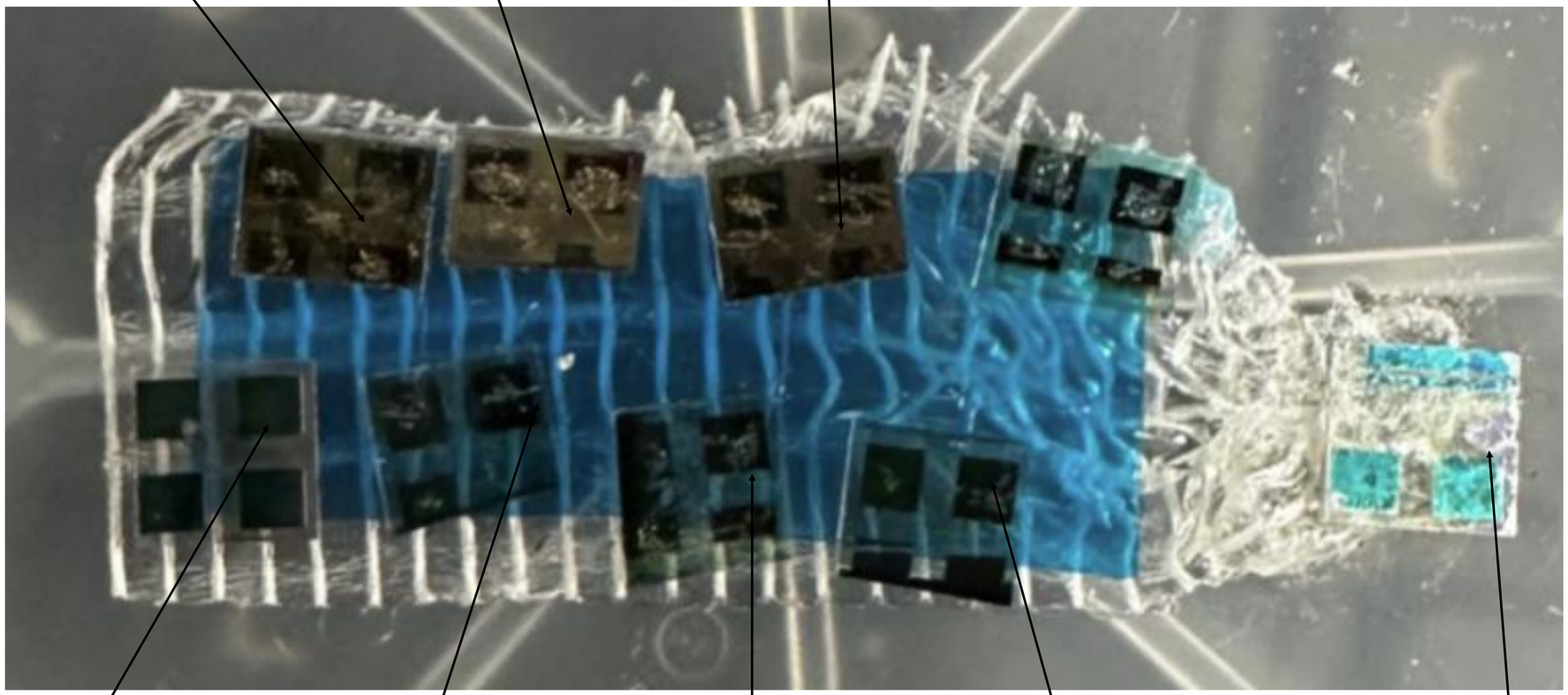
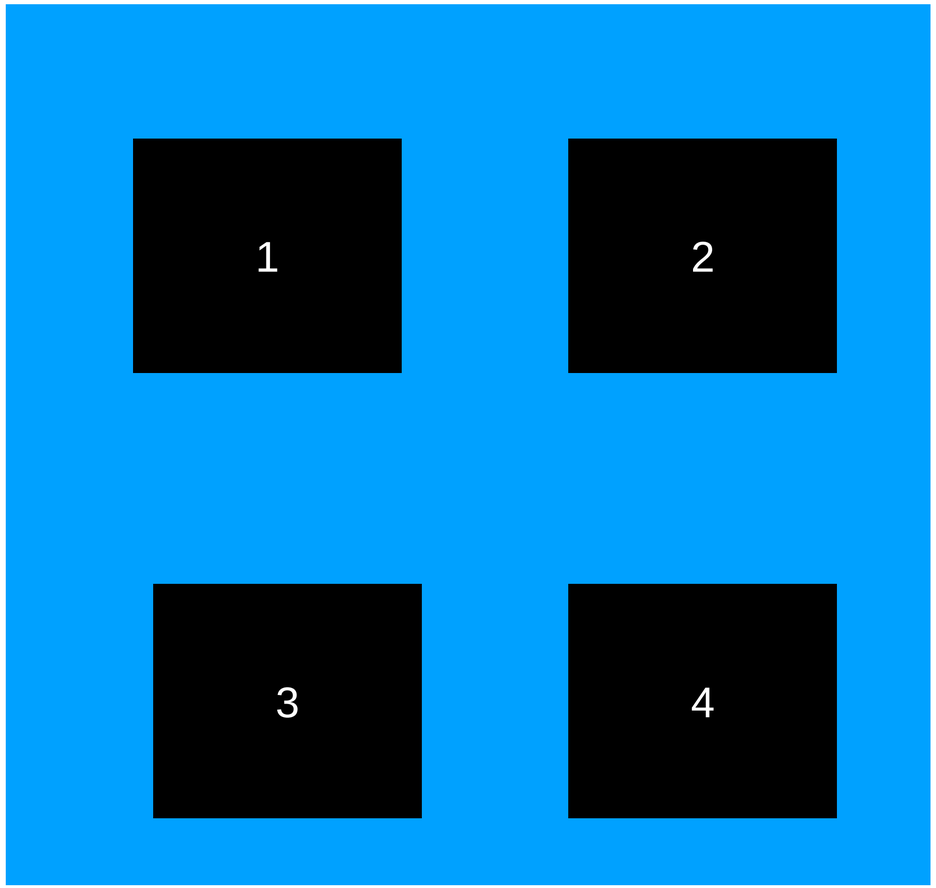


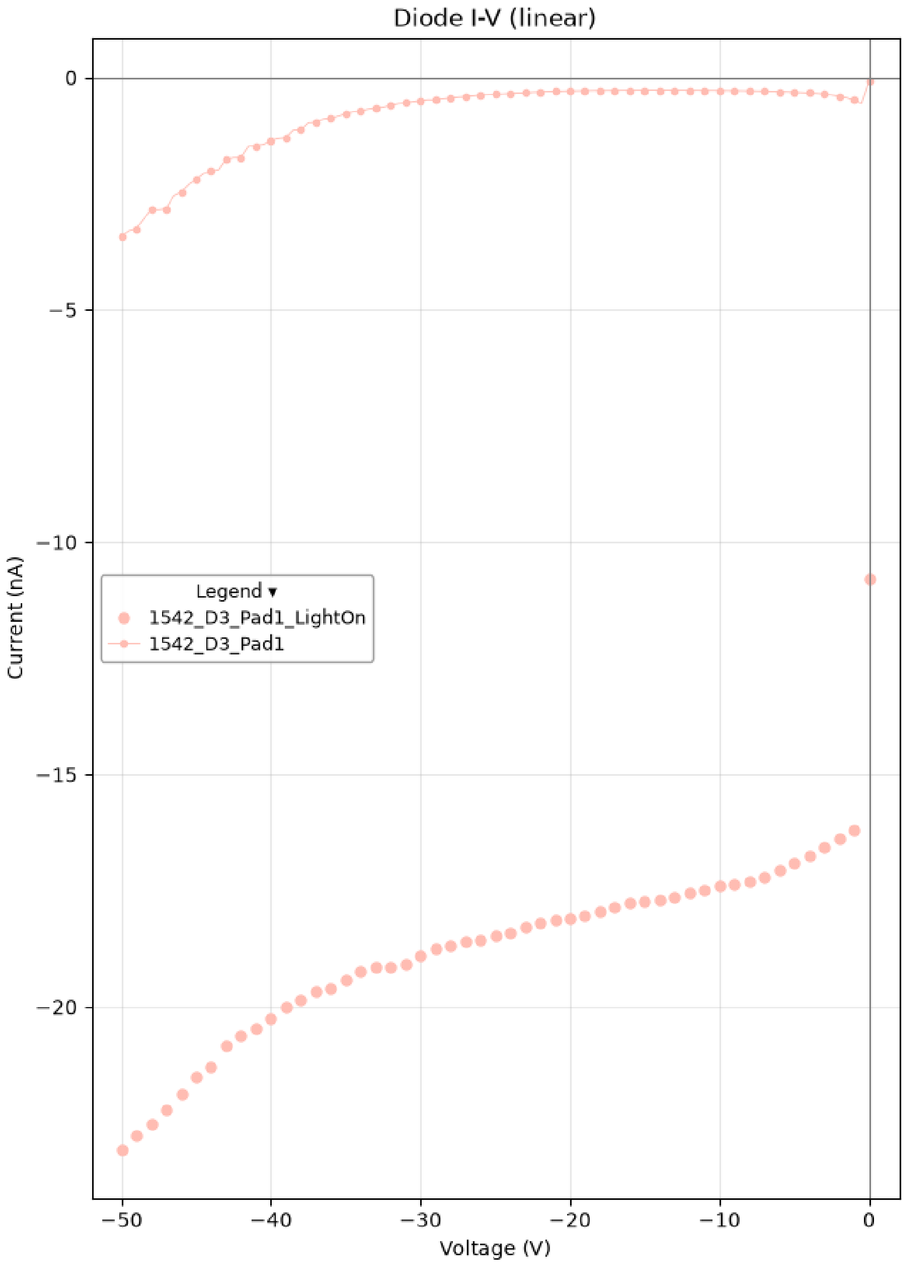
Device 1,2 : 1557

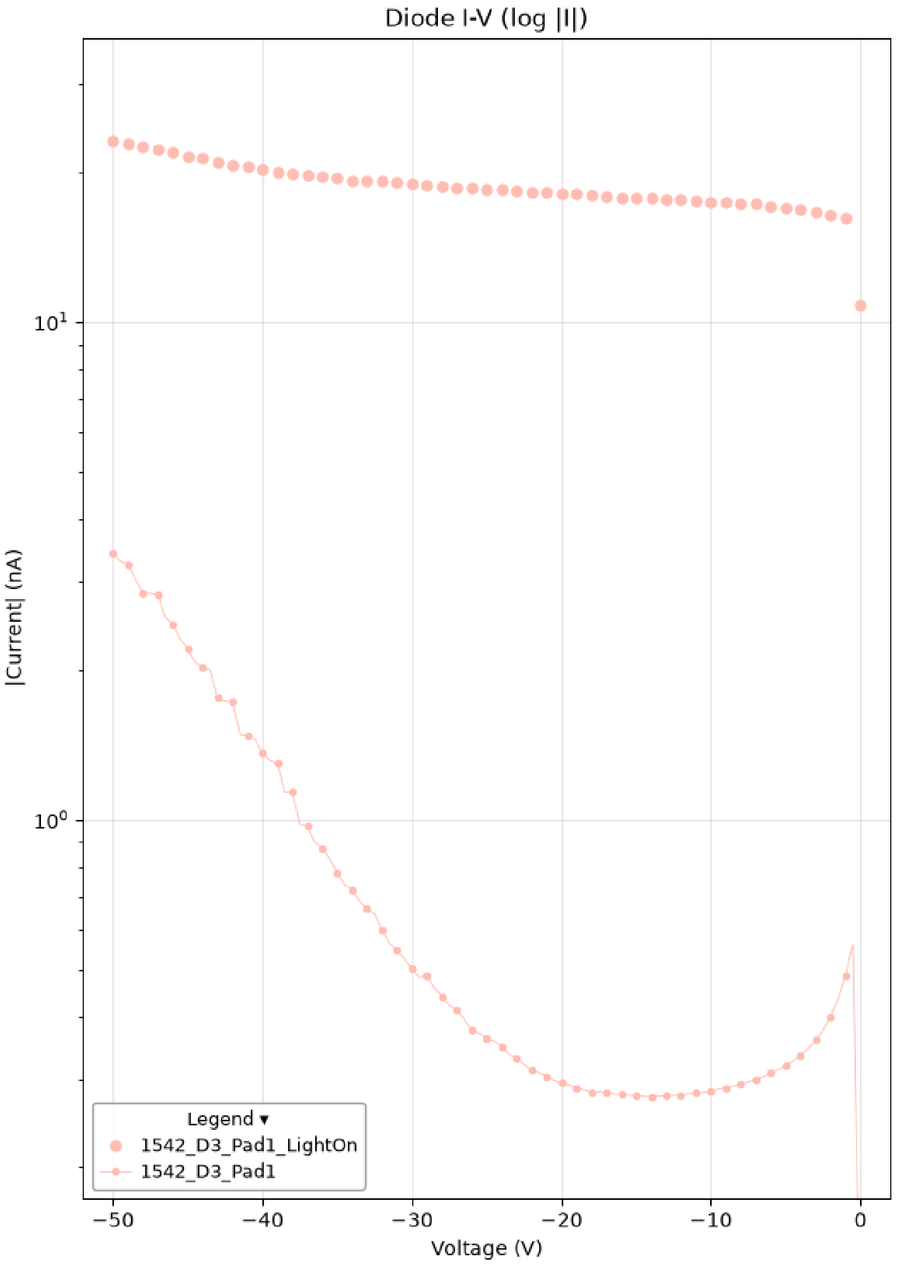
Device 6,7 & 8: 1663

Device 3,4 & 5: 1542

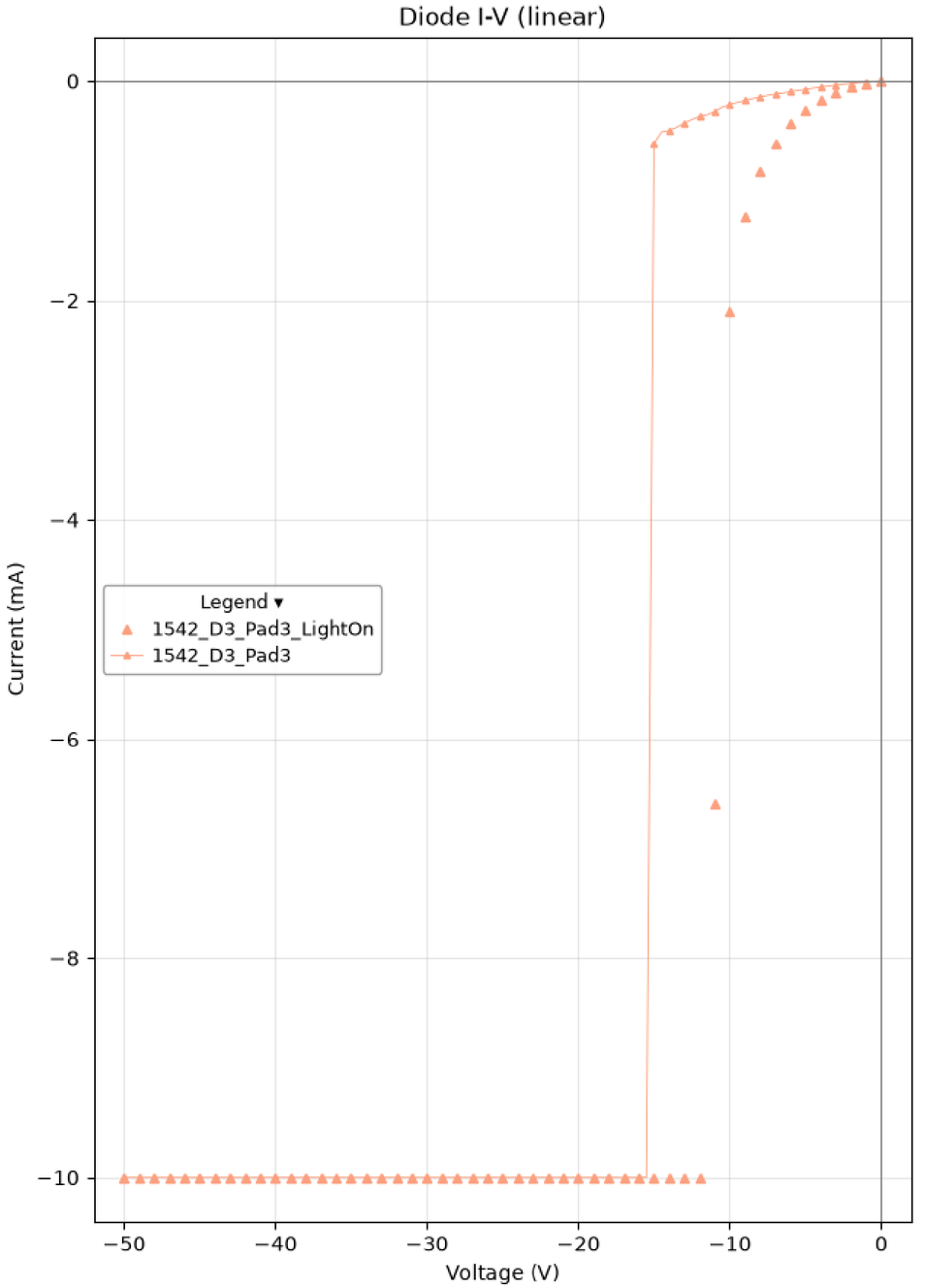


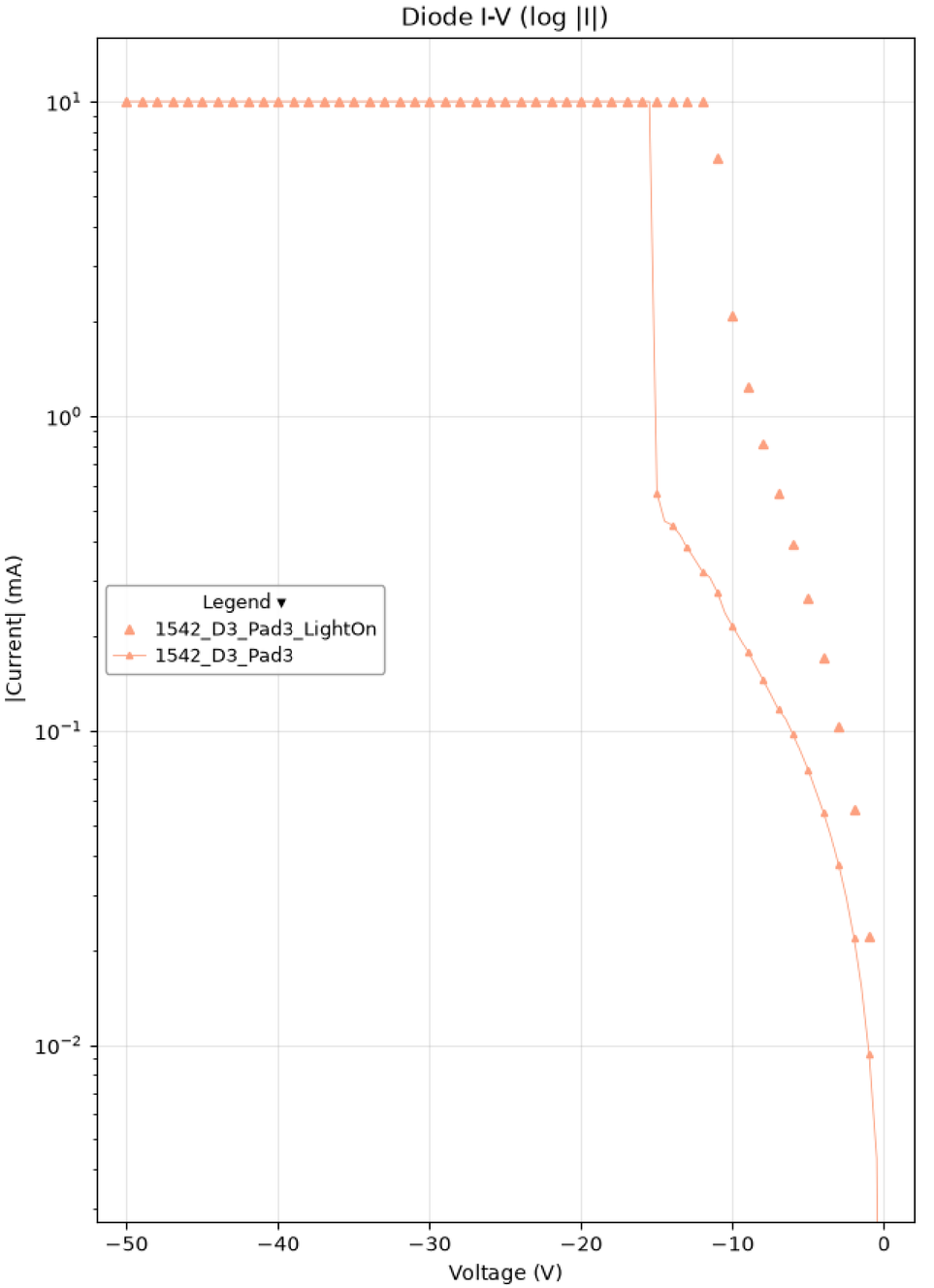
	1542	1557	1663
Contacts	TCO / TCO (transparent)	ZnO:Al / ZnO:Al (transparent)	Ni back (opaque)
n / i / p time (s)	120 / 8004 / 120	120 / 5530 / 52	n/a
i-layer vs 1557	1.45×	1.00×	n/a
Thickness (nm)	not measured	2513 ± 106	n/a
Efficiency	1.47	2.04	n/a


Diode I-V (linear)
Current (nA)
Voltage (V)
Legend ▾
1542_D3_Pad1_LightOn
1542_D3_Pad1
0
−5
−10
−15
−20
−50
−40
−30
−20
−10
0

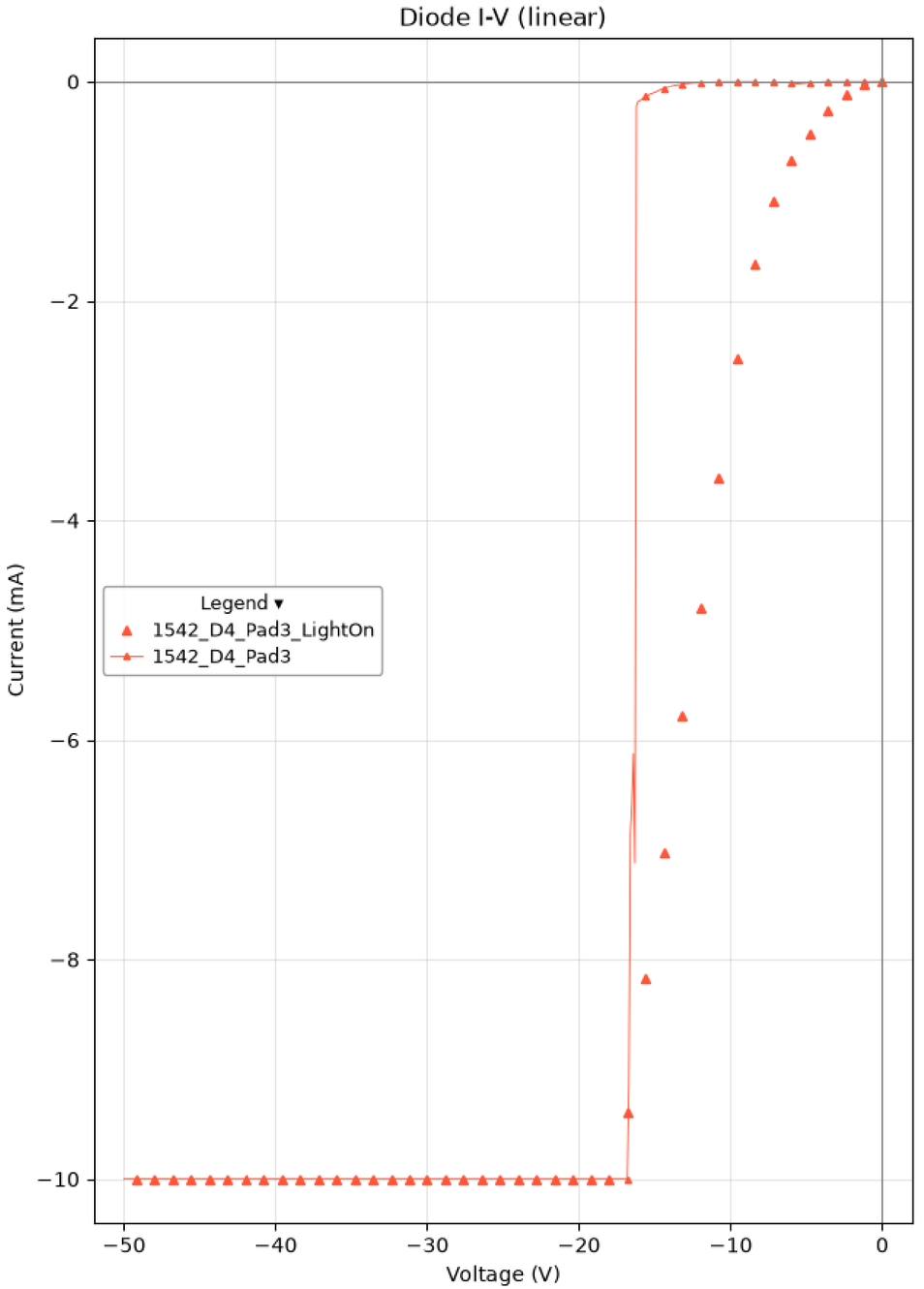

Diode I-V (log |I|)
|Current| (nA)
Voltage (V)
Legend ▾
1542_D3_Pad1_LightOn
1542_D3_Pad1
10^1
10^0
−50
−40
−30
−20
−10
0

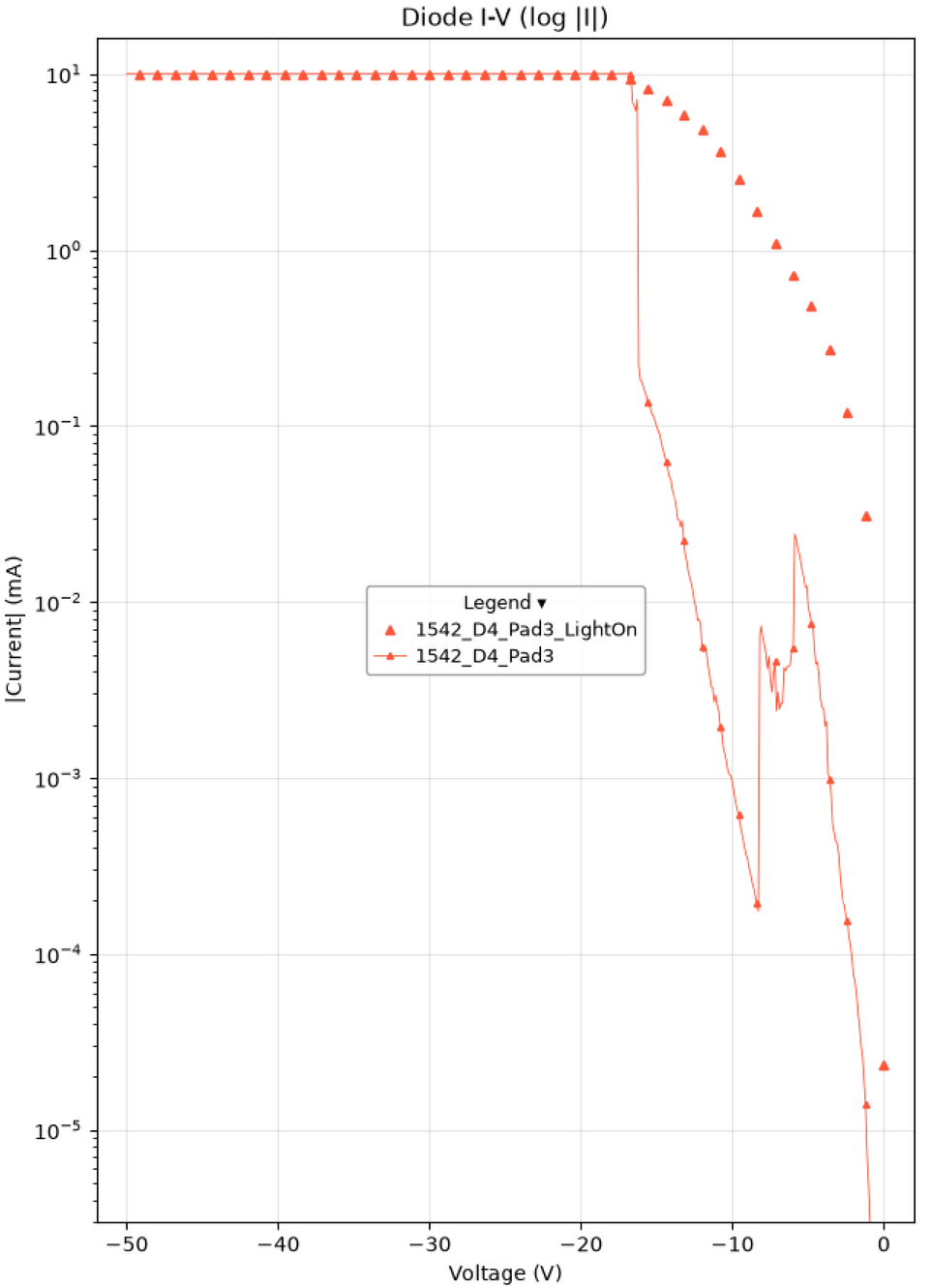
1542_D3_Pad1


Diode I-V (linear)
Current (mA)
Voltage (V)
Legend ▾
1542_D3_Pad3_LightOn
1542_D3_Pad3
0
−2
−4
−6
−8
−10
−50
−40
−30
−20
−10
0

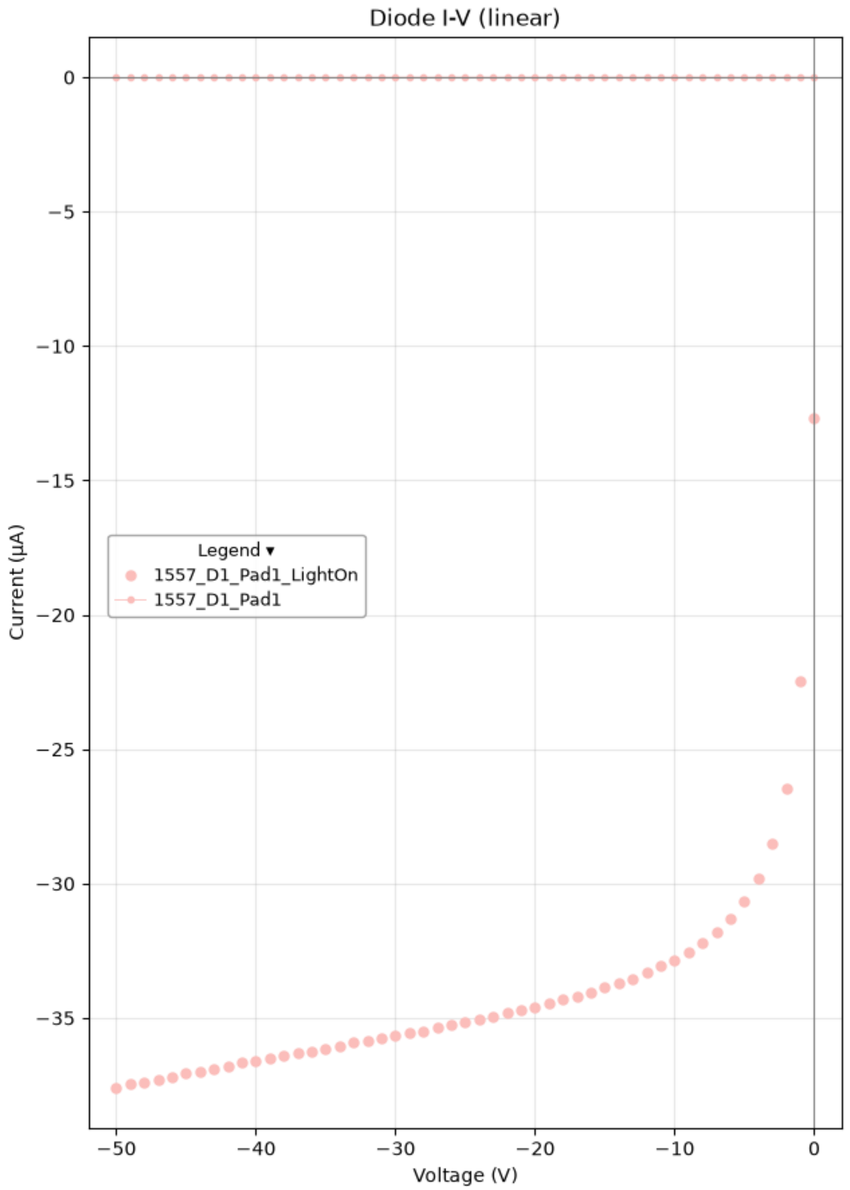

Diode I-V (log |I|)
|Current| (mA)
Voltage (V)
Legend ▾
1542_D3_Pad3_LightOn
1542_D3_Pad3
10^{1}
10^{0}
10^{-1}
10^{-2}
−50
−40
−30
−20
−10
0

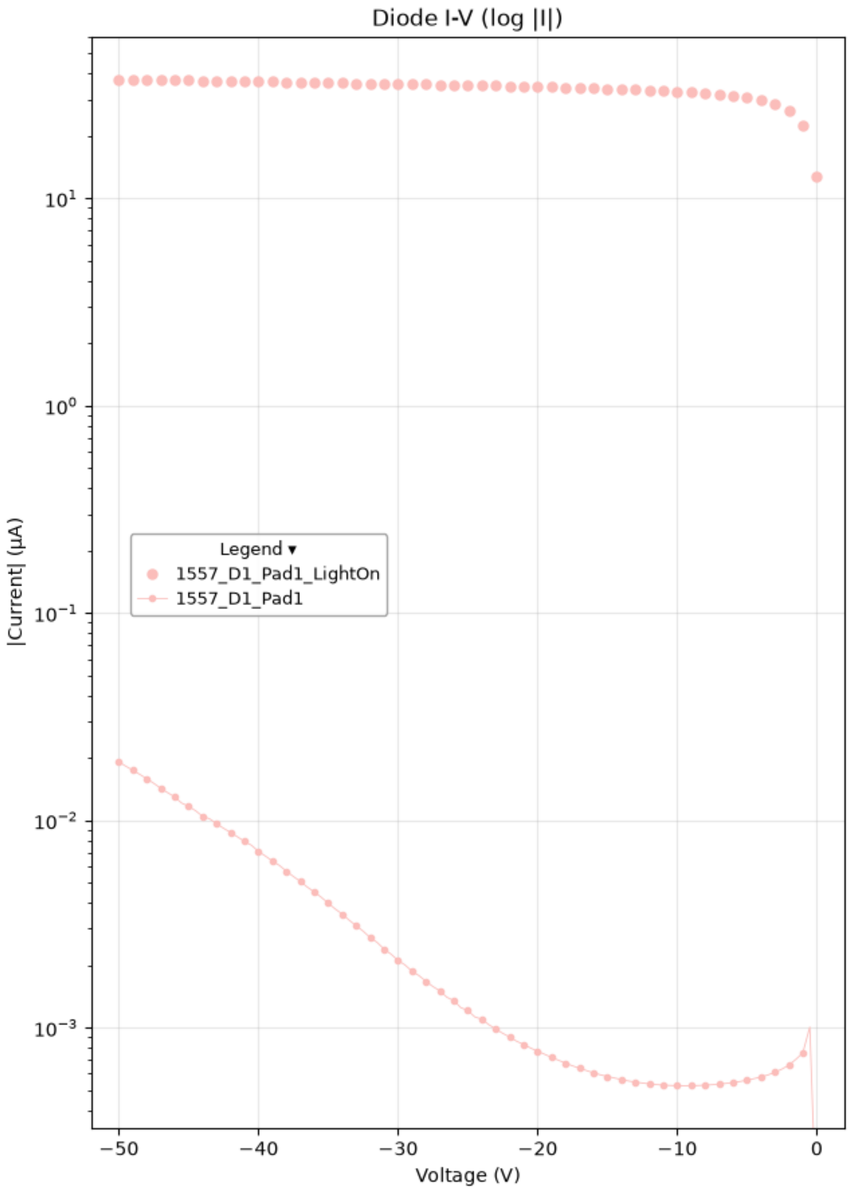
1542_D3_Pad3


Diode I-V (linear)
Current (mA)
Voltage (V)
Legend ▾
1542_D4_Pad3_LightOn
1542_D4_Pad3

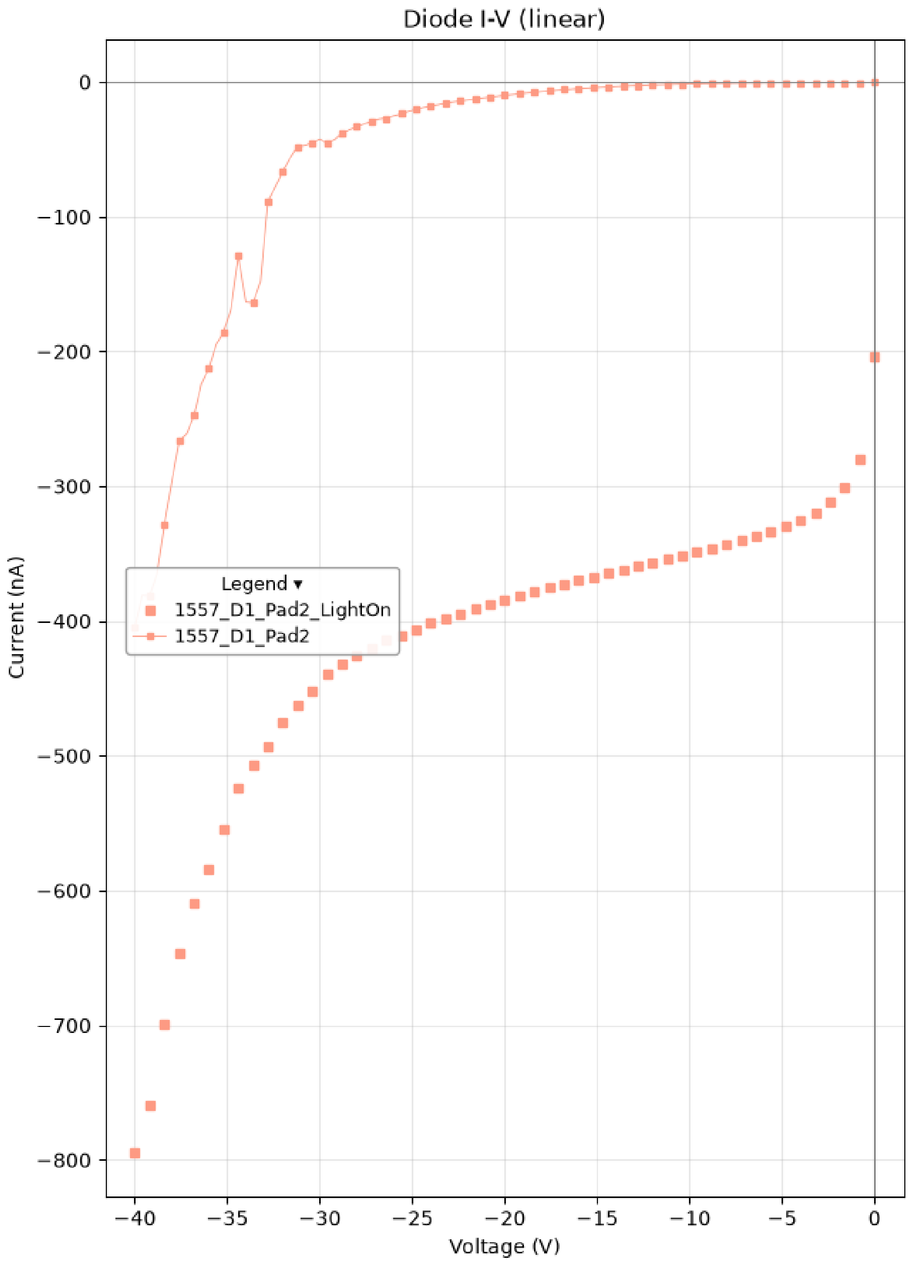

Diode I-V (log |I|)
|Current| (mA)
Voltage (V)
Legend ▾
1542_D4_Pad3_LightOn
1542_D4_Pad3

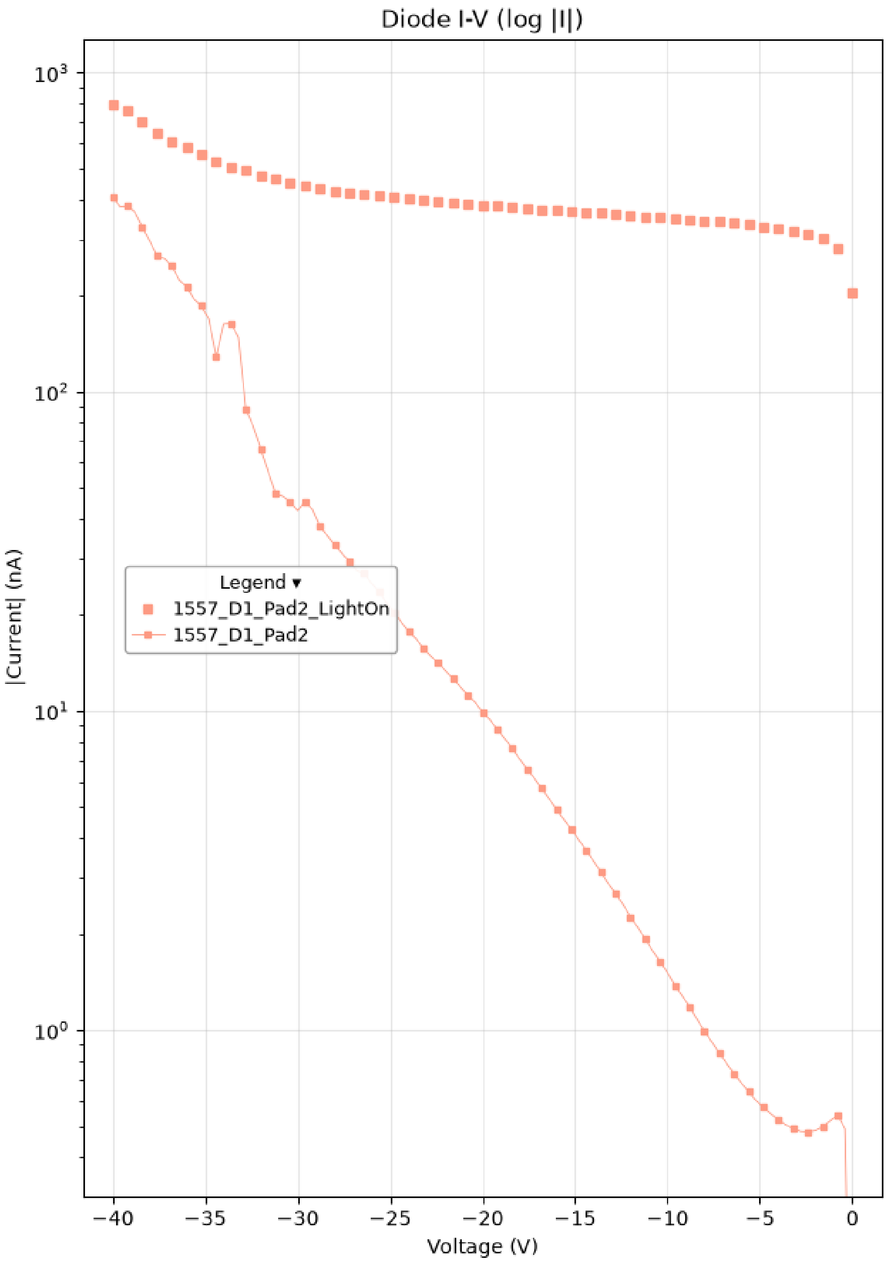
1542_D4_Pad3


Diode I-V (linear)
Current (µA)
Voltage (V)
Legend ▾
1557_D1_Pad1_LightOn
1557_D1_Pad1
0
−5
−10
−15
−20
−25
−30
−35
−50
−40
−30
−20
−10
0

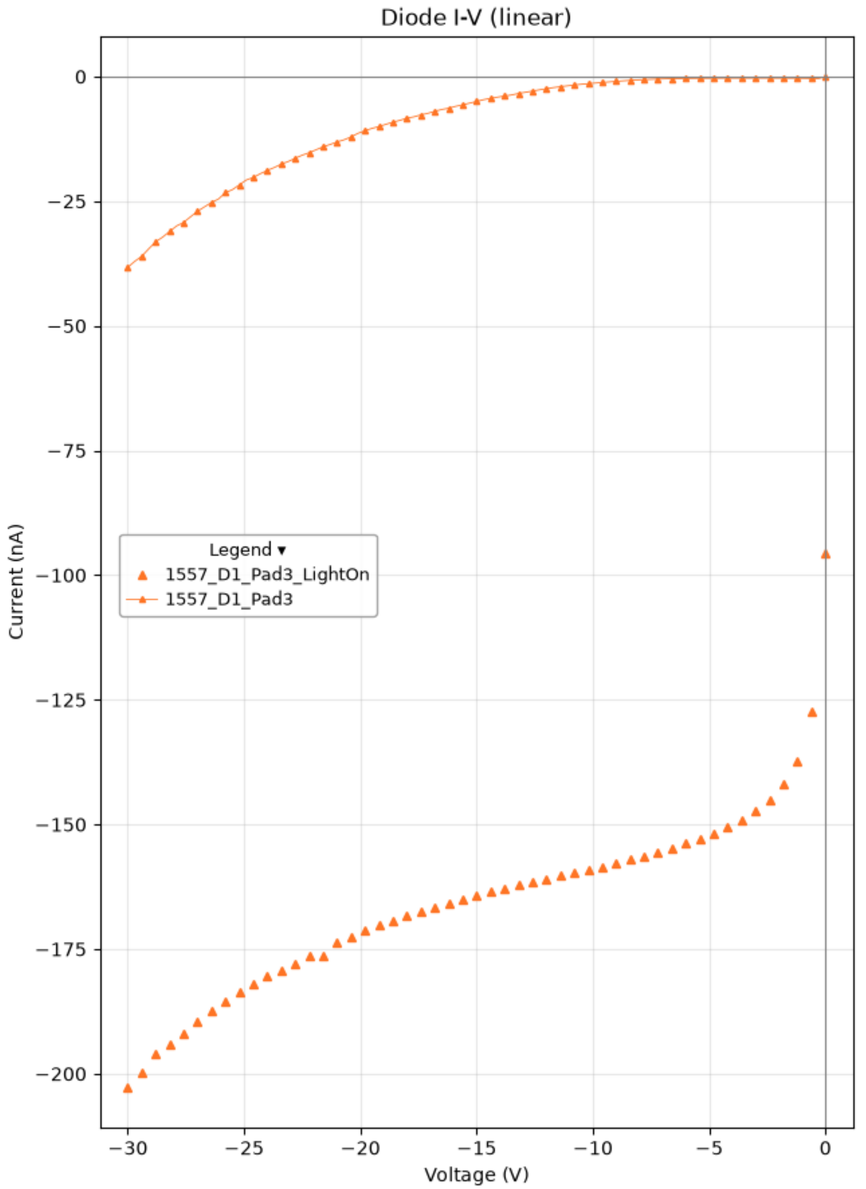

Diode I-V (log |I|)
|Current| (µA)
Voltage (V)
Legend ▾
1557_D1_Pad1_LightOn
1557_D1_Pad1
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
−50
−40
−30
−20
−10
0

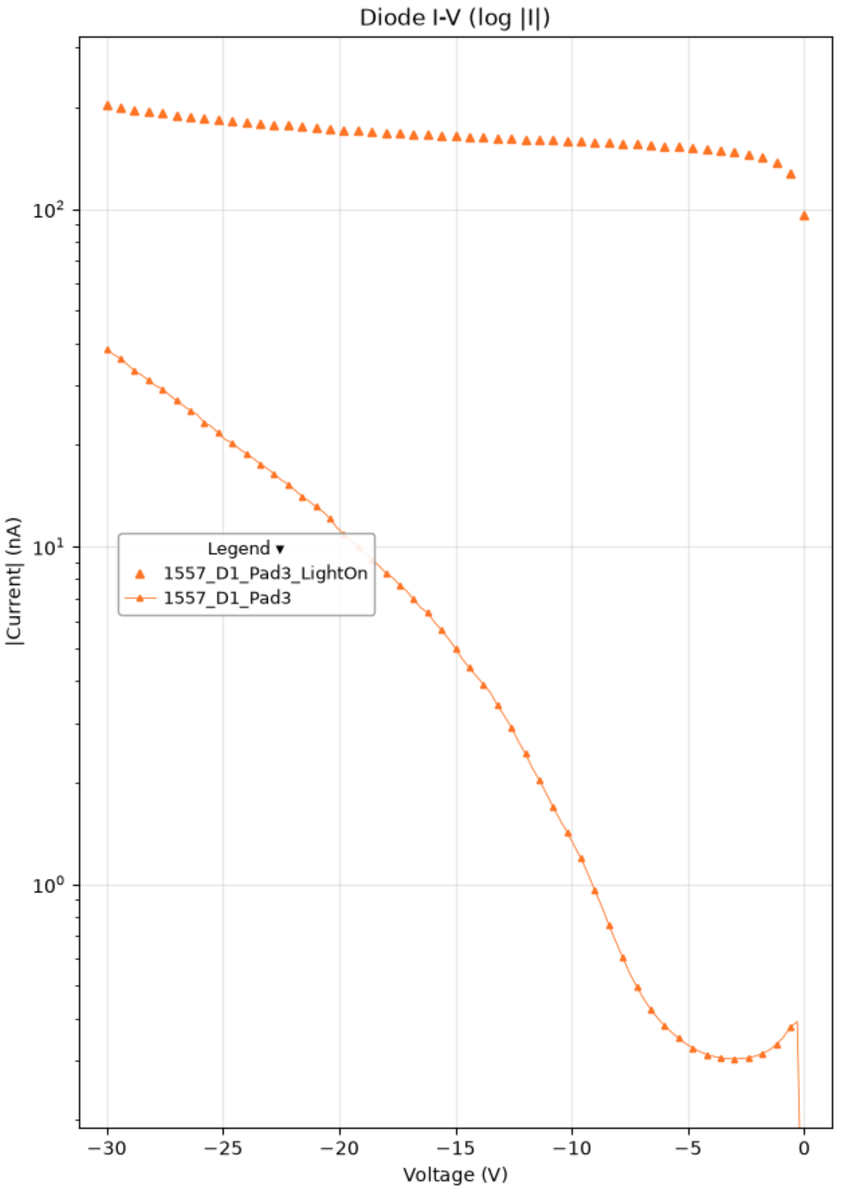
1557_D1_Pad1


Diode I-V (linear)
Current (nA)
Voltage (V)
Legend
1557_D1_Pad2_LightOn
1557_D1_Pad2

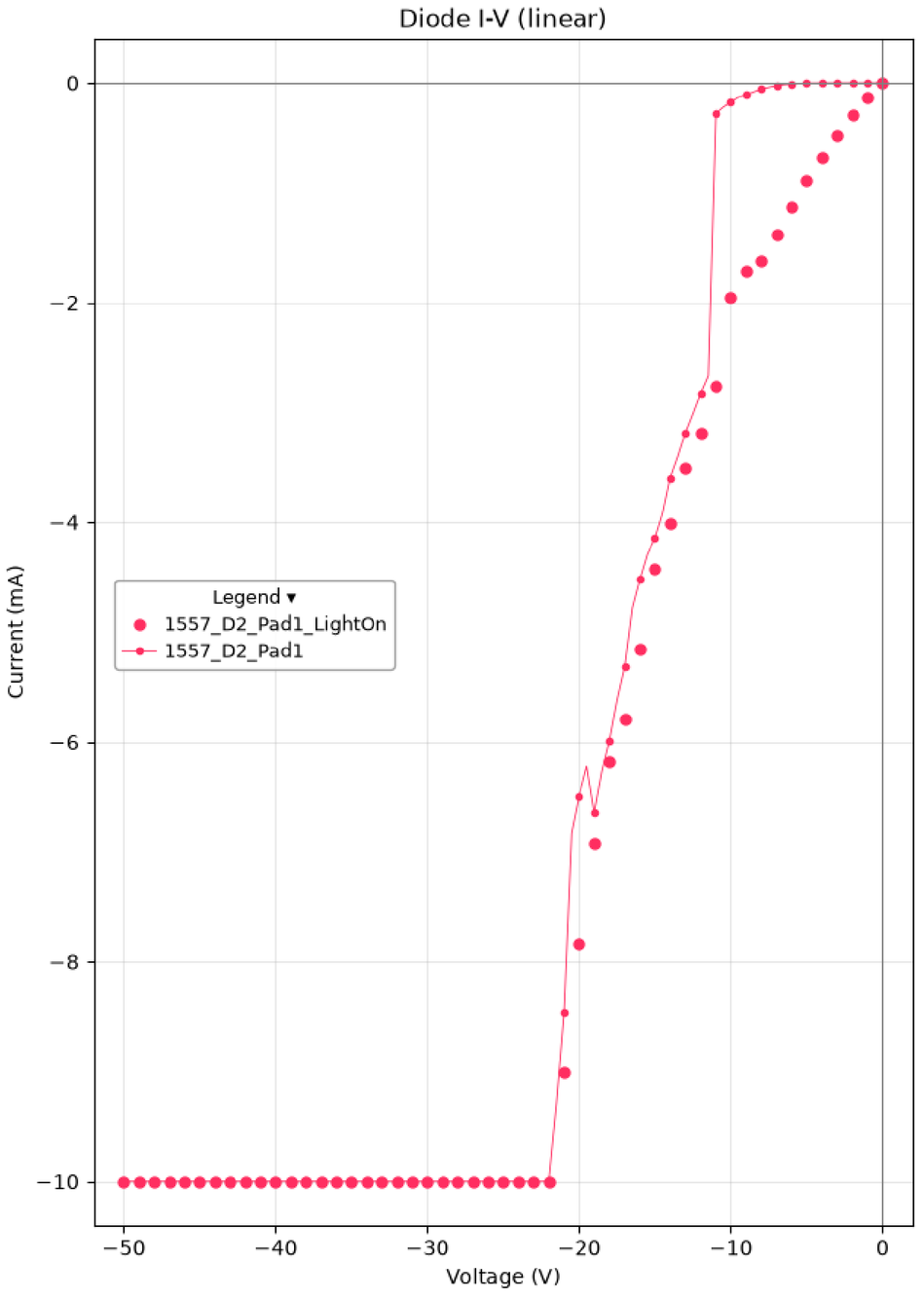

Diode I-V (log |I|)
|Current| (nA)
Voltage (V)
Legend
1557_D1_Pad2_LightOn
1557_D1_Pad2

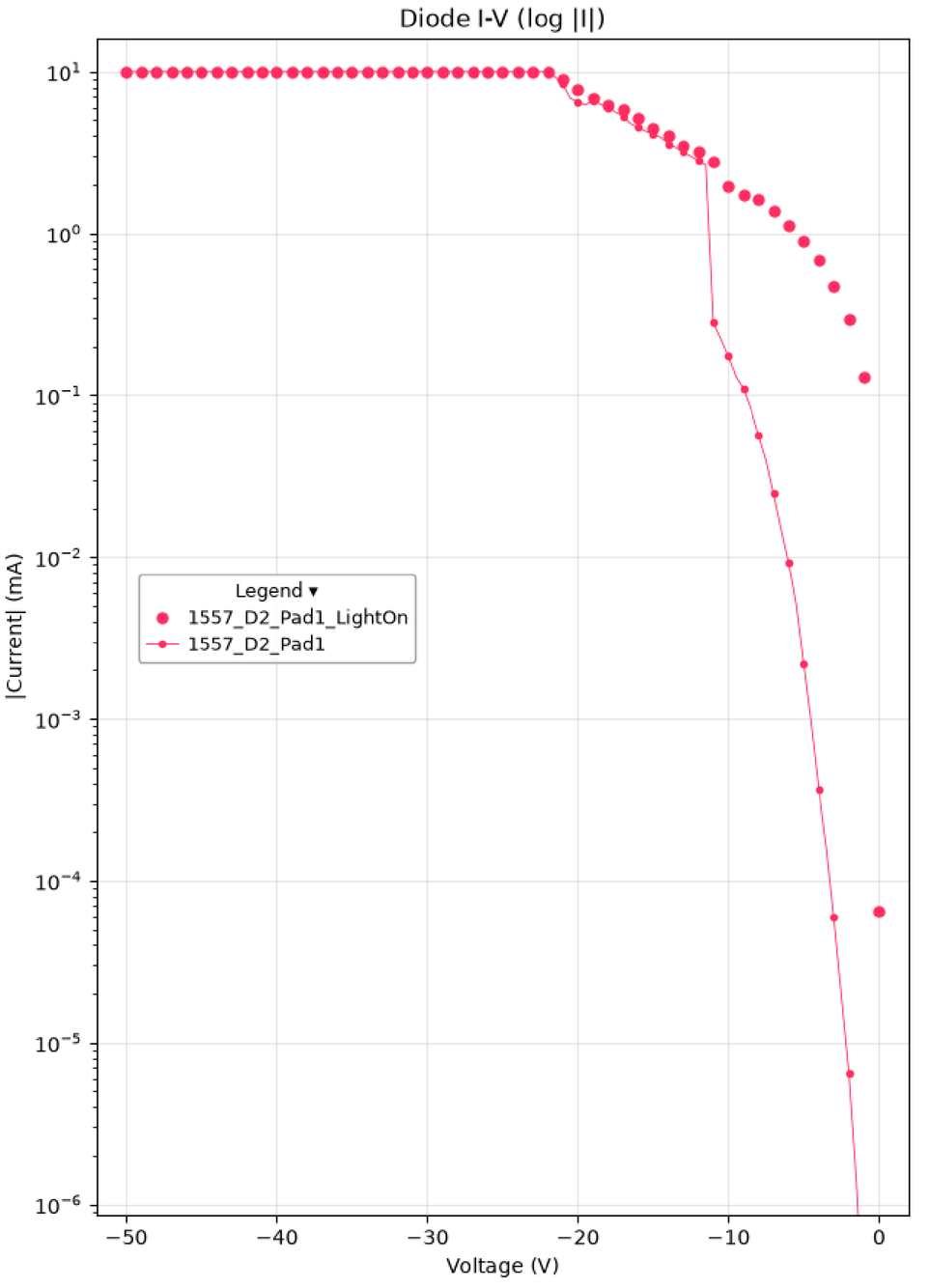
1557_D1_Pad2


Diode I-V (linear)
Current (nA)
Voltage (V)
Legend ▾
1557_D1_Pad3_LightOn
1557_D1_Pad3

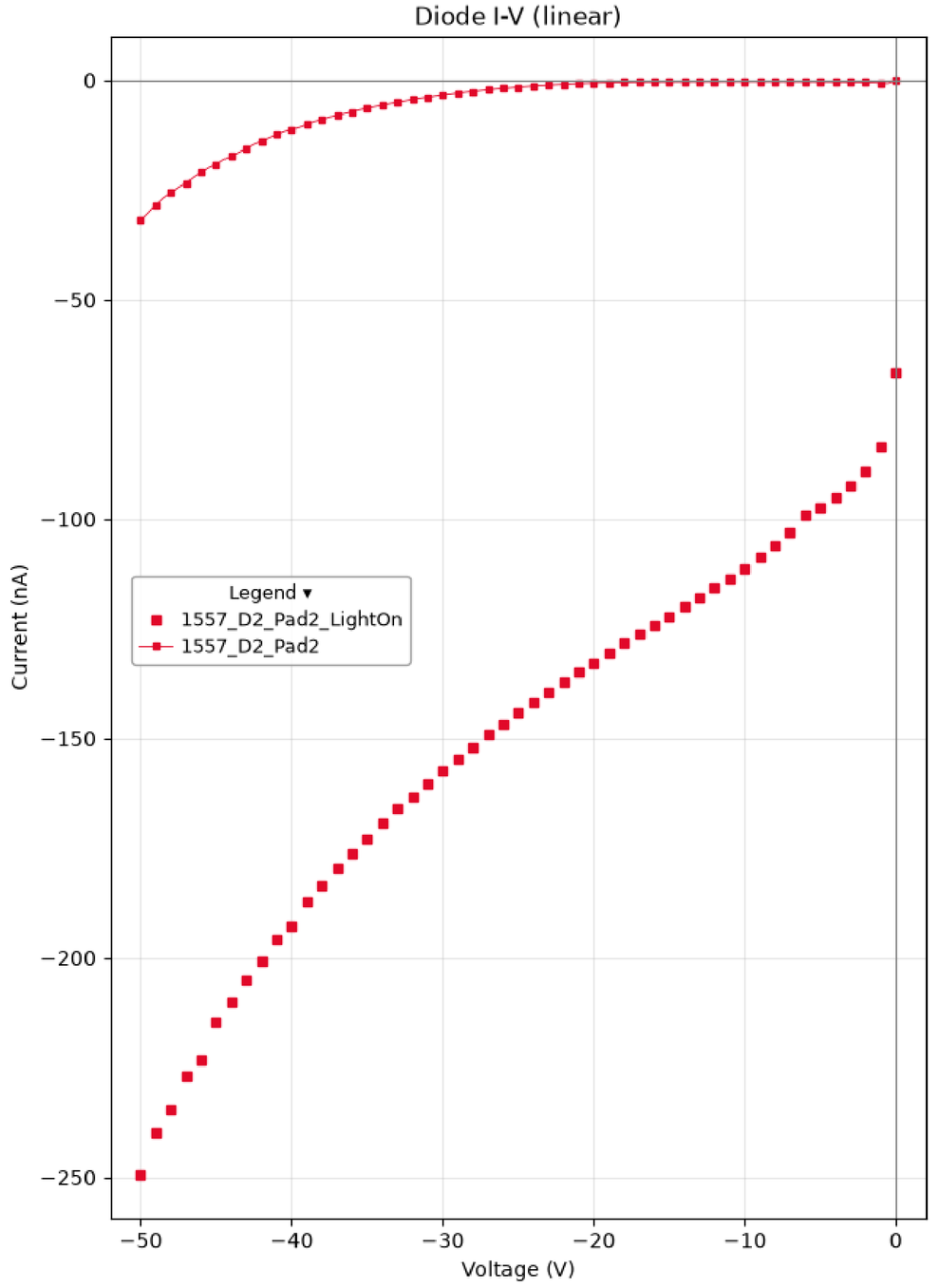

Diode I-V (log |I|)
|Current| (nA)
Voltage (V)
Legend ▾
1557_D1_Pad3_LightOn
1557_D1_Pad3

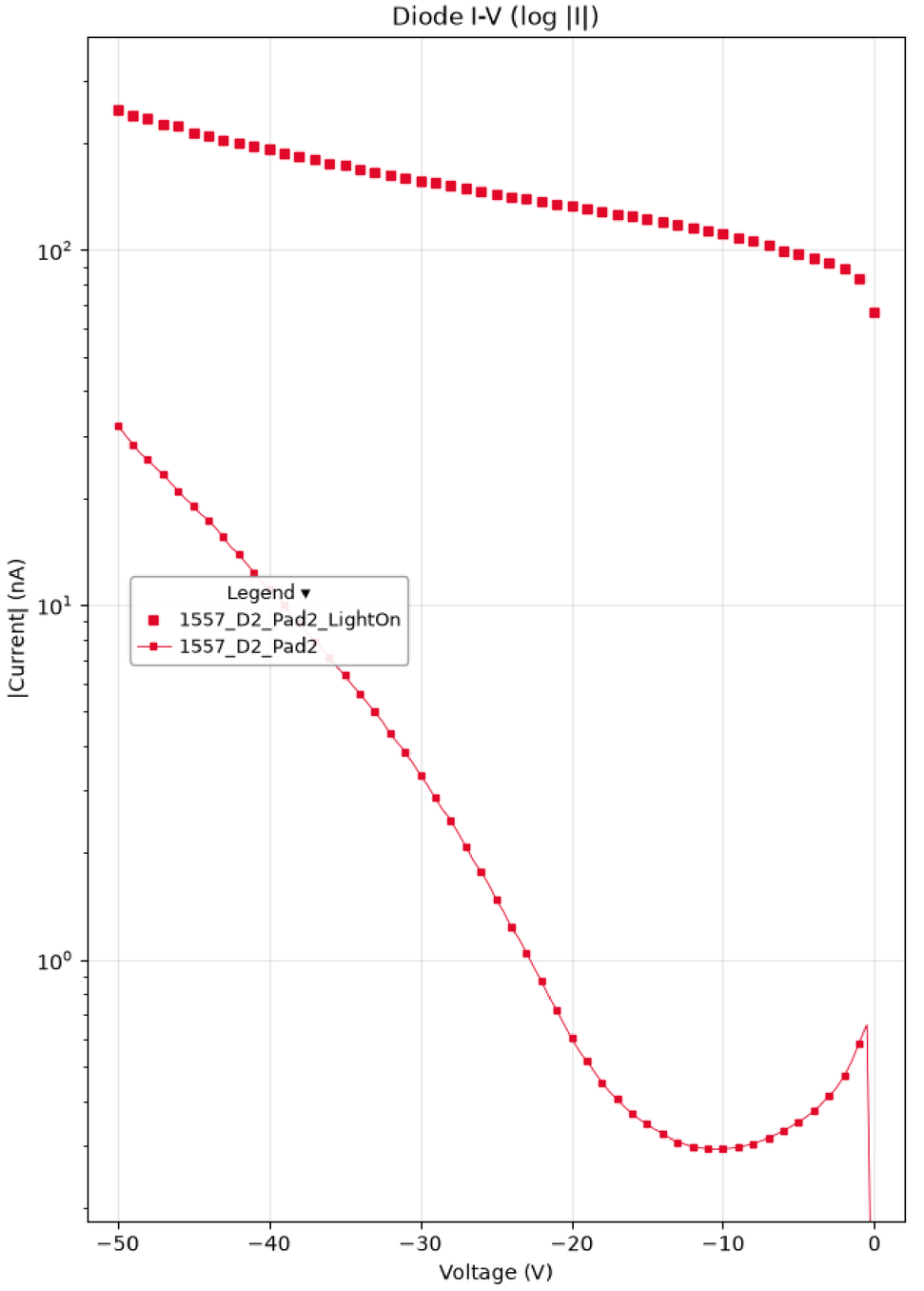
1557_D1_Pad3


Diode I-V (linear)
Current (mA)
Voltage (V)
Legend ▾
1557_D2_Pad1_LightOn
1557_D2_Pad1

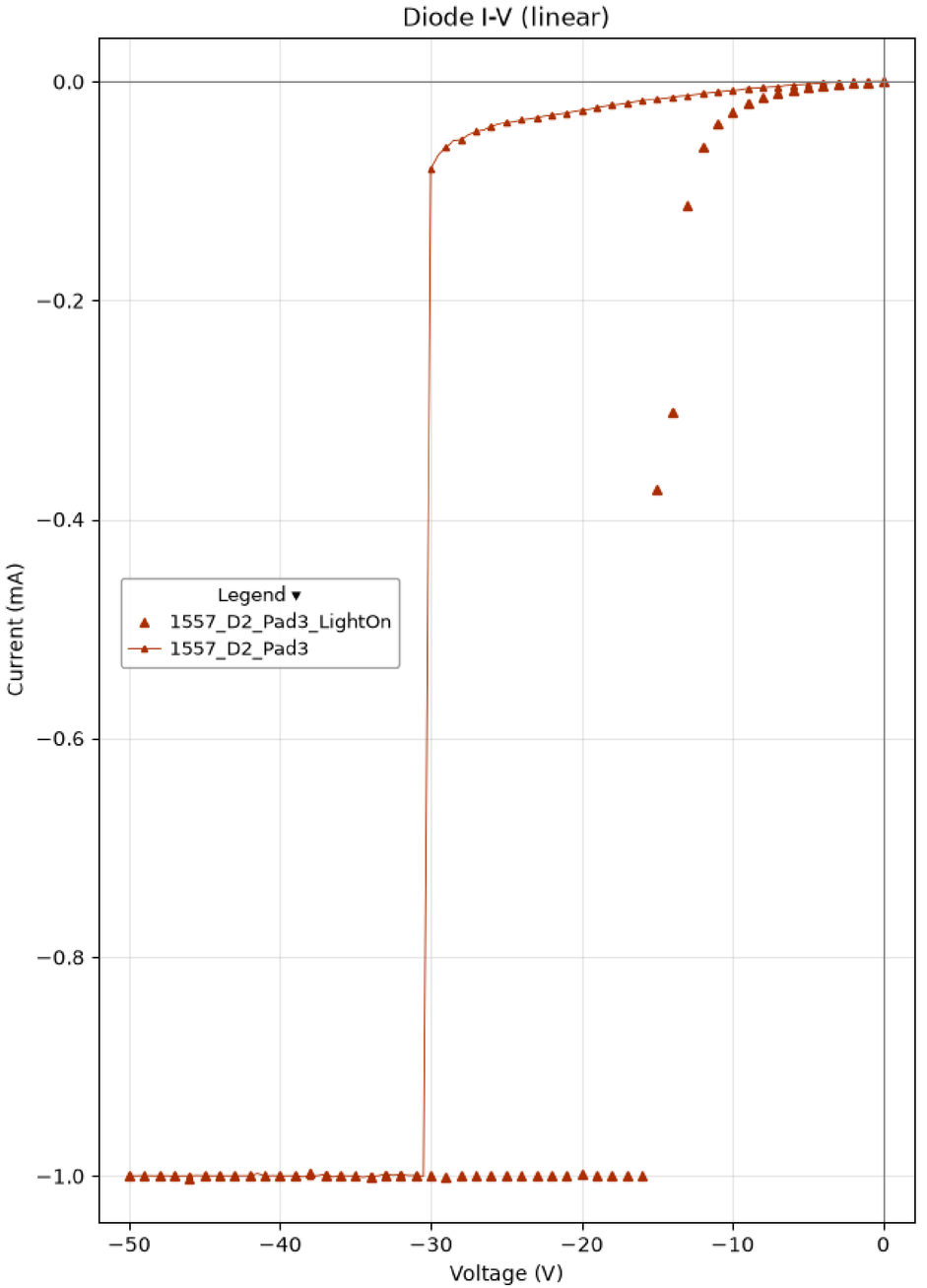

Diode I-V (log |I|)
|Current| (mA)
Voltage (V)
Legend ▾
1557_D2_Pad1_LightOn
1557_D2_Pad1

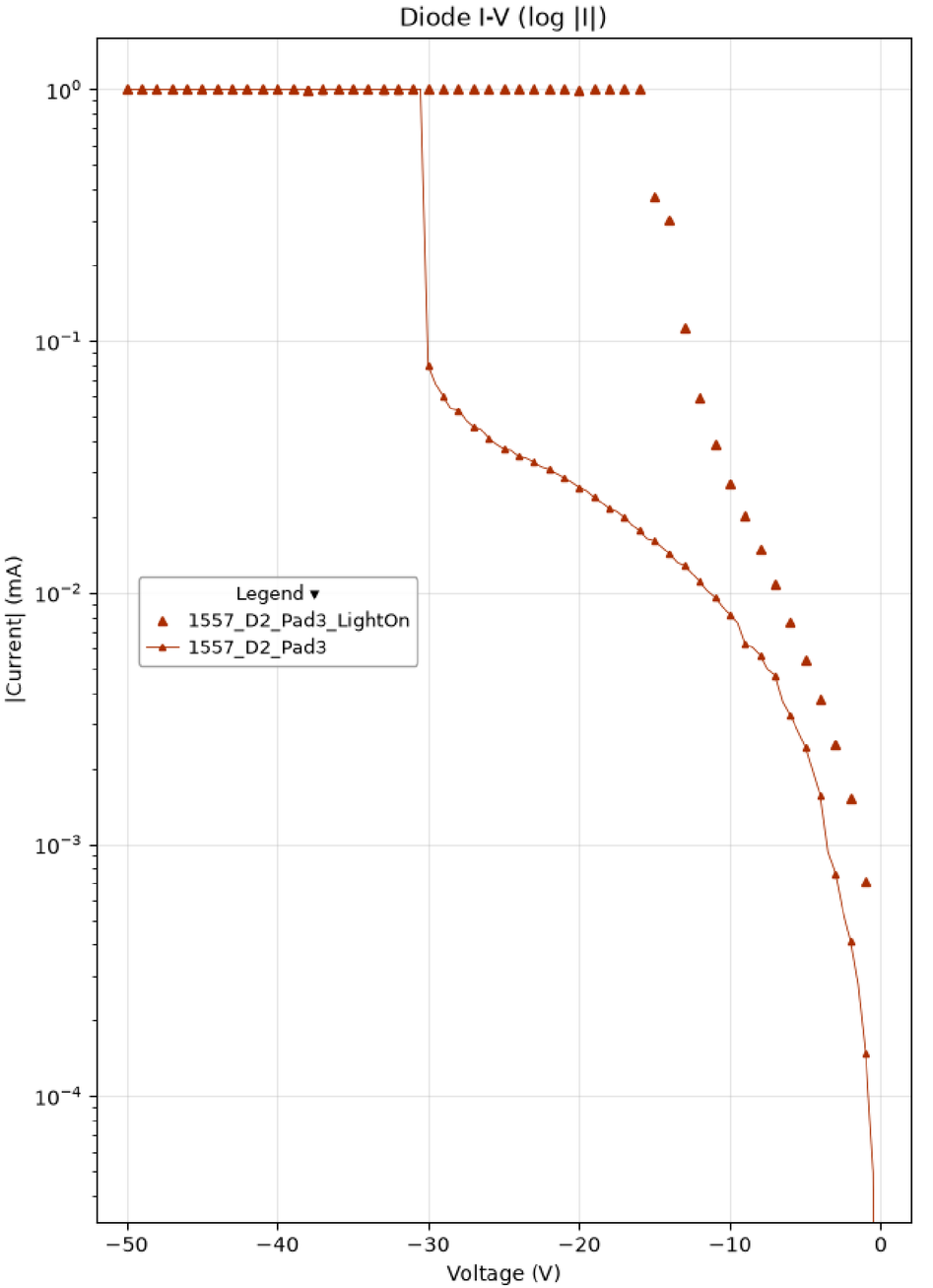
1557_D2_Pad1


Diode I-V (linear)
Current (nA)
Voltage (V)
Legend ▾
1557_D2_Pad2_LightOn
1557_D2_Pad2
0
−50
−100
−150
−200
−250
−50
−40
−30
−20
−10
0


Diode I-V (log |I|)
|Current| (nA)
Voltage (V)
Legend ▾
1557_D2_Pad2_LightOn
1557_D2_Pad2
10^2
10^1
10^0
−50
−40
−30
−20
−10
0

1557_D2_Pad2


Diode I-V (linear)
Current (mA)
Voltage (V)
Legend
1557_D2_Pad3_LightOn
1557_D2_Pad3


Diode I-V (log |I|)
|Current| (mA)
Voltage (V)
Legend
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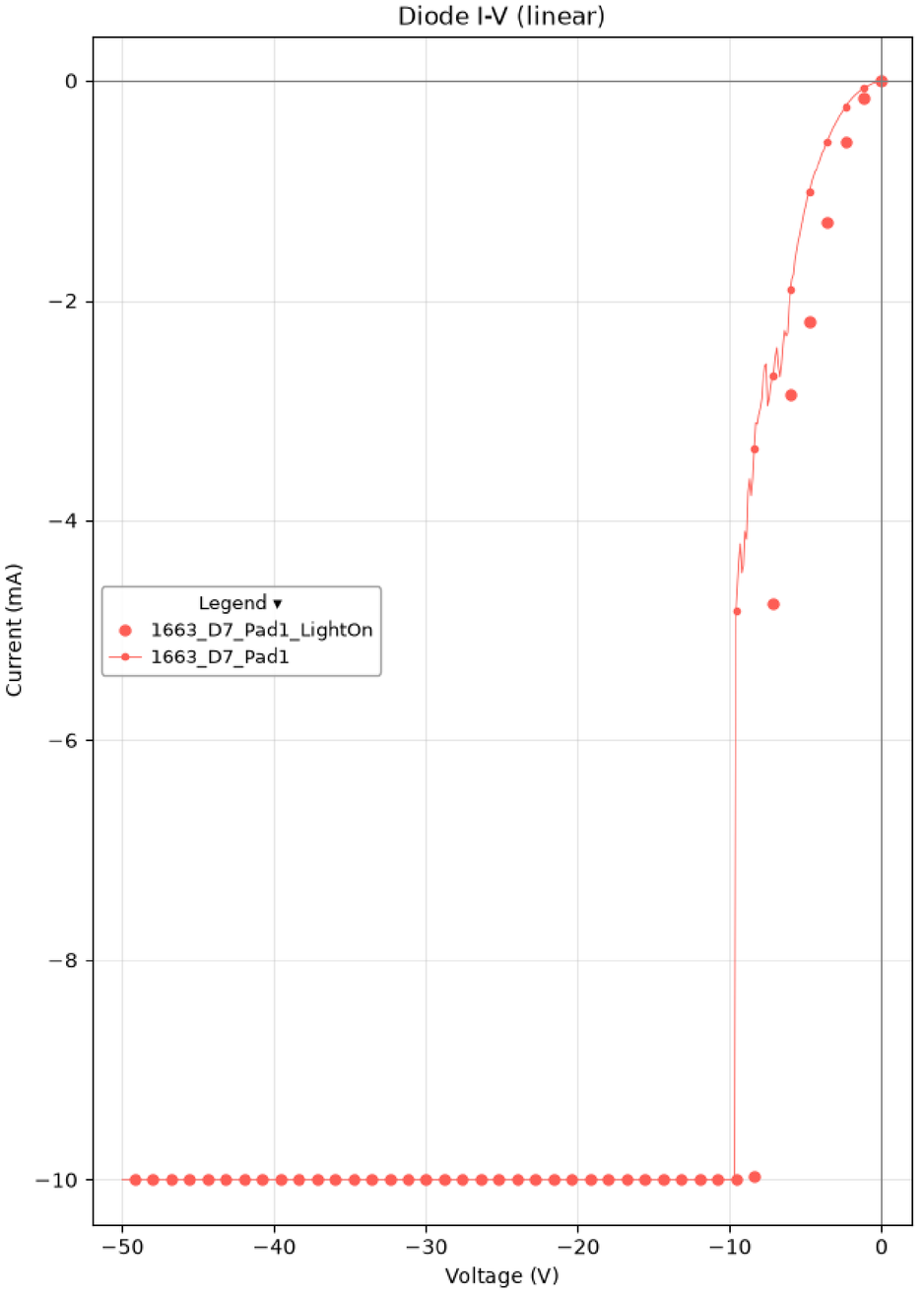
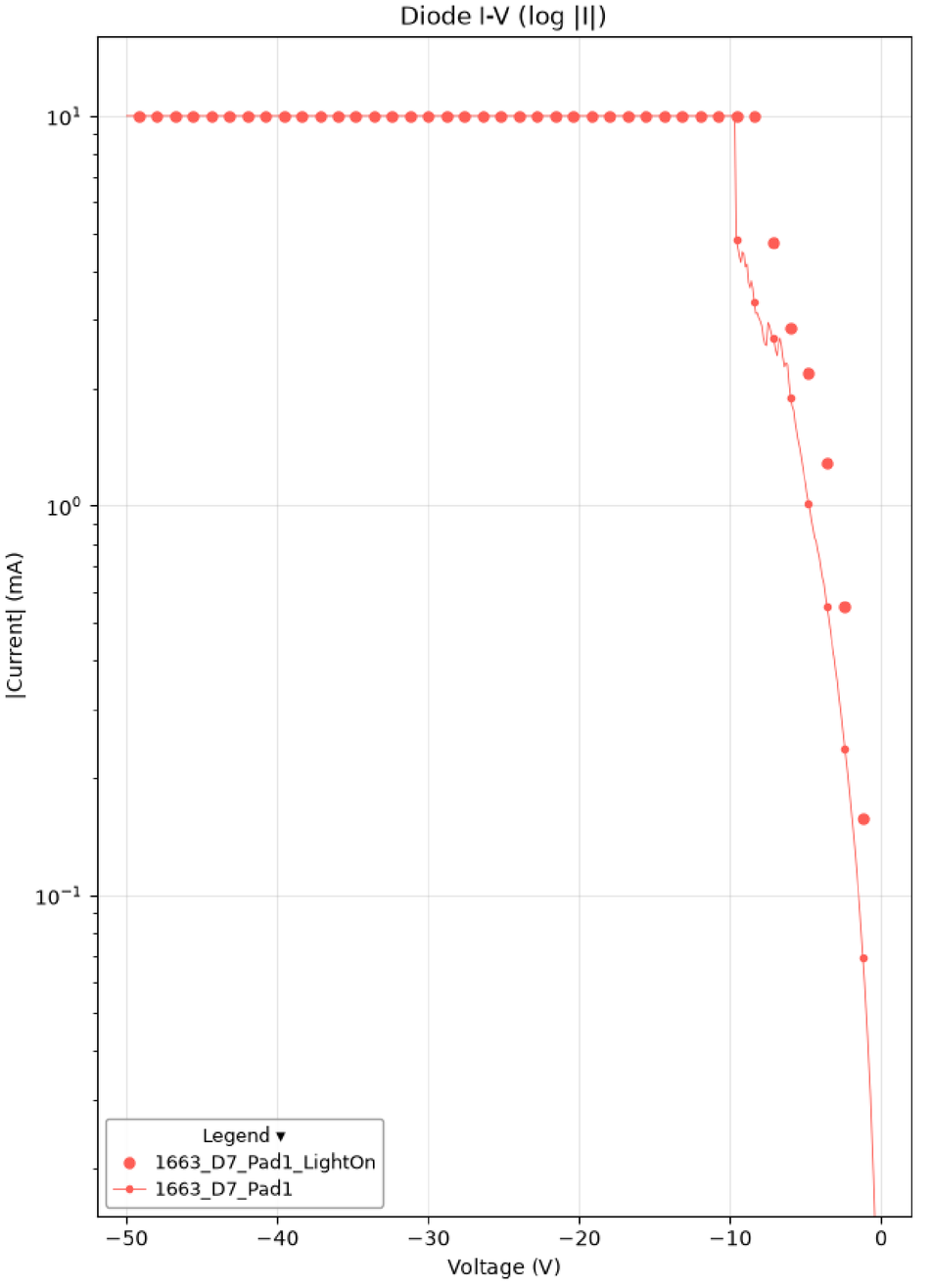
1557_D2_Pad3

1557_D2_Pad3


Diode I-V (linear)
Current (mA)
Voltage (V)
Legend
1663_D7_Pad1_LightOn
1663_D7_Pad1


Diode I-V (log |I|)
|Current| (mA)
Voltage (V)
Legend
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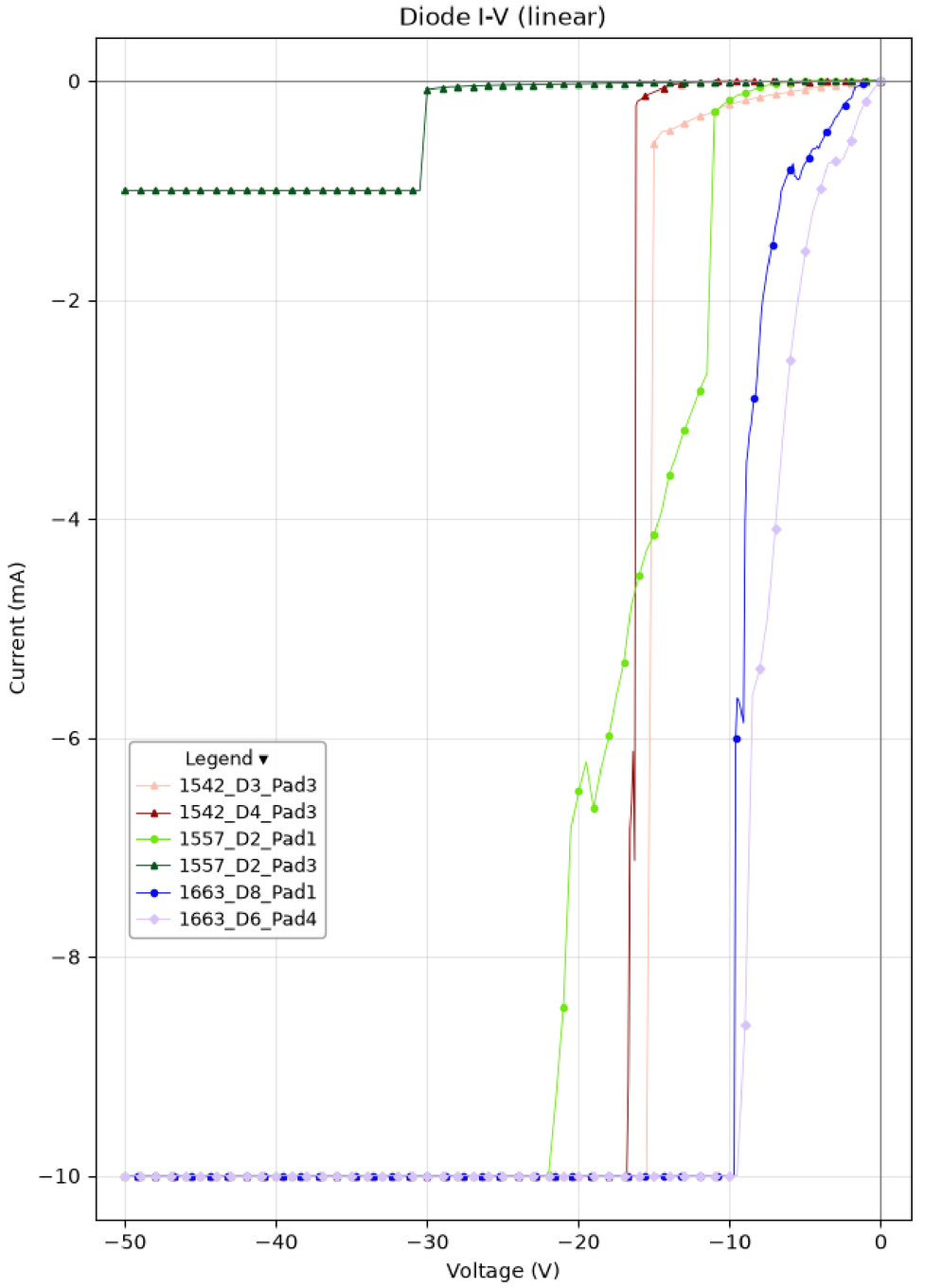
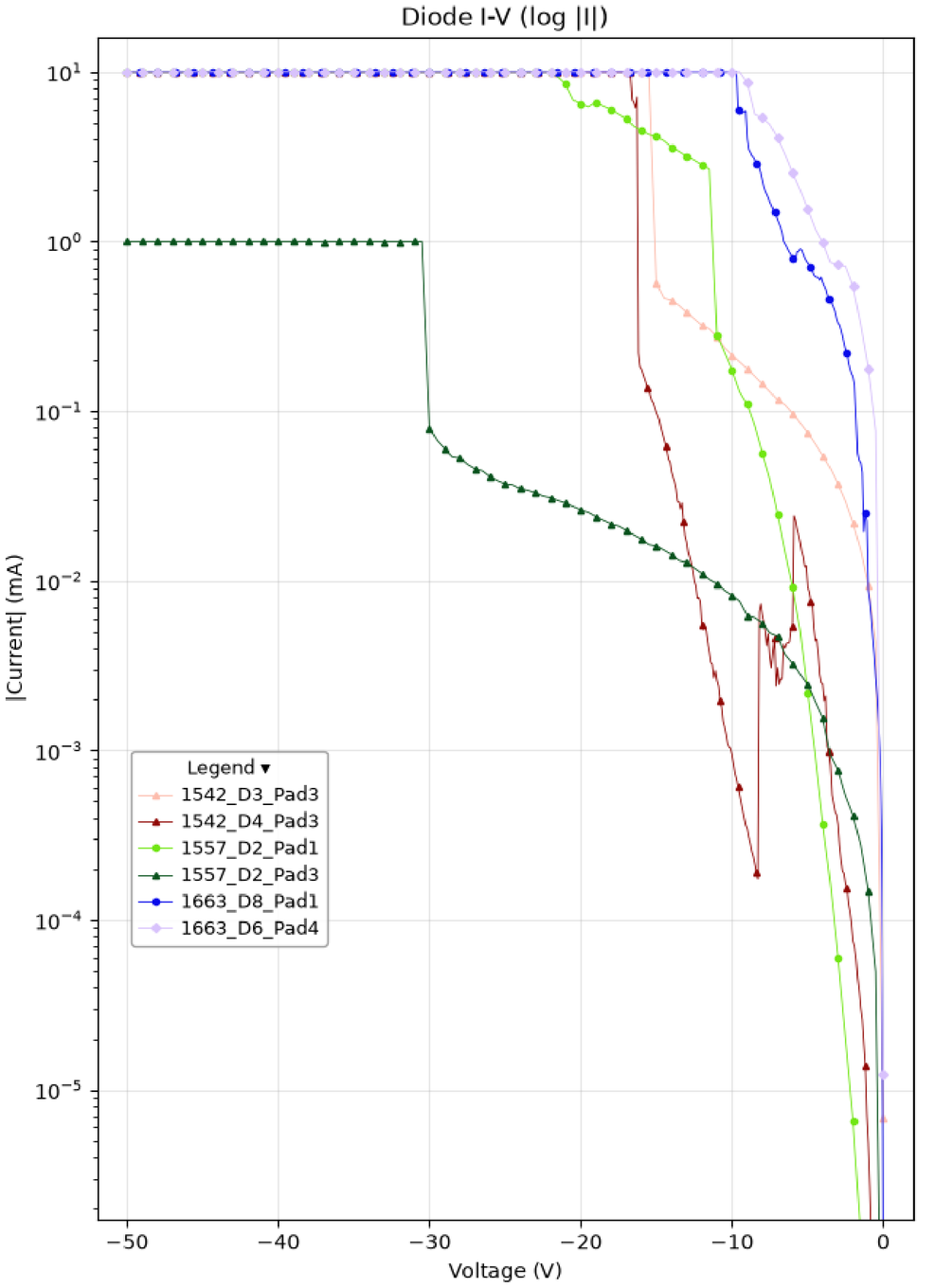
1663_D7_Pad1

1663_D7_Pad1





Comparison of three depositions, each showing its respective device and pads

Reference:

https://doi.org/10.1109/LSENS.2025.3578088

Z. Li, S. S. Panda, M. Müller, M. Diwan, P. Haring Bolívar, B. Choubey, and A. Bablich, "Amorphous Silicon Avalanche Photodiode for Back-End-of-Line CMOS Integration," *IEEE Sensors Letters*, vol. 9, no. 7, July 2025, Art. no. 3502304