Wafer data
Star120
(900V/120A)
June 2026

Features

GaNPower innovative all-GaN-IC enables 3.8V turn-on voltage and +/-20 V regulated gate driving.

Enhanced system reliability and compatibility with conventional gate drivers (*).

Regulated gate driving enables anti-ringing protection / ESD protection

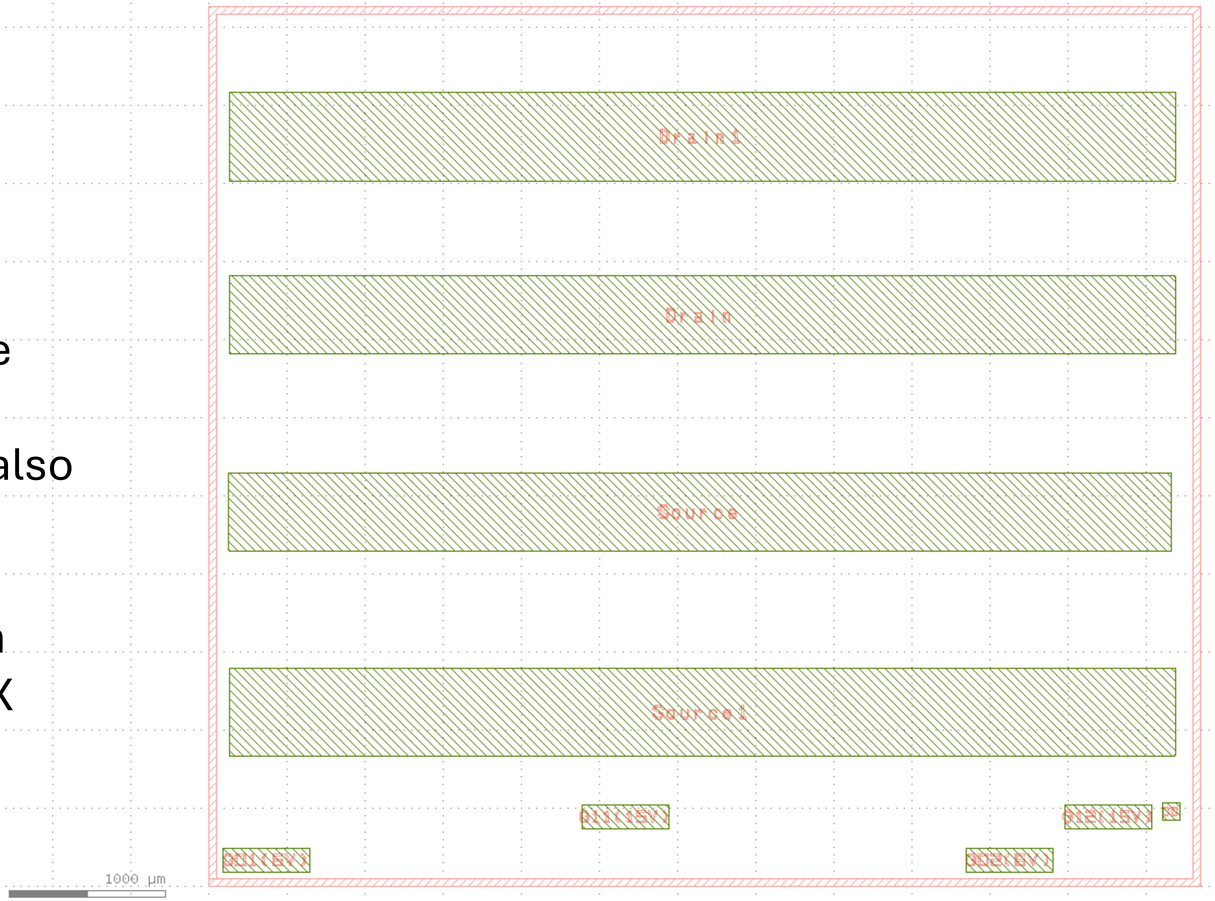
Lossless source side current sensing

(*) May require adjustment and increase of isolated auxiliary power supply of driver board if driving several parallelized Star120.

Content

- ➡ Basic wafer info/DC data
- Dynamic test data
- Chip probe data
- App notes

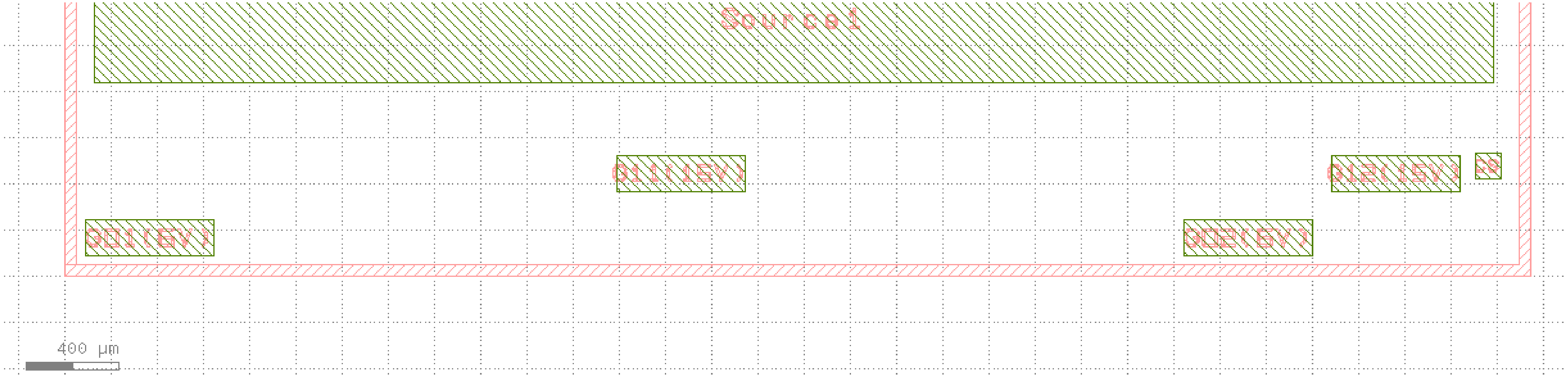
Device-name	x-size	y-size
Star120	6345.90	5634.28



Star120
Verson 1

Note that G11(15V) and G12(15V) are internally connected.
Similarly, G01(6V) and G02(6V0 are also internally connected.

For best gate control uniformity, both G1X (for 12/15V driving) or both G0X (for 6V driving) shall be used if wire bonding configuration allows.



Main switch FET channel width: 1,426,822 um

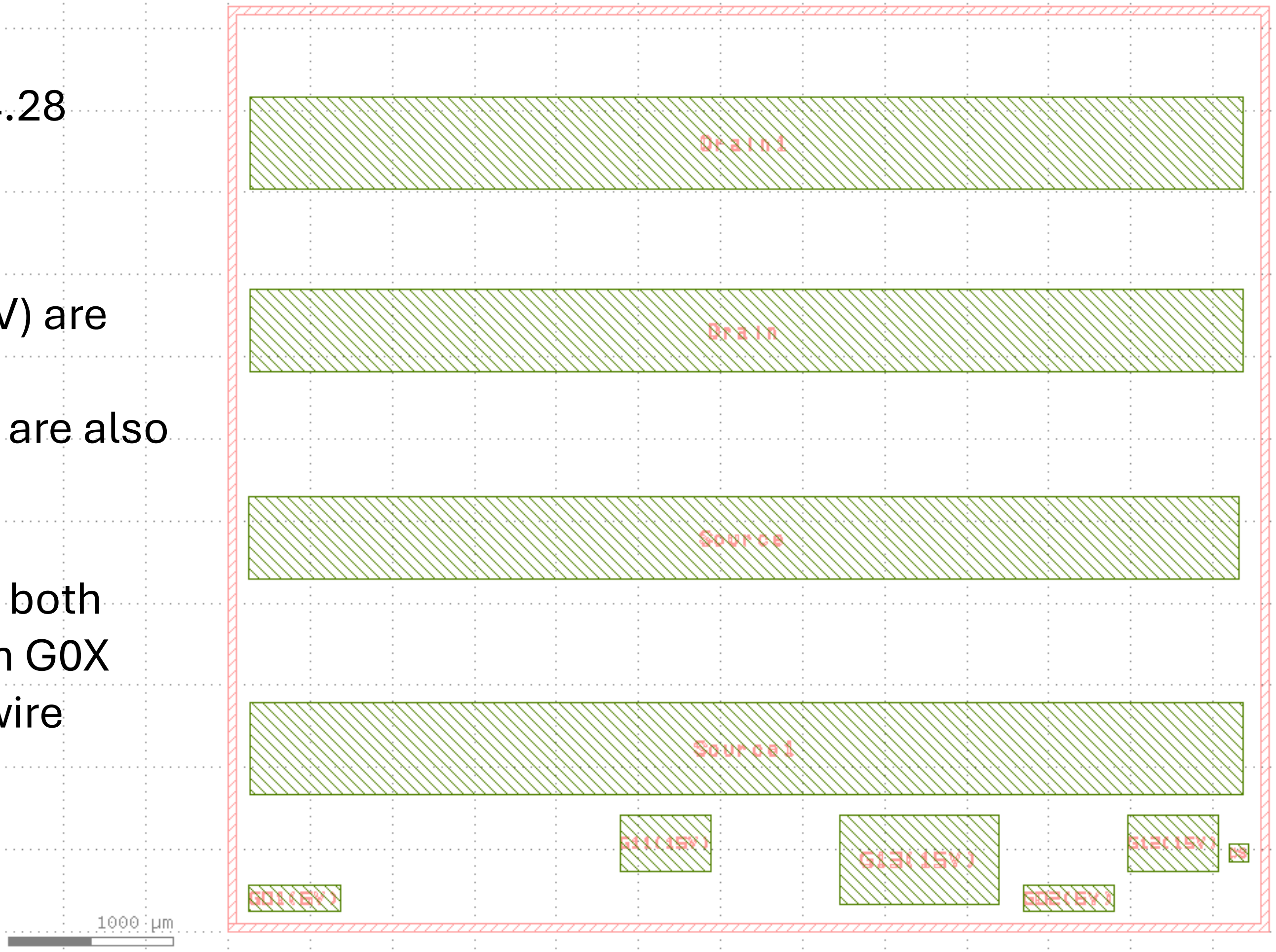
Star120
Version 1

PAD	Dx	Dy	Center_x	Center_y
G01(6V)	555.00	155.00	368.30	168.30
G11(15V)	585.00	185.00	2664.55	446.30
Source	6032.72	500.00	3144.16	2397.14
Source1	6053.72	560.00	3156.66	1116.70
Drain	6053.72	500.00	3156.66	3657.14
Drain1	6053.72	567.00	3156.66	4799.98
CS	111.00	111.00	6158.02	479.30
G02(6V)	555.00	155.00	5121.95	168.30
G12(15V)	585.00	185.00	5759.20	446.30

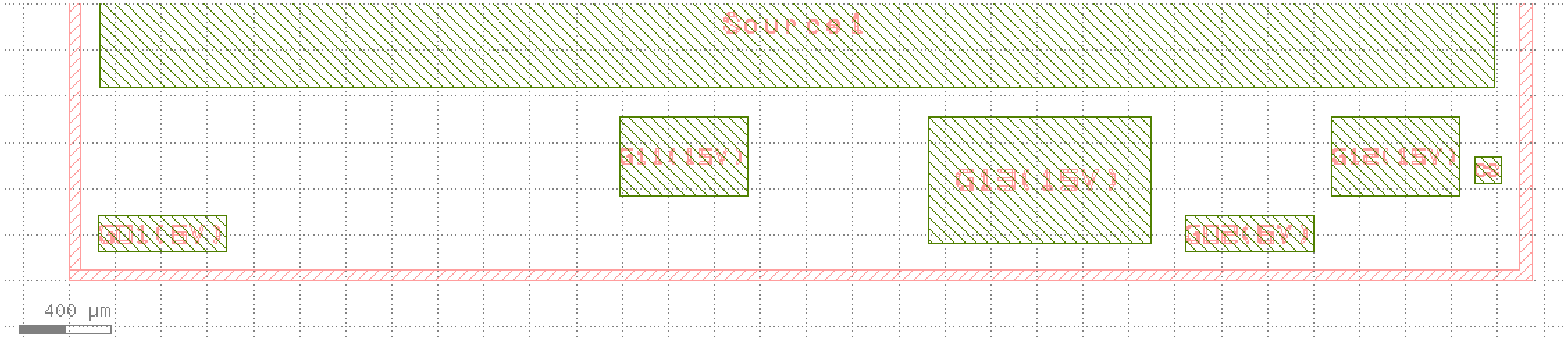
Device-name	x-size	y-size
Star120	6345.90	5634.28

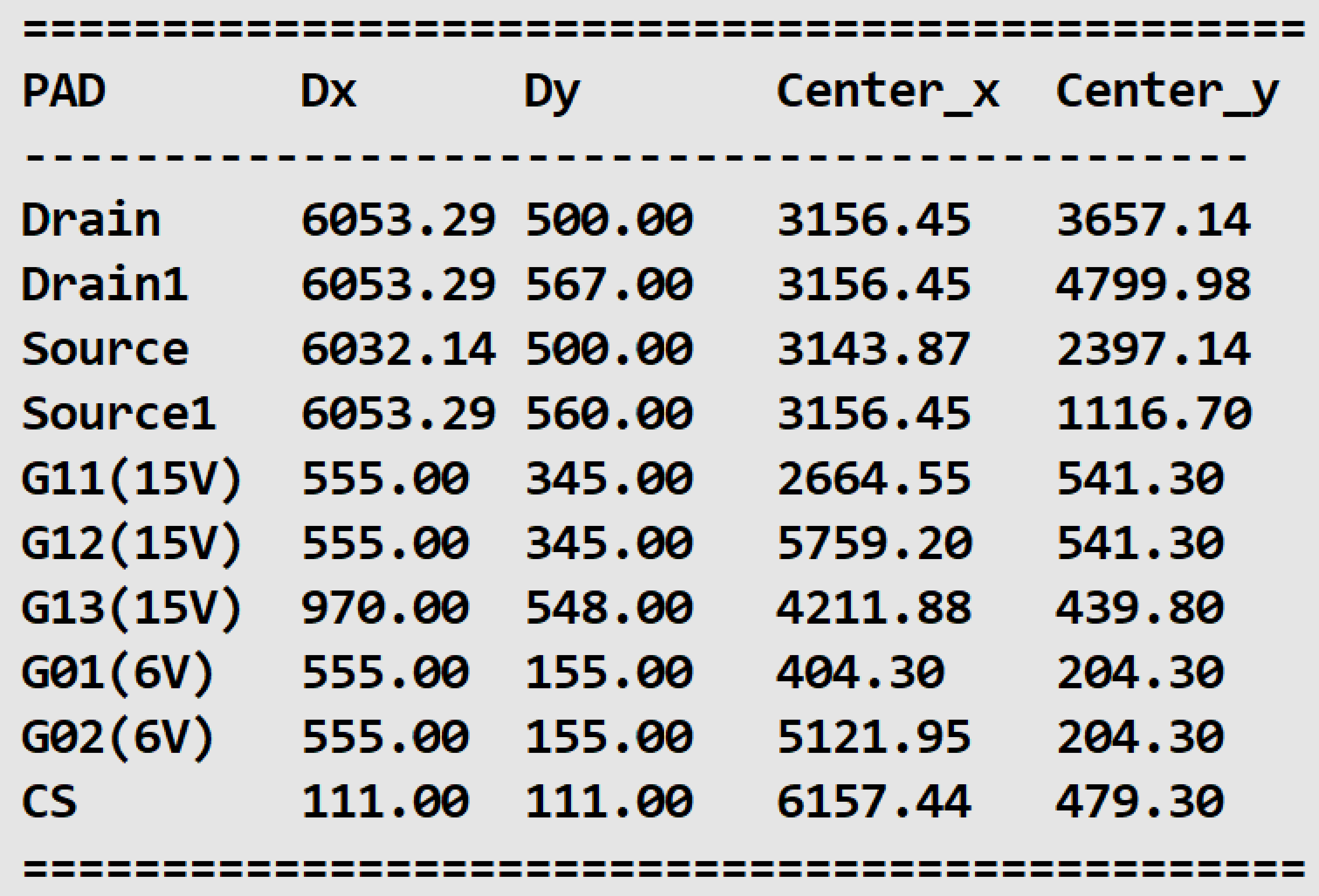
Note that G11(15V) and G12(15V) are internally connected.
Similarly, G01(6V) and G02(6V0 are also internally connected.

For best gate control uniformity, both G1X (for 12/15V driving) or both G0X (for 6V driving) shall be used if wire bonding configuration allows.



Star120
Version 2





```
==============================================
PAD         Dx       Dy         Center_x  Center_y
--------------------------------------------
Drain       6053.29 500.00     3156.45   3657.14
Drain1      6053.29 567.00     3156.45   4799.98
Source      6032.14 500.00     3143.87   2397.14
Source1     6053.29 560.00     3156.45   1116.70
G11(15V)    555.00   345.00     2664.55   541.30
G12(15V)    555.00   345.00     5759.20   541.30
G13(15V)    970.00   548.00     4211.88   439.80
G01(6V)     555.00   155.00     404.30    204.30
G02(6V)     555.00   155.00     5121.95   204.30
CS          111.00   111.00     6157.44   479.30
==============================================
```

Star120
Version 2

Basic specifications

Back metal	optional
Front metal	AlCu 4µm
Wafer diameter	6 inch
Wafer thickness before dicing	1000 µm
Recommended die thickness after dicing	150-250µm
Street width	80 µm
Recommended storage	N_2 environment

Wire bonding suggestion

Larger pads use 10mil or 12mil Al .

Smaller pads use Cu, PdCu , or Au (1.5 mil – 2 mil)

Backside must be glued to backplate using conductive glue or be soldered after back metal

Backplate must be connected to the source of the GaNFET using wire bonding (low stress Al-wire recommended).

Pressurized Ag sintering should be avoided while presureless Ag sintering is recommended for best thermal performance.

Characteristics

		Condition	min	typical	max	
Ids-max	Max current at 125°C	Vgs=6V/15V (125°C)		120		A
Ids-max	Max current at 25°C	Vgs=6V/15V (25°C)		240		A
Vds-max	D-S breakdown voltage	Vgs=0V (25°C) < 10uA		900		V
Vg0s	Original gate voltage		-3		7	V
Vg1s	Regulated		-20		20	
Vgth (G0)	Gate threshold voltage	Vgs=Vds, Ids=35mA		1.3		V
Vg1th_lin (G1)	Regulated threshold	Vds=0.01V, Ids=100 mA	2.67	3.89	5.1	V
Vg1th_sat (G1)	Regulated threshold	Vds=0.01V, Ids=100 mA		2.35	4.02	V
Rdson	On resistance	Vg0s=6V/Vg1s=15V, Ids=1A (25°C)	9.4	13.3	20	mΩ
Rdson (150°C)	On resistance	Vg0s=6V/Vg1s=15V, Ids=1A (150°C)	26	38	59	mΩ
Vcs	Current sensing	Ids=+/-120A	-2.5		2.5	V
Qg	Gate charge	Vbus=500V , Turn-off from Ids=60A Vg0s from 6V to 0V (25°C)		29		nC

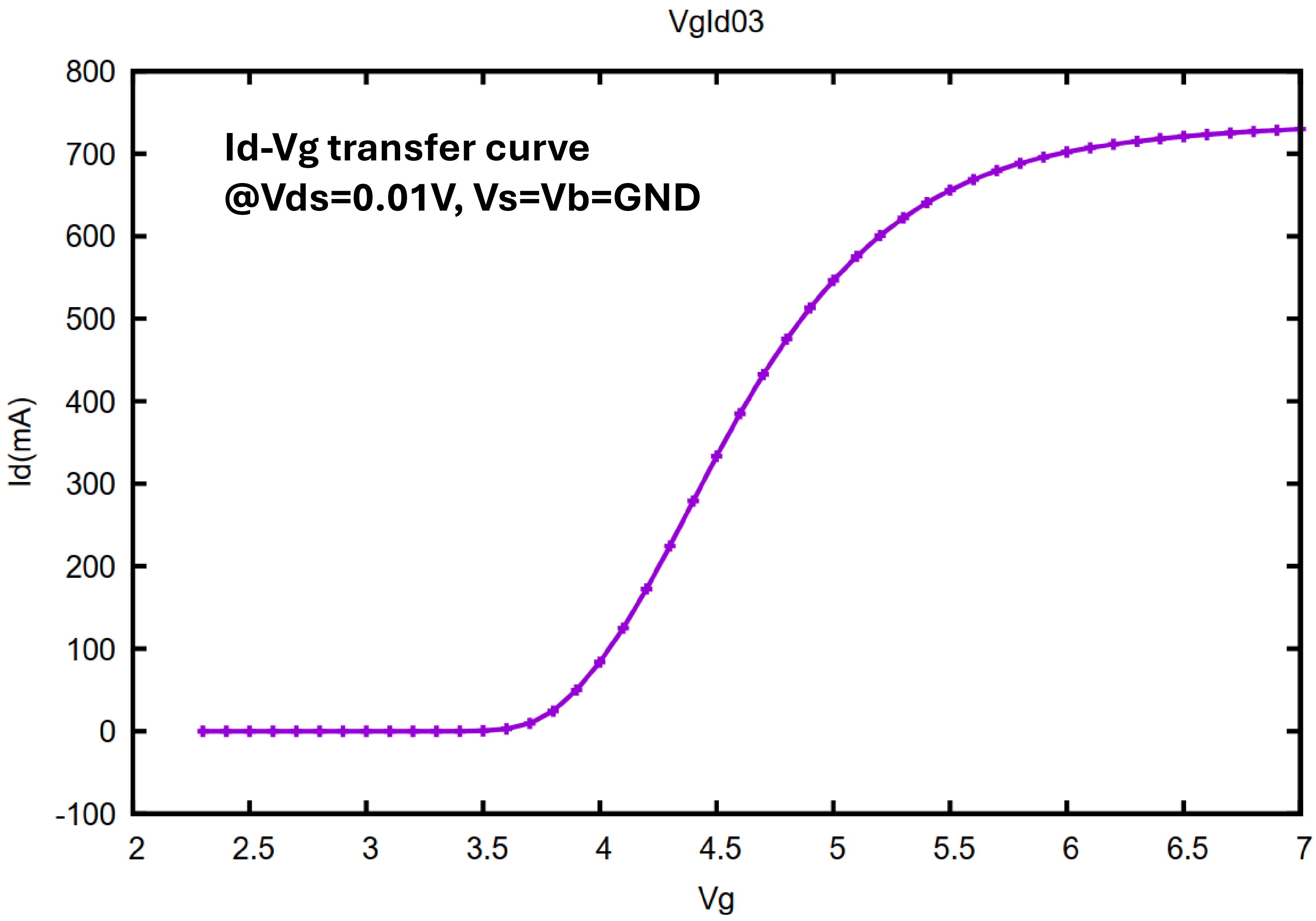
		Condition	min	typical	max	
Gm-Max	Max transconductance		357	640		mS
IDSS	Drain leakage	Vg1s=0V / Vg0s=0V, Vds=900V (25°C)		47	200	µA
IDSS(150°C)	Drain leakage	Vg1s=0V / Vg0s=0V, Vds=900V (150°C)		215	2345	µA
IDSS(150°C)	Drain leakage	Vg1s=0V / Vg0s=0V, Vds=900V (150°C)		374	2354	µA
IGSSF	Forward gate leakage	Vg1s=6V, Vds=0V (25°C)		184		µA
-IGSSR	Reverse gate leakage	Vg1s=-6V, Vds=0V (25°C)		106	817	µA
-IGSSR(150°C)	Reverse gate leakage	Vg1s=-6V, Vds=0V (150°C)		131	930	uA
Max_Isoff	Source leakage	Vg=Vs=Vb=GND, Vd=800V		0.6	7	µA
Isub	Bulk/substrate leakage	Vs=Vg=Vd=800V, B=GND		5.2		µA
Eoff	Turn-off energy	Vg=-2V/12V, Ids=60A		84.7		µJ
Tfall	Fall time			13.3		ns
Tdoff	Turn-off delay			35		ns
Eon	Turn-on energy			439		µJ
Trise	Rise time			39		ns
Tdon	Turn-on delay			12		ns

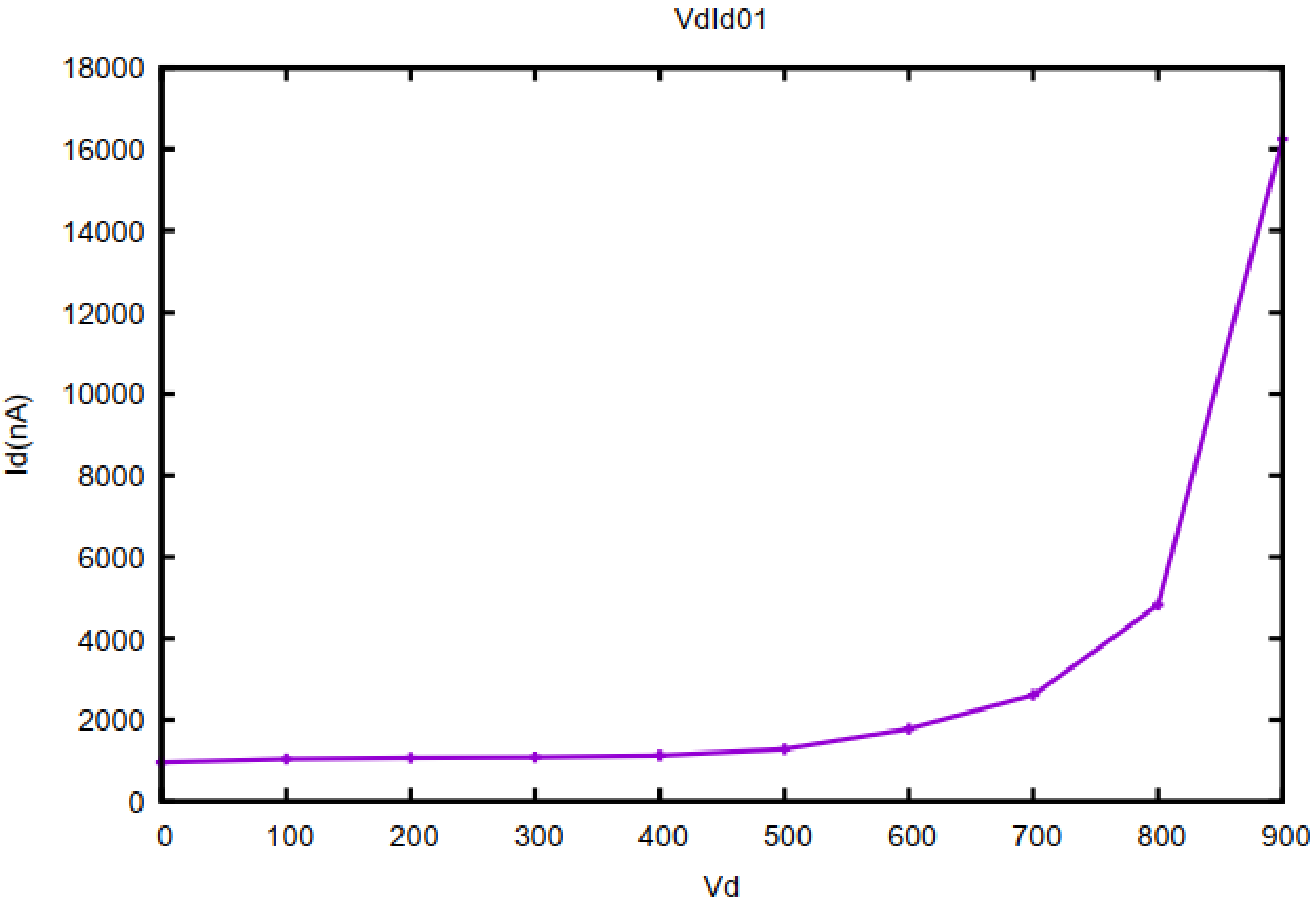
DUT	Transient	Tdon/Tdoff (ns)	Trise/Tfall (ns)	Ton/Toff (ns)	Eloss (uJ)	Load
Star120-V1 Vg=-1.3/12 V Rg = 2ohm	Turn-off	39	20	59	254	400 V 92 A
	Turn-on	9	60	69	1062	
Star120-V1 Vg=-3.3/12 V Rg = 2ohm	Turn-off	25	13	37	157	400 V 99 A
	Turn-on	11	98	109	1549	

R_{GOFF} = 6.8Ω for all

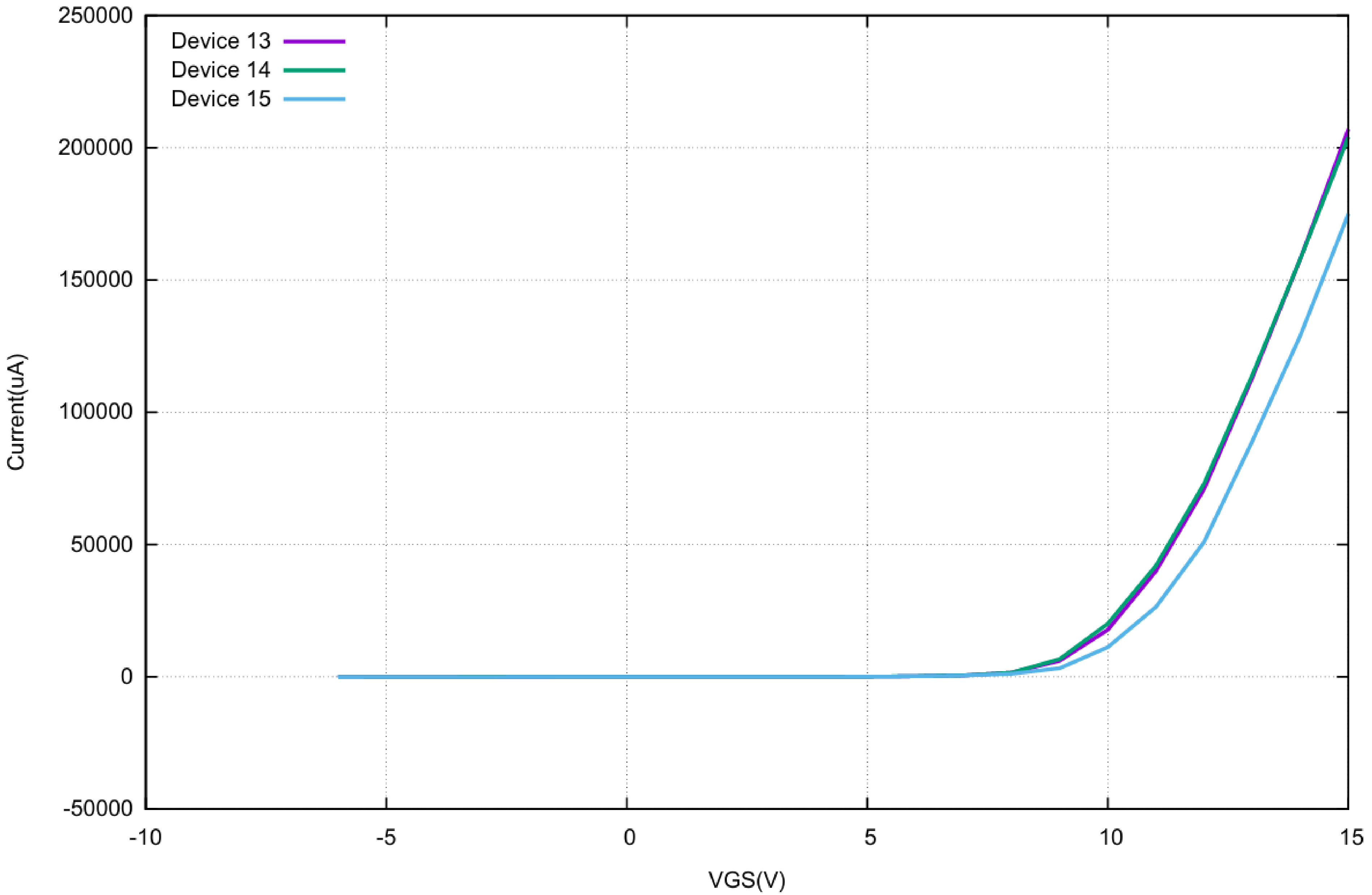
V_{GS}	I_{DS} (A)	R_{GON} (Ω)	T_{RISE} (ns)	T_{FALL} (ns)	Turn On-delay (ns)	Turn-Of delay (ns)	E_{ON} (µJ)	E_{OFF} (µJ)
-4V/+15.6V	29.2	6.8	33.6	23.2	23.0	42.76	674	88.61
	29.2	10	38.3	23.6	25.8	42.5	727.8	90.44
	29.4	12	41.04	23.44	27.8	42.95	762.7	91.59
	29.5	15	44.0	23.6	30.1	42.18	805.0	95.12
-4V/+11.7V	29.0	10	48.7	24	28.03	42.8	798.6	93.32
	29.2	6.8	44.8	23.8	27.03	43.8	777.9	94.38
	29.1	2	40.96	24.16	25.5	42.9	764.8	97.4
	29.1	1	39.2	24.3	24.0	43.1	742.3	99.59

*Parameters:
V_{BUS} = 750V
I_{DS} = 29A
L = 128 µH
Freewheeling diode = External SiC diode (FFSH50120A)
Gate driver = Infineon IEDB7275A

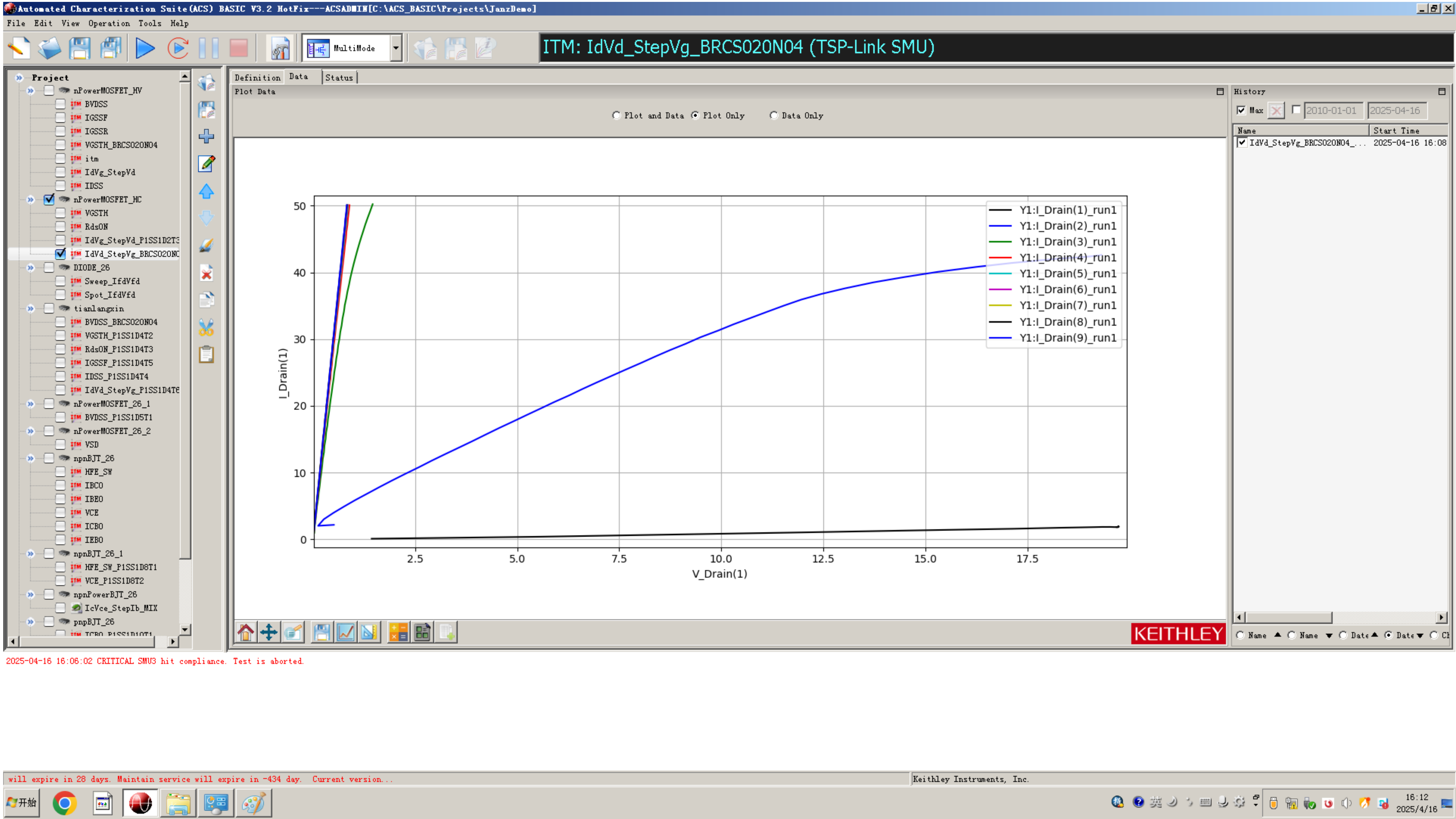

VgId03
Id-Vg transfer curve
@Vds=0.01V, Vs=Vb=GND
Id(mA)
800
700
600
500
400
300
200
100
0
-100
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
Vg


VdId01
Id(nA)
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0
100
200
300
400
500
600
700
800
900
Vd

Star120 gate leakage (TO247)



开态IdVds-StepVg测试结果（电流扫描1~50A，Vgs 4~12V，温度25℃ ）



Automated Characterization Suite(ACS) BASIC V3.2 HotFix---ACSADMIN[C:\ACS_BASIC\Projects\JanzDemo]

ITM: IdVd_StepVg_BRCS020N04 (TSP-Link SMU)

○ Plot and Data ● Plot Only ○ Data Only

History: ☑ Max ☐ 2010-01-01 2025-04-16

Name	Start Time
☑ IdVd_StepVg_BRCS020N04_...	2025-04-16 16:08

2025-04-16 16:06:02 CRITICAL SMU3 hit compliance. Test is aborted.

will expire in 28 days. Maintain service will expire in -434 day. Current version...

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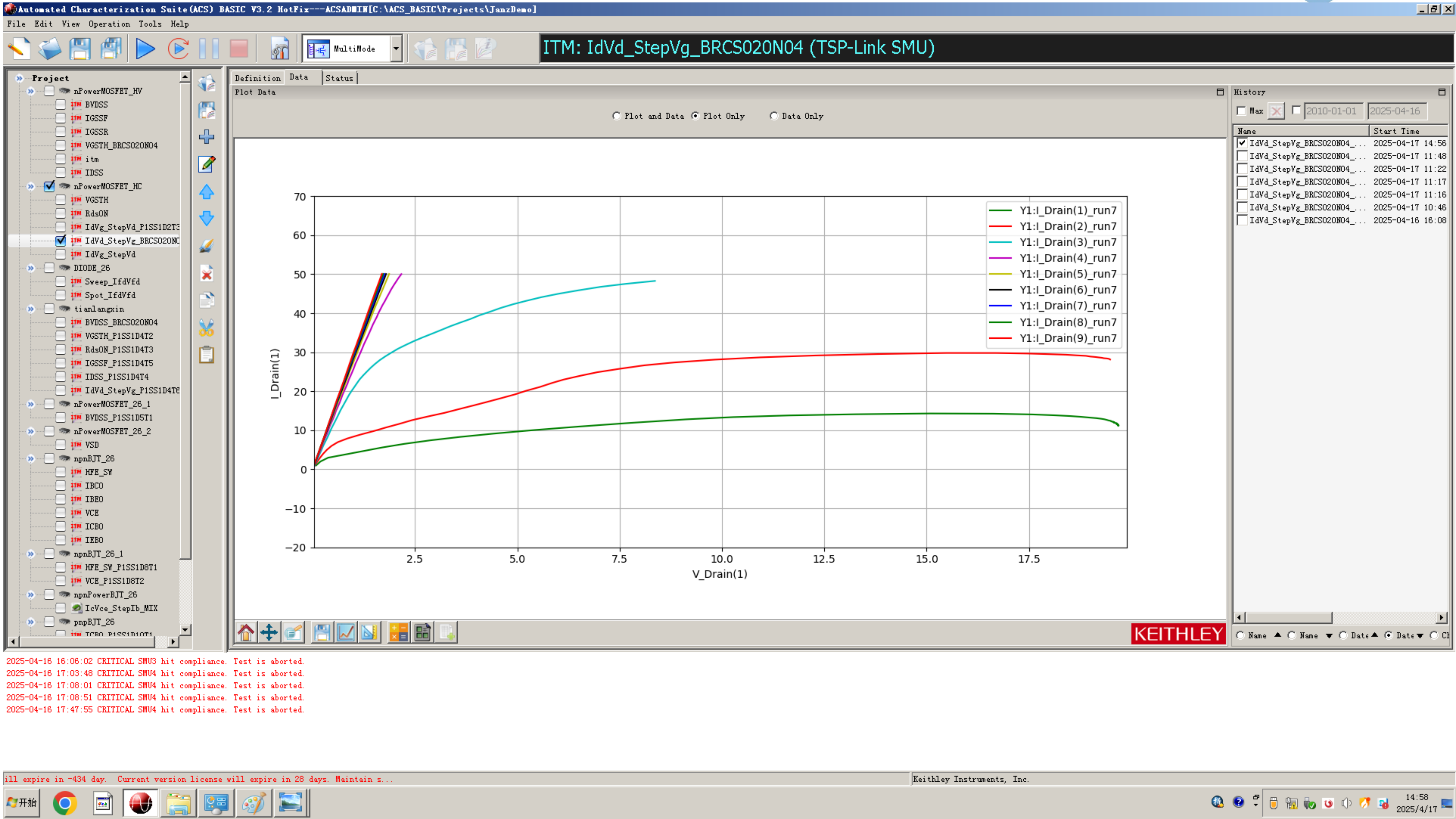
开态IdVds-StepVg测试结果（电流扫描1~50A，Vgs 4~12V，温度150℃）



Automated Characterization Suite(ACS) BASIC V3.2 HotFix---ACSADMIN[C:\ACS_BASIC\Projects\JanzDemo]

ITM: IdVd_StepVg_BRCS020N04 (TSP-Link SMU)

○ Plot and Data ● Plot Only ○ Data Only

Name	Start Time
☑ IdVd_StepVg_BRCS020N04_...	2025-04-17 14:56
☐ IdVd_StepVg_BRCS020N04_...	2025-04-17 11:48
☐ IdVd_StepVg_BRCS020N04_...	2025-04-17 11:22
☐ IdVd_StepVg_BRCS020N04_...	2025-04-17 11:17
☐ IdVd_StepVg_BRCS020N04_...	2025-04-17 11:16
☐ IdVd_StepVg_BRCS020N04_...	2025-04-17 10:46
☐ IdVd_StepVg_BRCS020N04_...	2025-04-16 16:08

```
2025-04-16 16:06:02 CRITICAL SMU3 hit compliance. Test is aborted.
2025-04-16 17:03:48 CRITICAL SMU4 hit compliance. Test is aborted.
2025-04-16 17:08:01 CRITICAL SMU4 hit compliance. Test is aborted.
2025-04-16 17:08:51 CRITICAL SMU4 hit compliance. Test is aborted.
2025-04-16 17:47:55 CRITICAL SMU4 hit compliance. Test is aborted.
```

ill expire in -434 day. Current version license will expire in 28 days. Maintain s...

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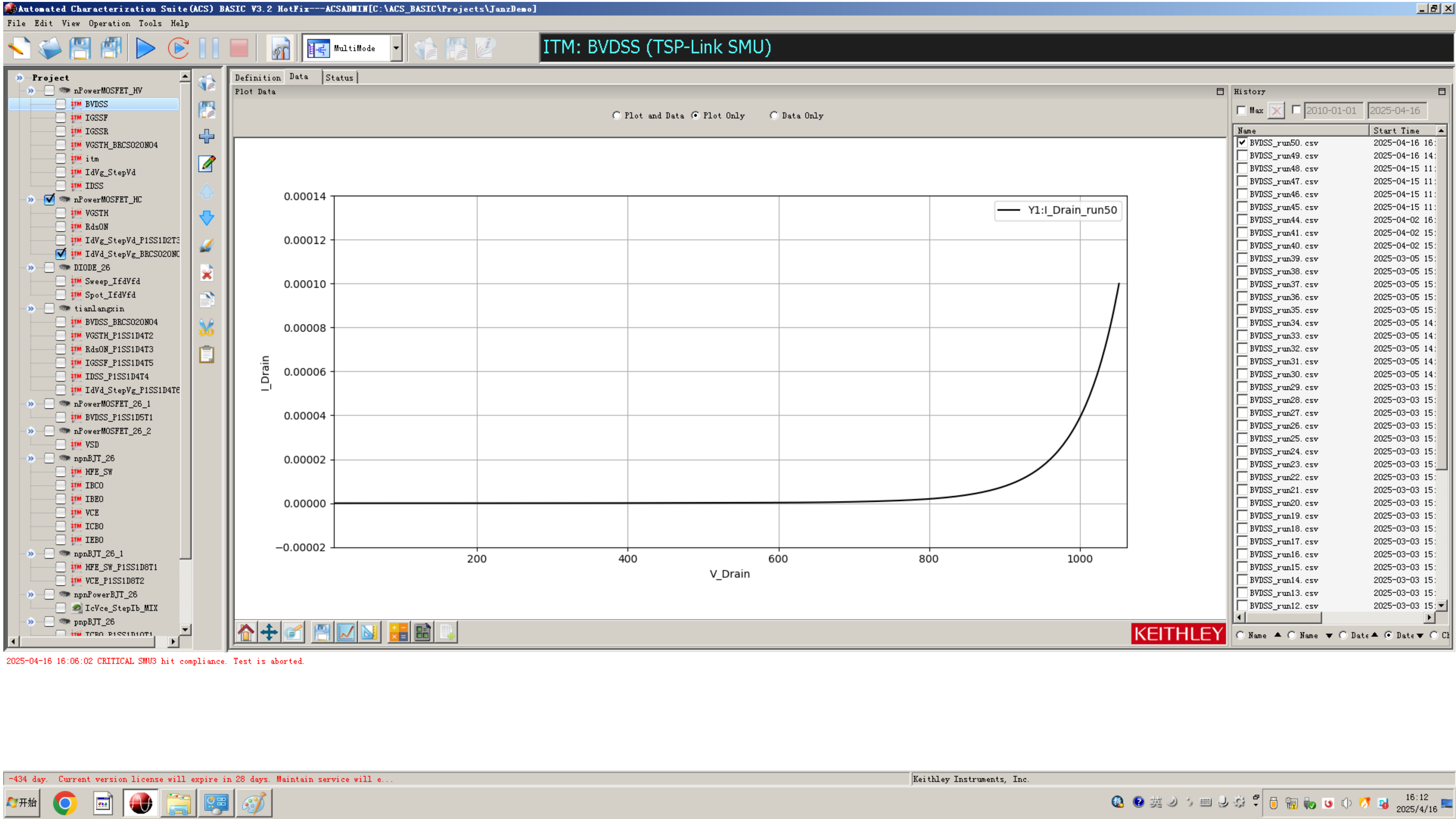
关态的Idss-Vds（最高Vds可到900V） （扫描0~1200V，100uA触发保护关断，温度25°C）



Automated Characterization Suite(ACS) BASIC V3.2 HotFix---ACSADMIN[C:\ACS_BASIC\Projects\JanzDemo]

ITM: BVDSS (TSP-Link SMU)

Project
- ☐ nPowerMOSFET_HV
  - ☐ BVDSS
  - ☐ IGSSF
  - ☐ IGSSR
  - ☐ VGSTH_BRCS020N04
  - ☐ itm
  - ☐ IdVg_StepVd
  - ☐ IDSS
- ☑ nPowerMOSFET_HC
  - ☐ VGSTH
  - ☐ RdsON
  - ☐ IdVg_StepVd_P1SS1D2T3
  - ☑ IdVd_StepVg_BRCS020N0
- ☐ DIODE_26
  - ☐ Sweep_IfdVfd
  - ☐ Spot_IfdVfd
- ☐ tianlangxin
  - ☐ BVDSS_BRCS020N04
  - ☐ VGSTH_P1SS1D4T2
  - ☐ RdsON_P1SS1D4T3
  - ☐ IGSSF_P1SS1D4T5
  - ☐ IDSS_P1SS1D4T4
  - ☐ IdVd_StepVg_P1SS1D4T6
- ☐ nPowerMOSFET_26_1
  - ☐ BVDSS_P1SS1D5T1
- ☐ nPowerMOSFET_26_2
  - ☐ VSD
- ☐ npnBJT_26
  - ☐ HFE_SW
  - ☐ IBCO
  - ☐ IBEO
  - ☐ VCE
  - ☐ ICBO
  - ☐ IEBO
- ☐ npnBJT_26_1
  - ☐ HFE_SW_P1SS1D8T1
  - ☐ VCE_P1SS1D8T2
- ☐ npnPowerBJT_26
  - ☐ IcVce_StepIb_MIX
- ☐ pnpBJT_26

Plot Data

○ Plot and Data ● Plot Only ○ Data Only

History

☐ Max ☐ 2010-01-01 2025-04-16

Name	Start Time
☑ BVDSS_run50.csv	2025-04-16 16:
☐ BVDSS_run49.csv	2025-04-16 14:
☐ BVDSS_run48.csv	2025-04-15 11:
☐ BVDSS_run47.csv	2025-04-15 11:
☐ BVDSS_run46.csv	2025-04-15 11:
☐ BVDSS_run45.csv	2025-04-15 11:
☐ BVDSS_run44.csv	2025-04-02 16:
☐ BVDSS_run41.csv	2025-04-02 15:
☐ BVDSS_run40.csv	2025-04-02 15:
☐ BVDSS_run39.csv	2025-03-05 15:
☐ BVDSS_run38.csv	2025-03-05 15:
☐ BVDSS_run37.csv	2025-03-05 15:
☐ BVDSS_run36.csv	2025-03-05 15:
☐ BVDSS_run35.csv	2025-03-05 15:
☐ BVDSS_run34.csv	2025-03-05 14:
☐ BVDSS_run33.csv	2025-03-05 14:
☐ BVDSS_run32.csv	2025-03-05 14:
☐ BVDSS_run31.csv	2025-03-05 14:
☐ BVDSS_run30.csv	2025-03-05 14:
☐ BVDSS_run29.csv	2025-03-03 15:
☐ BVDSS_run28.csv	2025-03-03 15:
☐ BVDSS_run27.csv	2025-03-03 15:
☐ BVDSS_run26.csv	2025-03-03 15:
☐ BVDSS_run25.csv	2025-03-03 15:
☐ BVDSS_run24.csv	2025-03-03 15:
☐ BVDSS_run23.csv	2025-03-03 15:
☐ BVDSS_run22.csv	2025-03-03 15:
☐ BVDSS_run21.csv	2025-03-03 15:
☐ BVDSS_run20.csv	2025-03-03 15:
☐ BVDSS_run19.csv	2025-03-03 15:
☐ BVDSS_run18.csv	2025-03-03 15:
☐ BVDSS_run17.csv	2025-03-03 15:
☐ BVDSS_run16.csv	2025-03-03 15:
☐ BVDSS_run15.csv	2025-03-03 15:
☐ BVDSS_run14.csv	2025-03-03 15:
☐ BVDSS_run13.csv	2025-03-03 15:
☐ BVDSS_run12.csv	2025-03-03 15:

○ Name ▲ ○ Name ▼ ○ Date▲ ● Date▼ ○ Cl

```
2025-04-16 16:06:02 CRITICAL SMU3 hit compliance. Test is aborted.
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-434 day.  Current version license will expire in 28 days. Maintain service will e...
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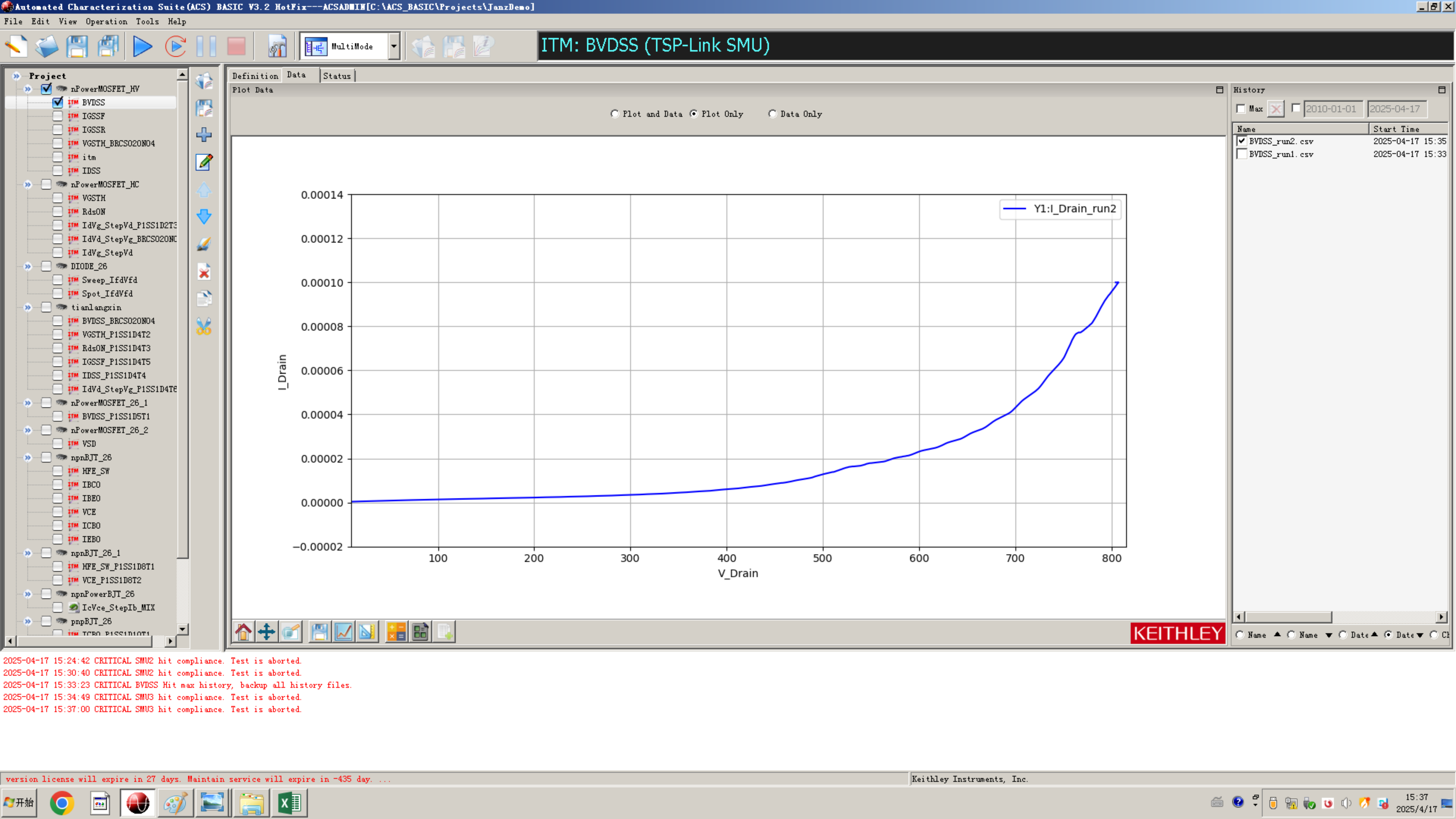
开始

16:12
2025/4/16



○ Plot and Data ● Plot Only ○ Data Only

☐ Max ☐ 2010-01-01 2025-04-17

Name	Start Time
☑ BVDSS_run2.csv	2025-04-17 15:35
☐ BVDSS_run1.csv	2025-04-17 15:33

```
2025-04-17 15:24:42 CRITICAL SMU2 hit compliance. Test is aborted.
2025-04-17 15:30:40 CRITICAL SMU2 hit compliance. Test is aborted.
2025-04-17 15:33:23 CRITICAL BVDSS Hit max history, backup all history files.
2025-04-17 15:34:49 CRITICAL SMU3 hit compliance. Test is aborted.
2025-04-17 15:37:00 CRITICAL SMU3 hit compliance. Test is aborted.
```

version license will expire in 27 days. Maintain service will expire in -435 day. ...

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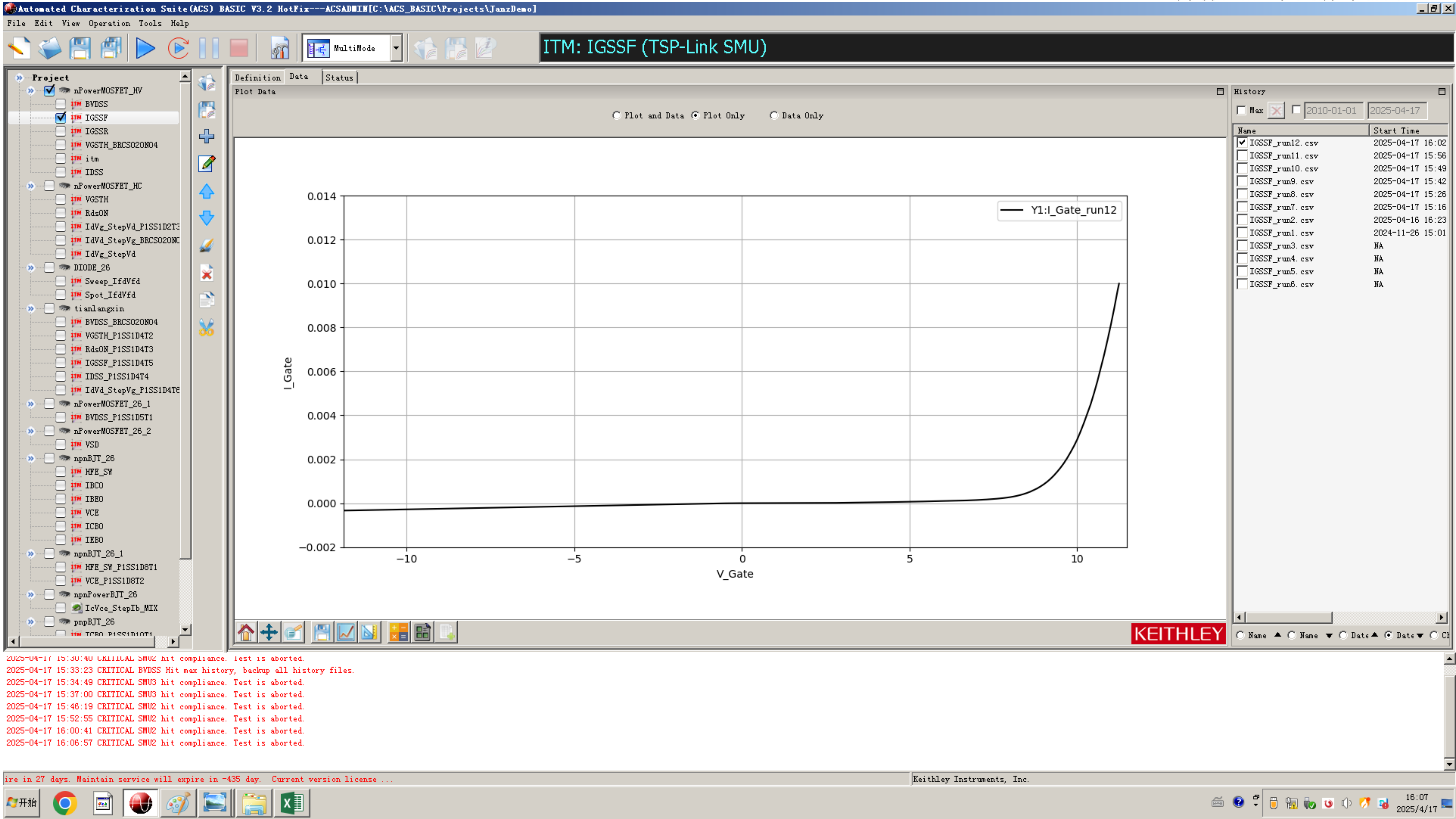
Ig-Vg曲线（Vgs=-12 to 12V，Igss限流10mA，Vds = 0V，温度25°C）



○ Plot and Data ● Plot Only ○ Data Only

☐ Max ☐ 2010-01-01 2025-04-17

Name	Start Time
☑ IGSSF_run12.csv	2025-04-17 16:02
☐ IGSSF_run11.csv	2025-04-17 15:56
☐ IGSSF_run10.csv	2025-04-17 15:49
☐ IGSSF_run9.csv	2025-04-17 15:42
☐ IGSSF_run8.csv	2025-04-17 15:26
☐ IGSSF_run7.csv	2025-04-17 15:16
☐ IGSSF_run2.csv	2025-04-16 16:23
☐ IGSSF_run1.csv	2024-11-26 15:01
☐ IGSSF_run3.csv	NA
☐ IGSSF_run4.csv	NA
☐ IGSSF_run5.csv	NA
☐ IGSSF_run6.csv	NA

```
2025-04-17 15:30:40 CRITICAL SMU2 hit compliance. Test is aborted.
2025-04-17 15:33:23 CRITICAL BVDSS Hit max history, backup all history files.
2025-04-17 15:34:49 CRITICAL SMU3 hit compliance. Test is aborted.
2025-04-17 15:37:00 CRITICAL SMU3 hit compliance. Test is aborted.
2025-04-17 15:46:19 CRITICAL SMU2 hit compliance. Test is aborted.
2025-04-17 15:52:55 CRITICAL SMU2 hit compliance. Test is aborted.
2025-04-17 16:00:41 CRITICAL SMU2 hit compliance. Test is aborted.
2025-04-17 16:06:57 CRITICAL SMU2 hit compliance. Test is aborted.
```

```
ire in 27 days. Maintain service will expire in -435 day.  Current version license ...
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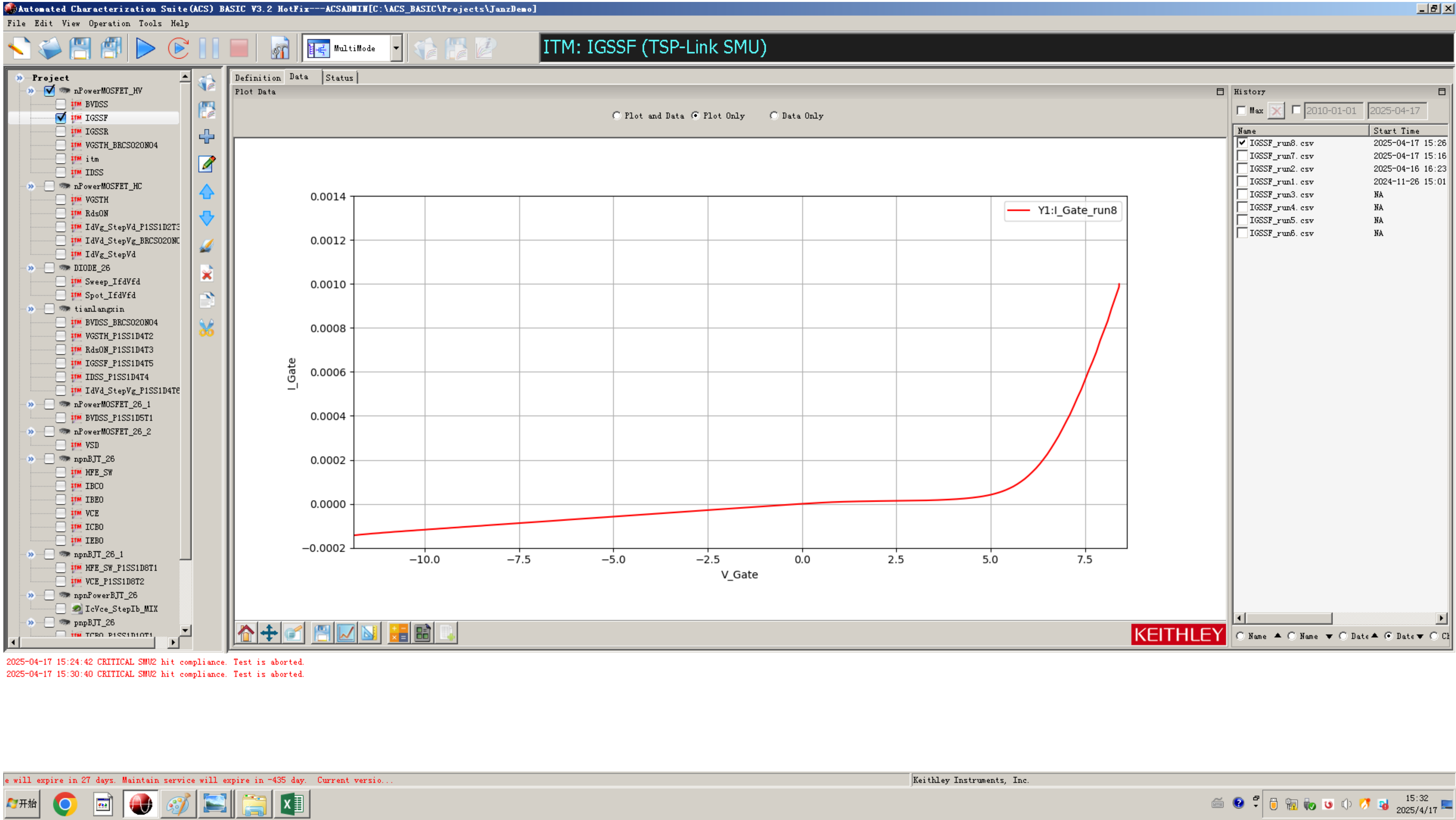
Ig-Vg曲线（Vgs=-12 to 12V，Igss限流1mA，Vds = 0V , 温度150℃）

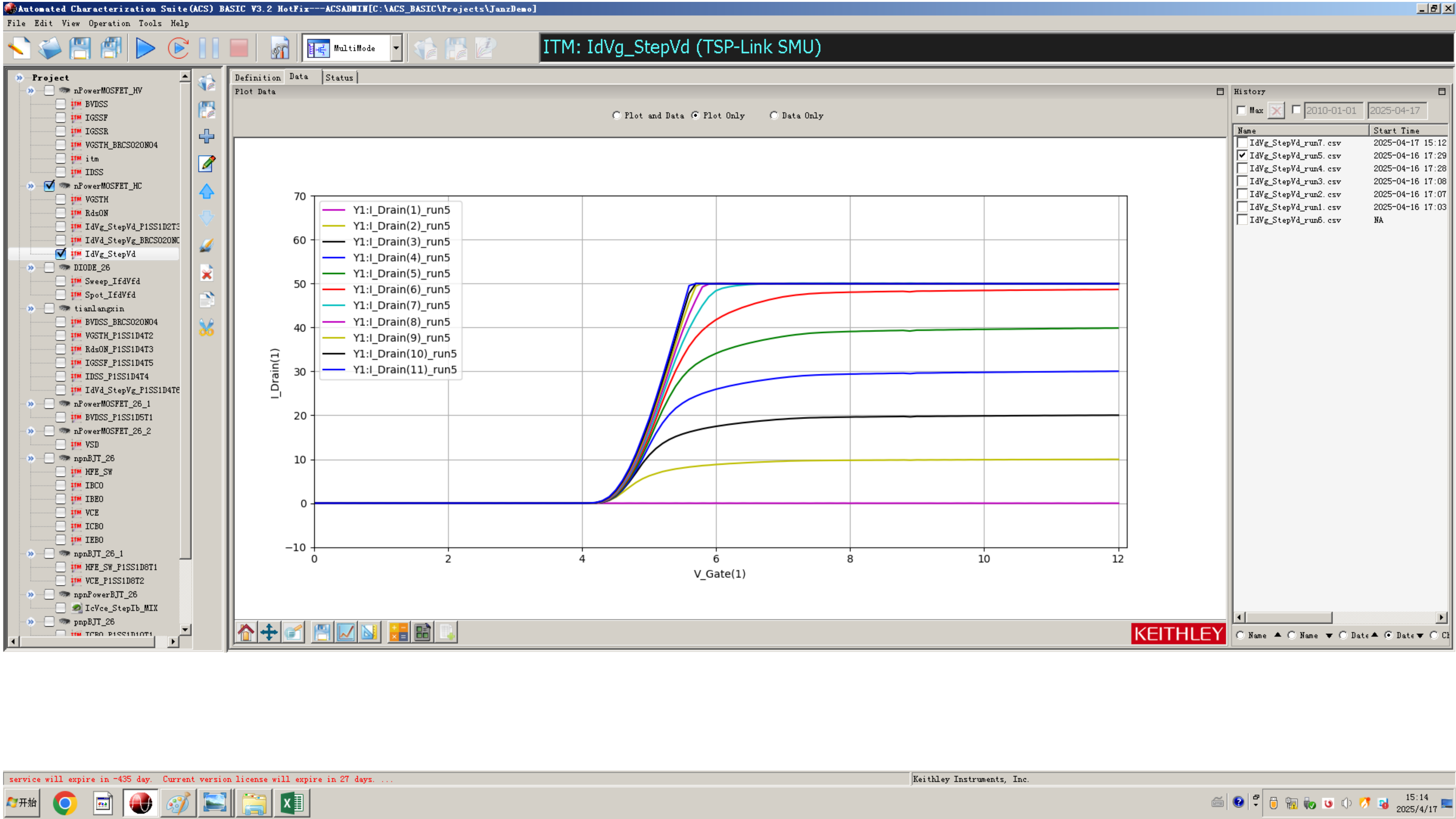


Name	Start Time
☑ IGSSF_run8.csv	2025-04-17 15:26
☐ IGSSF_run7.csv	2025-04-17 15:16
☐ IGSSF_run2.csv	2025-04-16 16:23
☐ IGSSF_run1.csv	2024-11-26 15:01
☐ IGSSF_run3.csv	NA
☐ IGSSF_run4.csv	NA
☐ IGSSF_run5.csv	NA
☐ IGSSF_run6.csv	NA

```
2025-04-17 15:24:42 CRITICAL SMU2 hit compliance. Test is aborted.
2025-04-17 15:30:40 CRITICAL SMU2 hit compliance. Test is aborted.
```

```
e will expire in 27 days. Maintain service will expire in -435 day.  Current versio...
```

Id-Vg曲线（Vgs=0-12V，Vds=0~2V, Id=0~50A, 温度25°C）



Automated Characterization Suite(ACS) BASIC V3.2 HotFix---ACSADMIN[C:\ACS_BASIC\Projects\JanzDemo]

ITM: IdVg_StepVd (TSP-Link SMU)

☐ 2010-01-01 2025-04-17

	Name	Start Time
☐	IdVg_StepVd_run7.csv	2025-04-17 15:12
☑	IdVg_StepVd_run5.csv	2025-04-16 17:29
☐	IdVg_StepVd_run4.csv	2025-04-16 17:28
☐	IdVg_StepVd_run3.csv	2025-04-16 17:08
☐	IdVg_StepVd_run2.csv	2025-04-16 17:07
☐	IdVg_StepVd_run1.csv	2025-04-16 17:03
☐	IdVg_StepVd_run6.csv	NA

service will expire in -435 day. Current version license will expire in 27 days. ...

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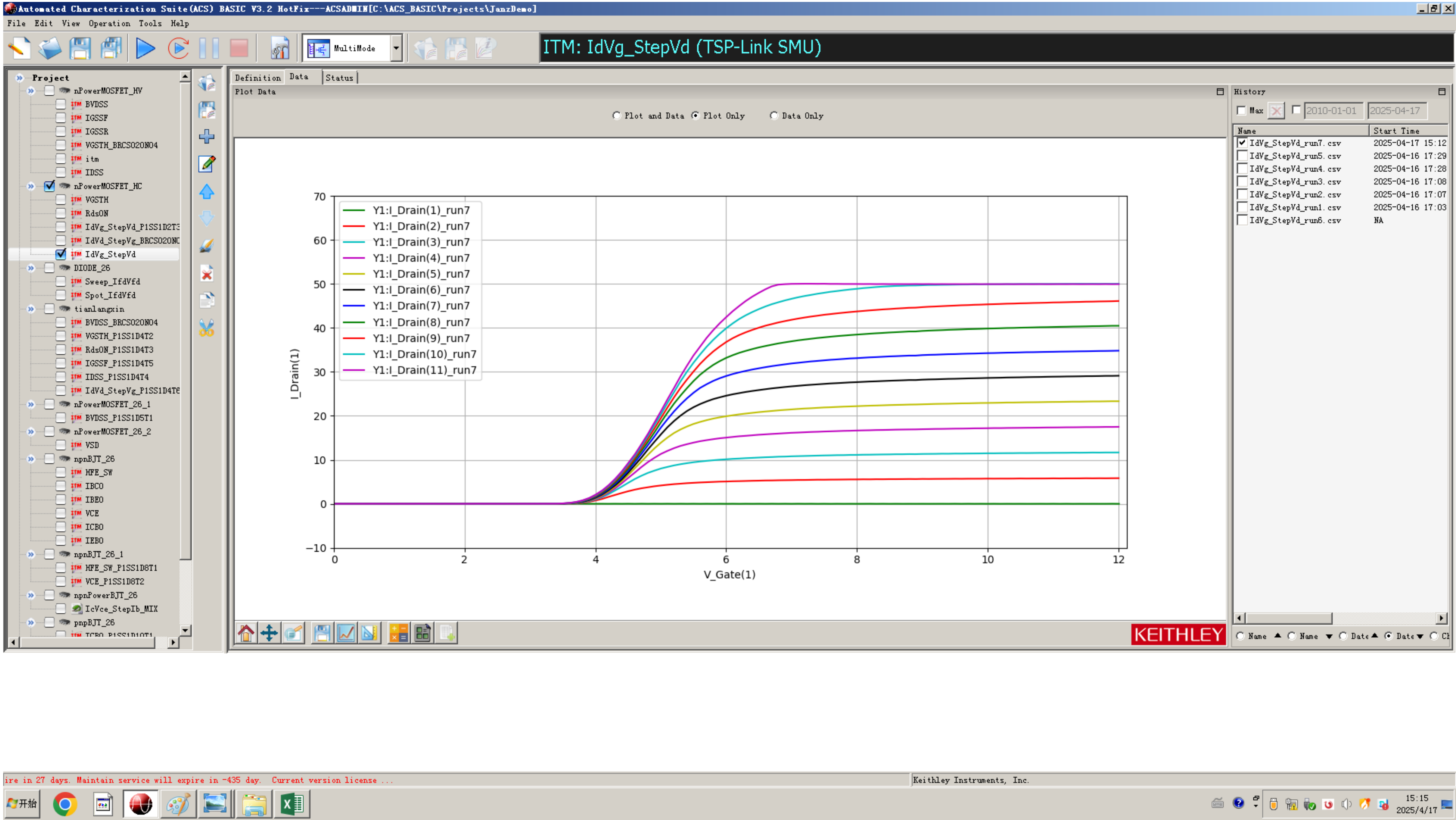
开始

15:14
2025/4/17

Id-Vg曲线（Vgs=0-12V， Vds=0~2V, Id=0~50A, 温度150℃）



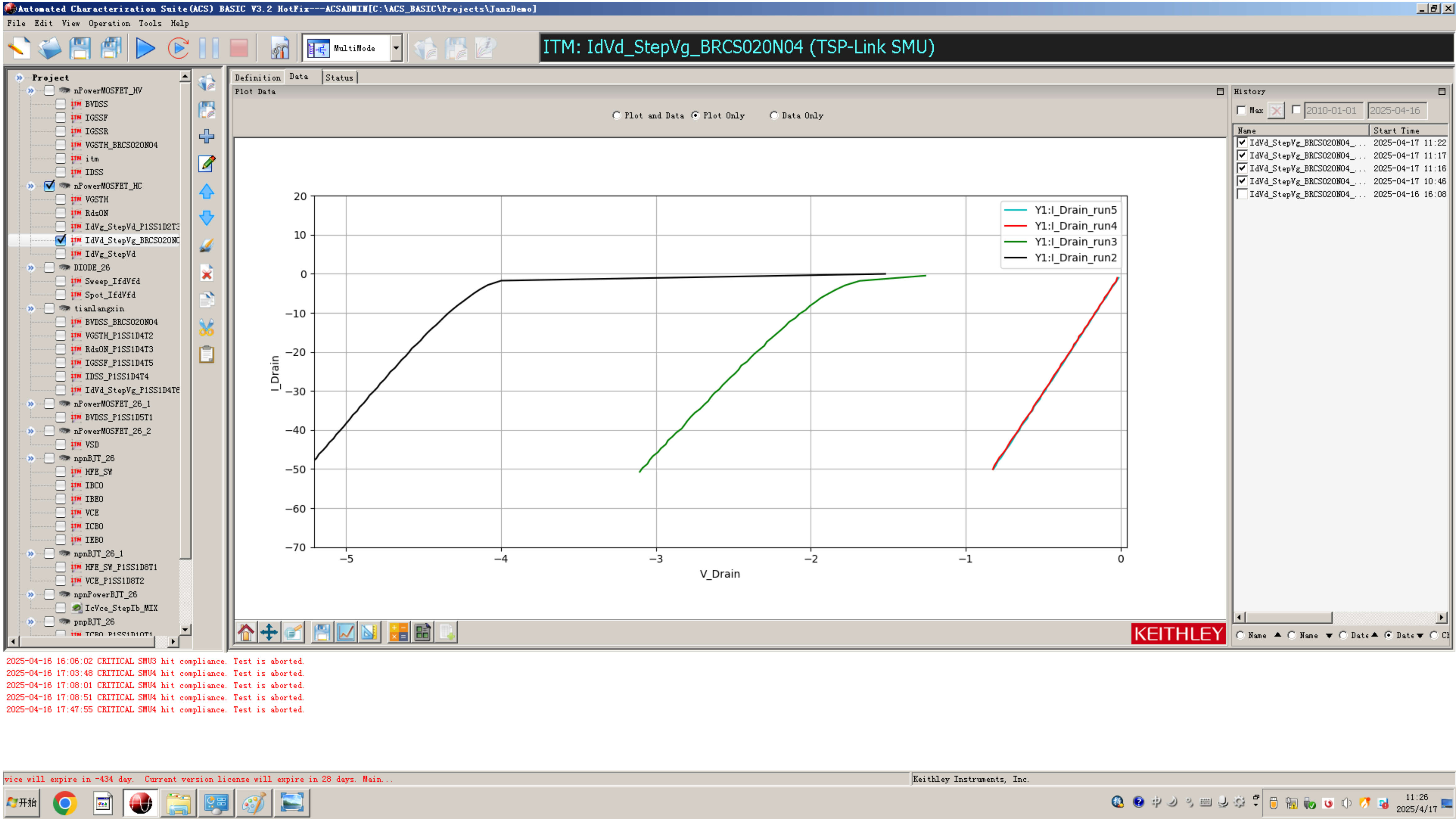
☐ 2010-01-01 2025-04-17

Name	Start Time
☑ IdVg_StepVd_run7.csv	2025-04-17 15:12
☐ IdVg_StepVd_run5.csv	2025-04-16 17:29
☐ IdVg_StepVd_run4.csv	2025-04-16 17:28
☐ IdVg_StepVd_run3.csv	2025-04-16 17:08
☐ IdVg_StepVd_run2.csv	2025-04-16 17:07
☐ IdVg_StepVd_run1.csv	2025-04-16 17:03
☐ IdVg_StepVd_run6.csv	NA

ire in 27 days. Maintain service will expire in -435 day. Current version license ...

Keithley Instruments, Inc.

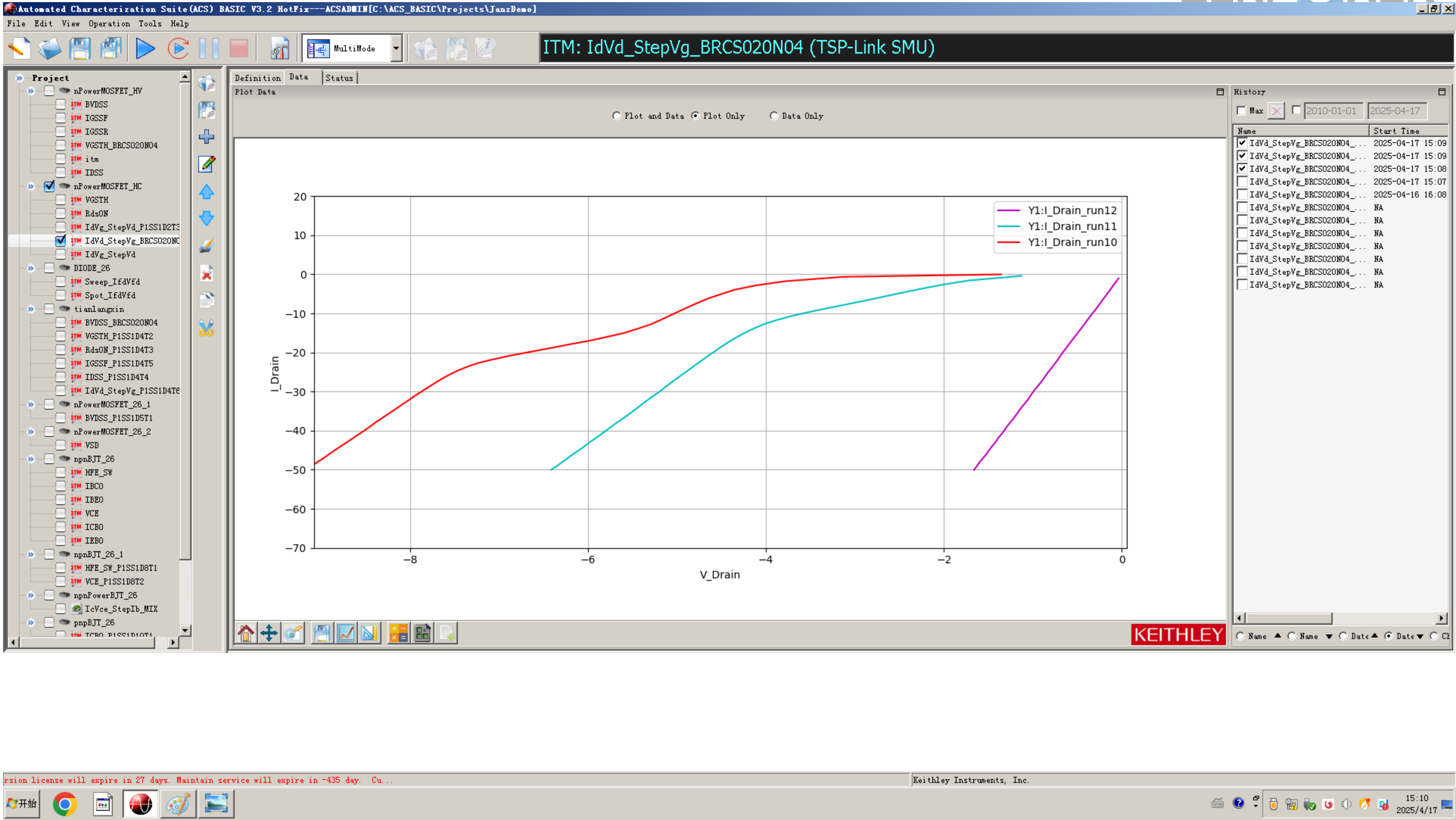
反向导通的Isd-Vsd（Vgs=-3V/0V/12V，温度25℃）



```
2025-04-16 16:06:02 CRITICAL SMU3 hit compliance. Test is aborted.
2025-04-16 17:03:48 CRITICAL SMU4 hit compliance. Test is aborted.
2025-04-16 17:08:01 CRITICAL SMU4 hit compliance. Test is aborted.
2025-04-16 17:08:51 CRITICAL SMU4 hit compliance. Test is aborted.
2025-04-16 17:47:55 CRITICAL SMU4 hit compliance. Test is aborted.
```

```
vice will expire in -434 day.  Current version license will expire in 28 days. Main...
Keithley Instruments, Inc.
```

反向导通的Isd-Vsd（Vgs=-3V/0V/12V，温度150℃）



Automated Characterization Suite(ACS) BASIC V3.2 HotFix---ACSADMIN[C:\ACS_BASIC\Projects\JanzDemo]

ITM: IdVd_StepVg_BRCS020N04 (TSP-Link SMU)

○ Plot and Data ● Plot Only ○ Data Only

Name	Start Time
☑ IdVd_StepVg_BRCS020N04_...	2025-04-17 15:09
☑ IdVd_StepVg_BRCS020N04_...	2025-04-17 15:09
☑ IdVd_StepVg_BRCS020N04_...	2025-04-17 15:08
☐ IdVd_StepVg_BRCS020N04_...	2025-04-17 15:07
☐ IdVd_StepVg_BRCS020N04_...	2025-04-16 16:08
☐ IdVd_StepVg_BRCS020N04_...	NA
☐ IdVd_StepVg_BRCS020N04_...	NA
☐ IdVd_StepVg_BRCS020N04_...	NA
☐ IdVd_StepVg_BRCS020N04_...	NA
☐ IdVd_StepVg_BRCS020N04_...	NA
☐ IdVd_StepVg_BRCS020N04_...	NA
☐ IdVd_StepVg_BRCS020N04_...	NA

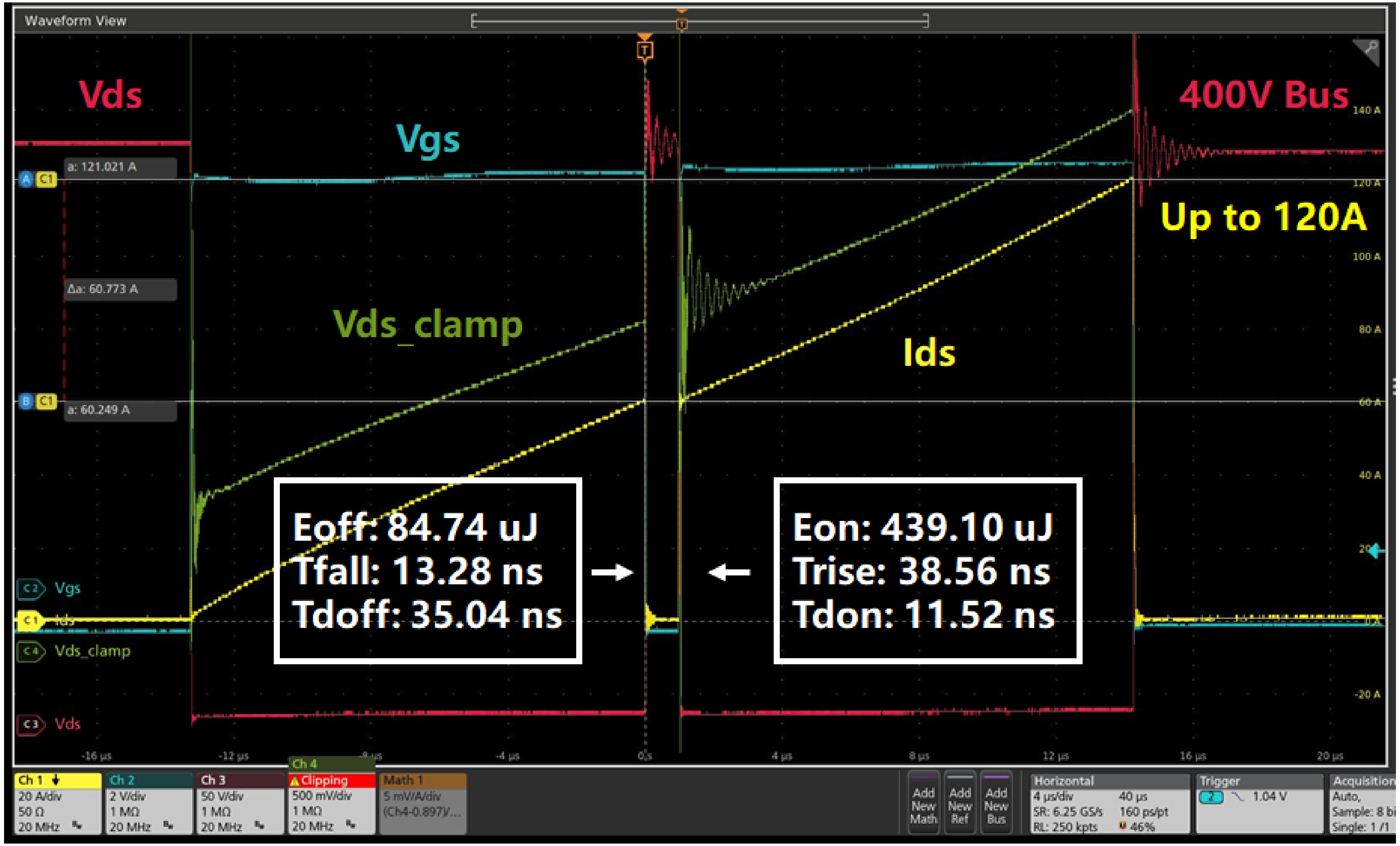
rsion license will expire in 27 days. Maintain service will expire in -435 day. Cu...

Keithley Instruments, Inc.

Content

- Basic wafer info/DC data
- ➡ Dynamic test data
- Chip probe data
- App notes

TO247-4 DPT Waveform



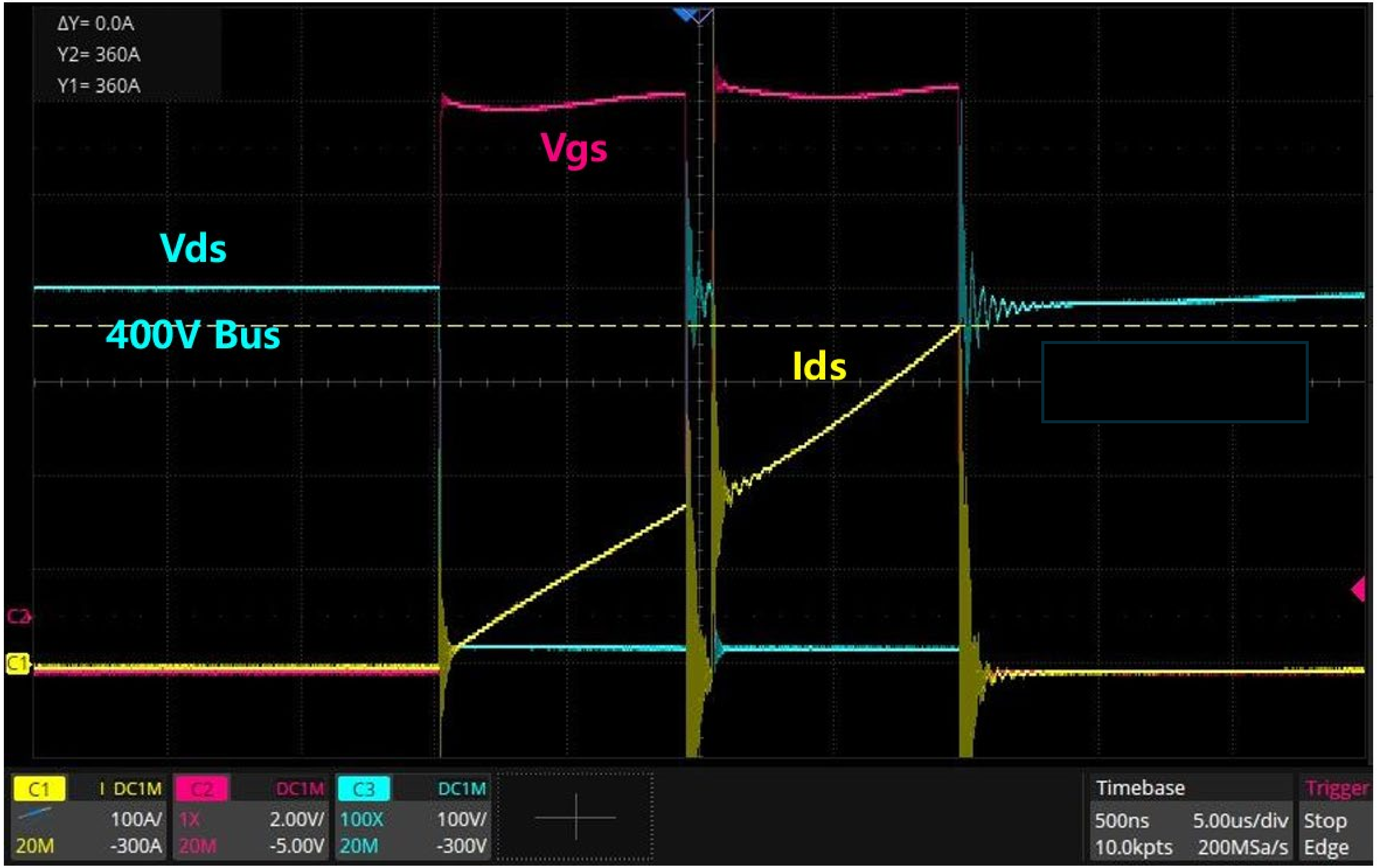
Eoff: 84.74 uJ
Tfall: 13.28 ns
Tdoff: 35.04 ns

→ ←

Eon: 439.10 uJ
Trise: 38.56 ns
Tdon: 11.52 ns

Ch 1: 20 A/div, 50 Ω, 20 MHz
Ch 2: 2 V/div, 1 MΩ, 20 MHz
Ch 3: 50 V/div, 1 MΩ, 20 MHz
Ch 4: Clipping, 500 mV/div, 1 MΩ, 20 MHz
Math 1: 5 mV/A/div (Ch4-0.897)/...
Horizontal: 4 µs/div, 40 µs, SR: 6.25 GS/s, 160 ps/pt, RL: 250 kpts, 46%
Trigger: 2, 1.04 V
Acquisition: Auto, Sample: 8 bi, Single: 1 /1

3-parallel TO247-4 DPT Waveform (> 360A)



Gate pulsing test at 200KHz (4 uS on /1 uS off)

VG1(-)	VG1(+)	VG0(-)	VG0(+)	VBUS
-1.3	11.6	-0.7	7.4	0
-3.4	11.6	-3.1	7.4	0
-6.3	11.6	-6.3	7.4	0
-3.4	11.6	-3.0	7.4	100V (1.5A)
-3.4	11.6	-2.9	7.4	200V (2.1A)
-3.4	11.6	-2.8	7.4	400V (4.5A)

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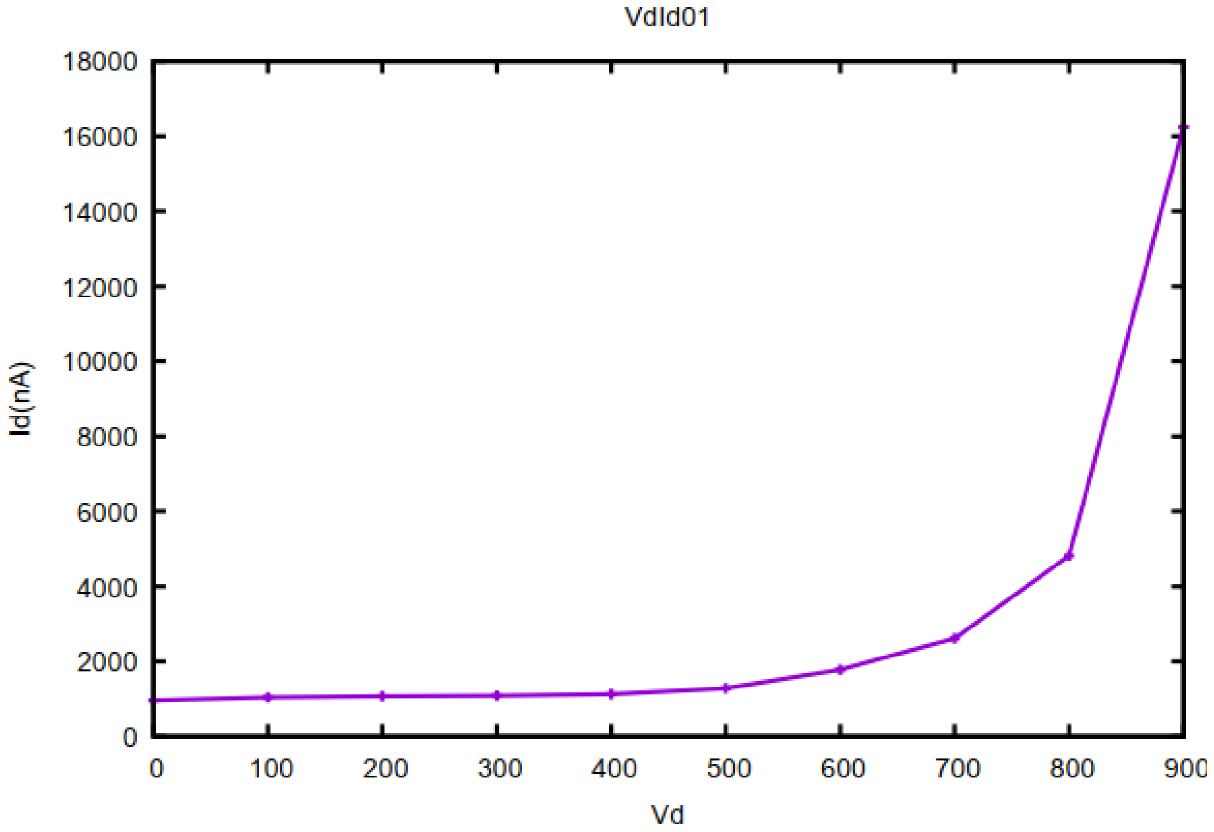
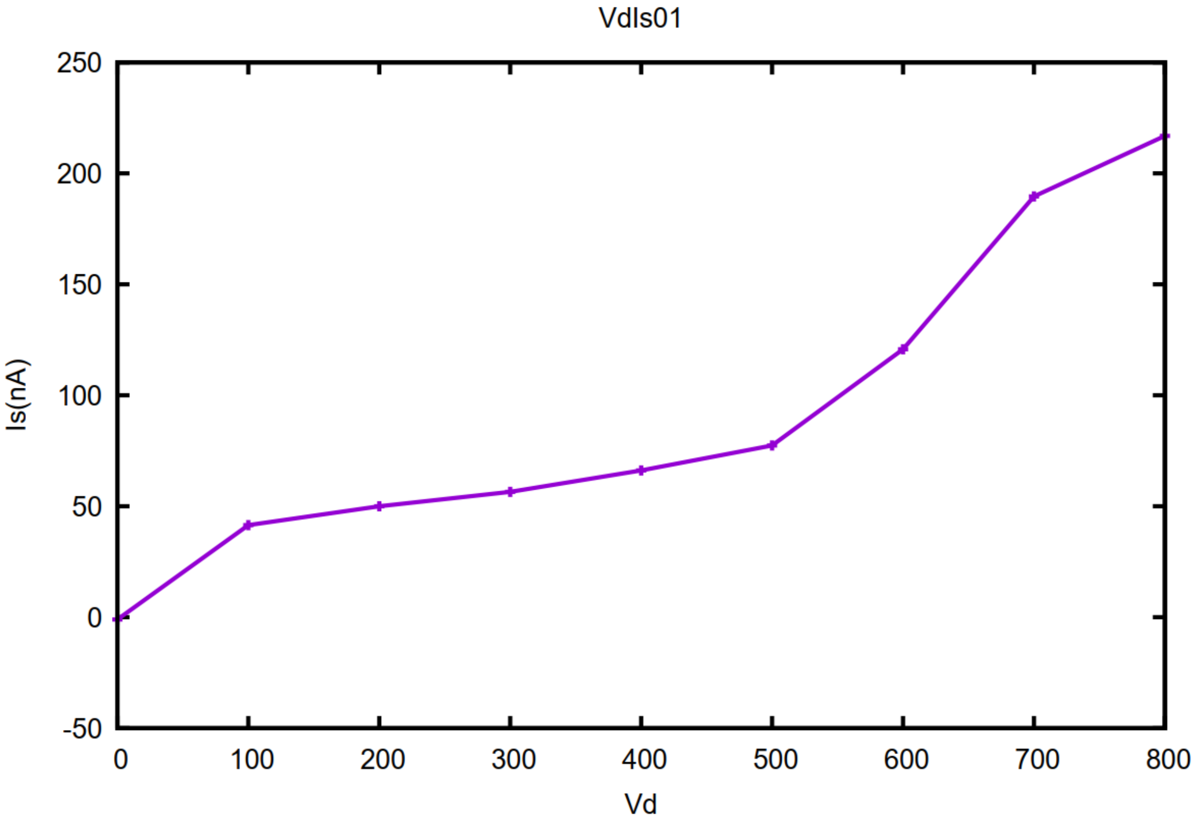
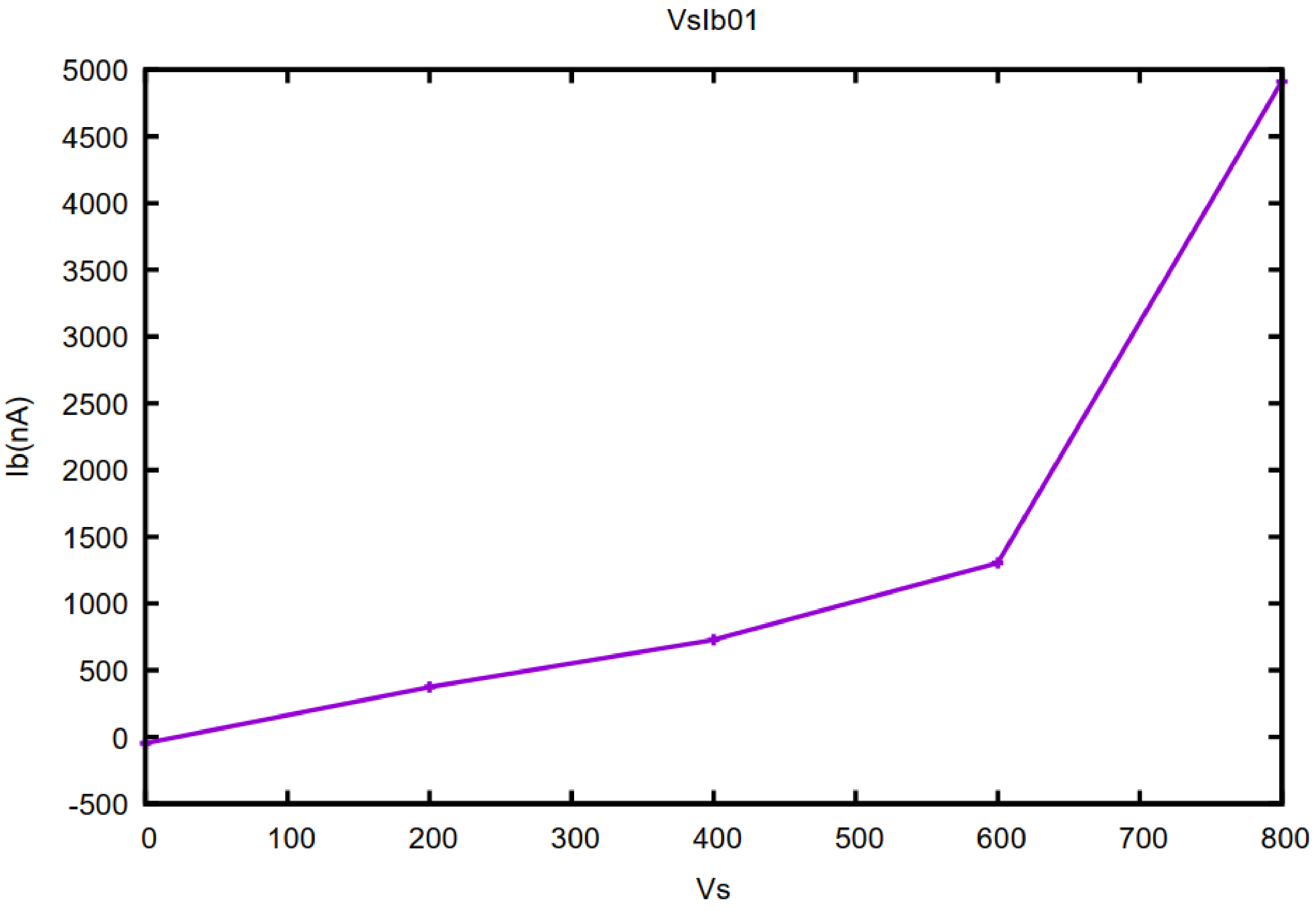
@RT



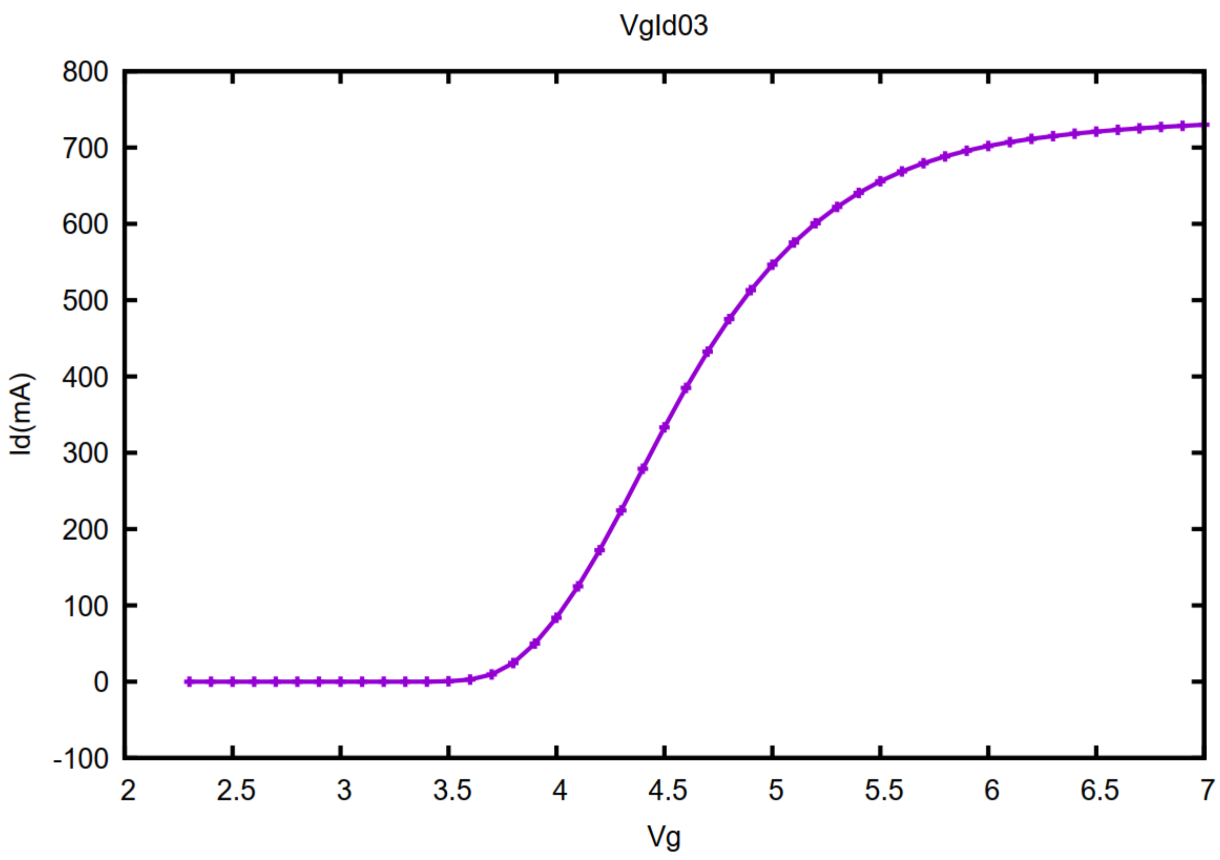
Drain leakage Idss versus Vds @Vg=Vs=Vb=GND

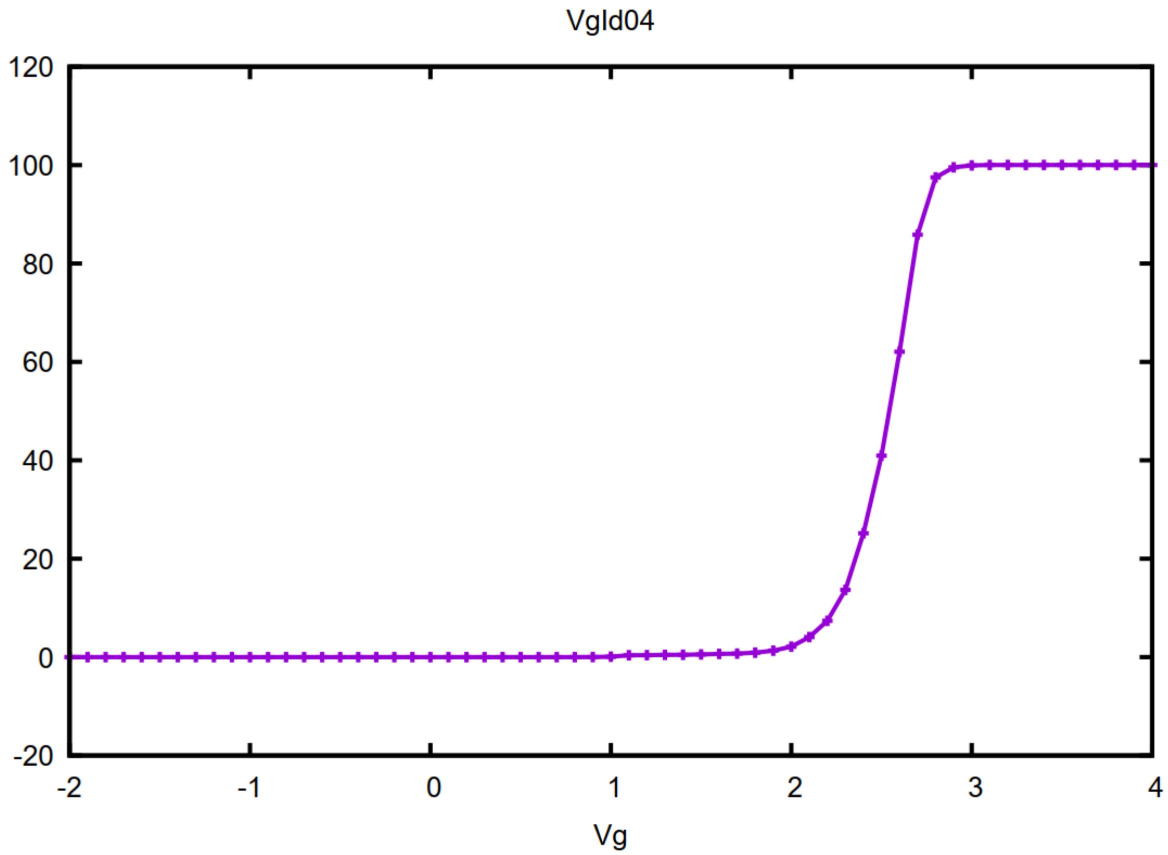


Source leakage Is versus Vds @Vg=Vs=Vb=GND



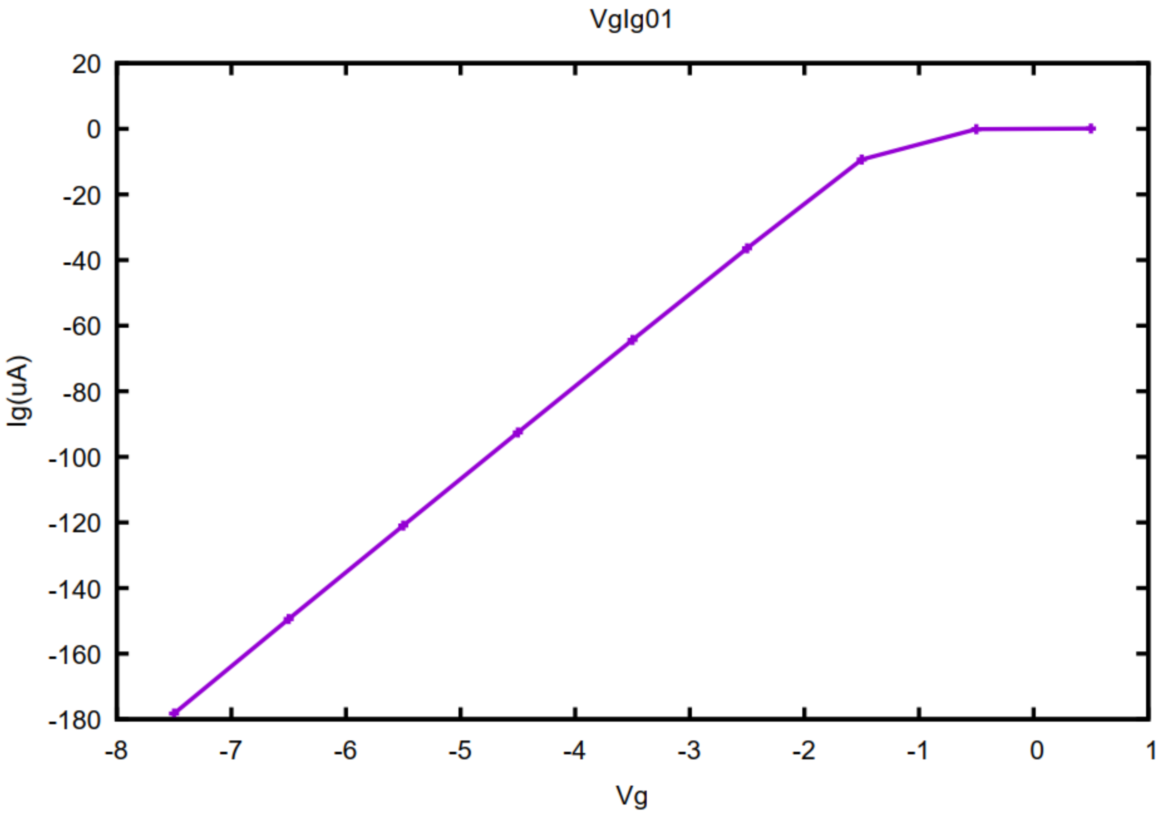
Bulk (Subtrate) leakage Ib versus Vs
@Vg=Vs=Vd, B=GND

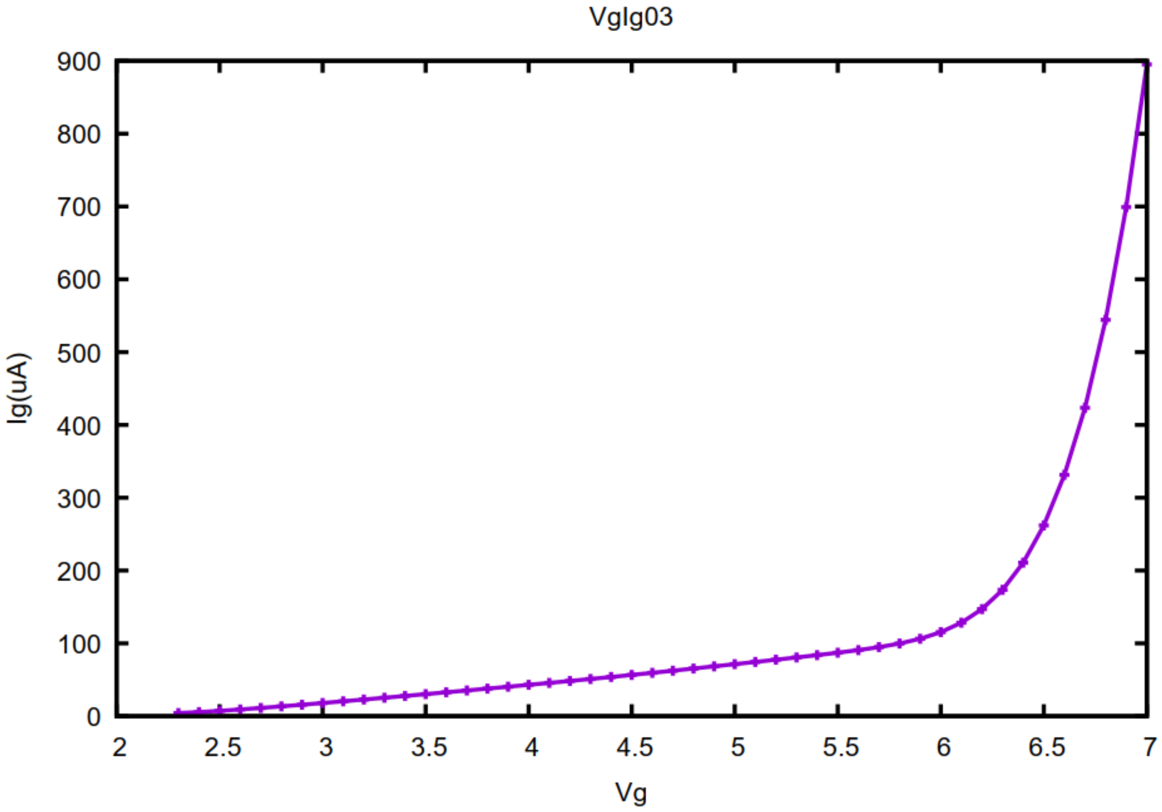




Id-Vg transfer curve
@Vds=0.01V, Vs=Vb=GND

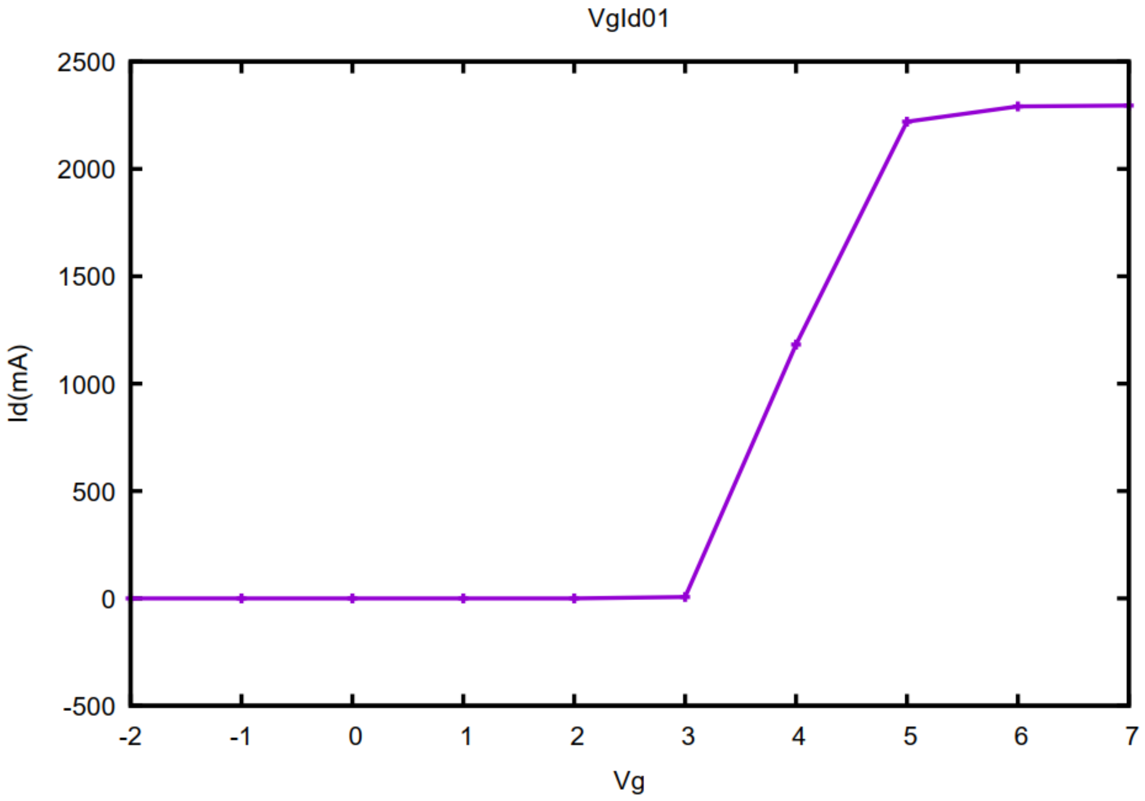
Id vs Vg transfer curve
@Vds=100V, Vs=Vb=GND



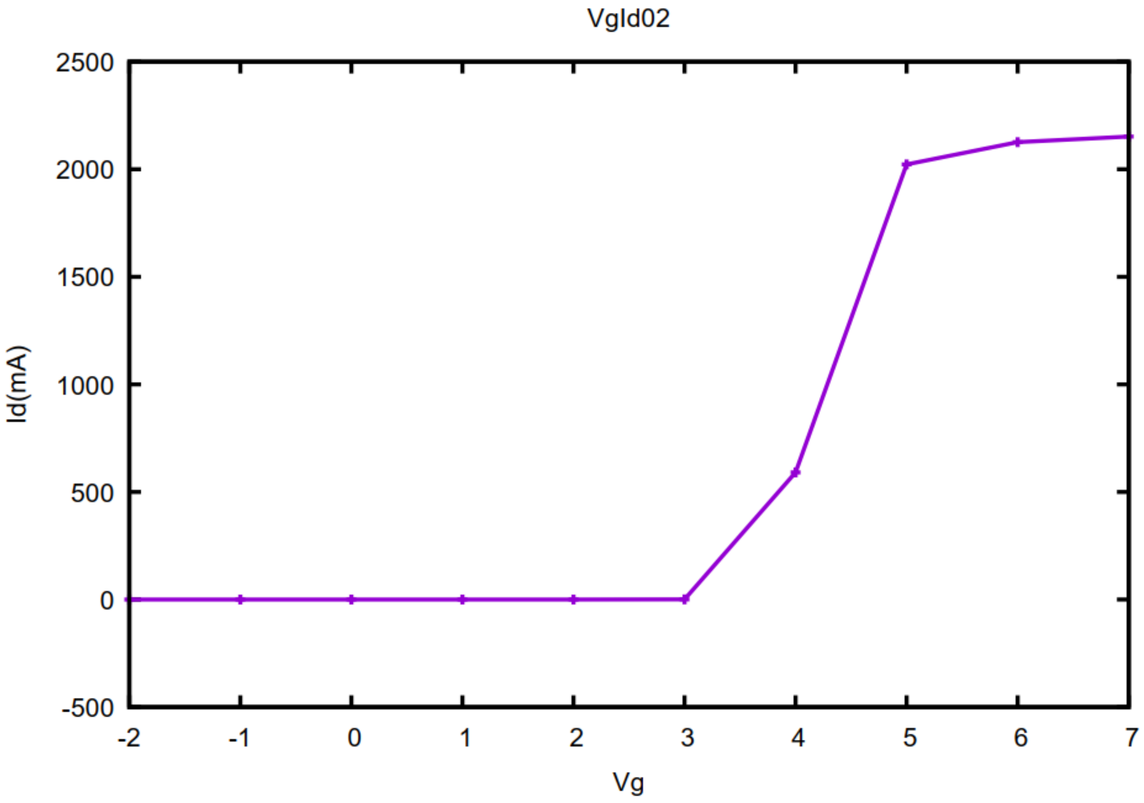


Gate leakage
@Vds=0.1V, Vs=Vb=GND

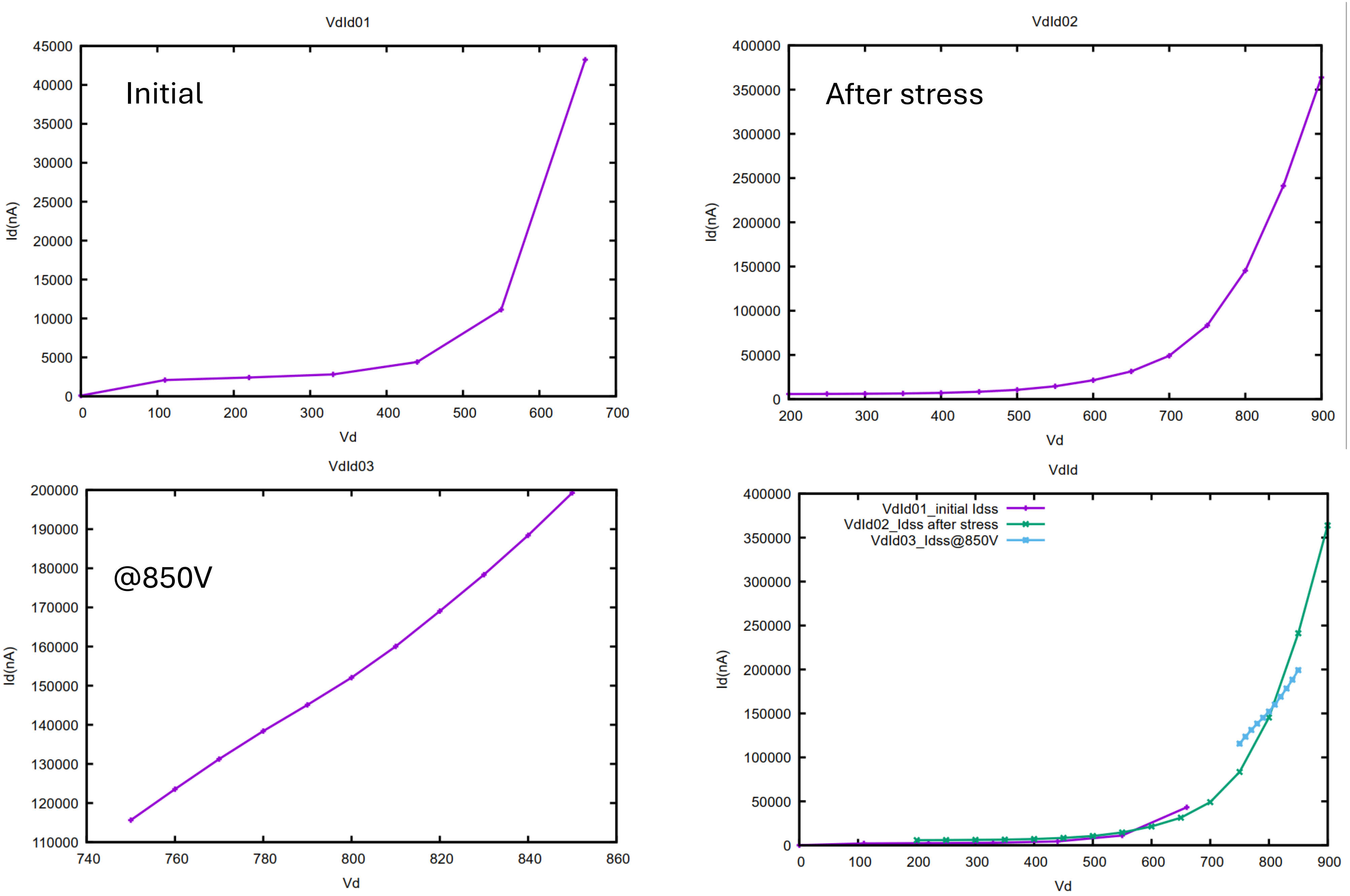
@HT 150 ^{O}C



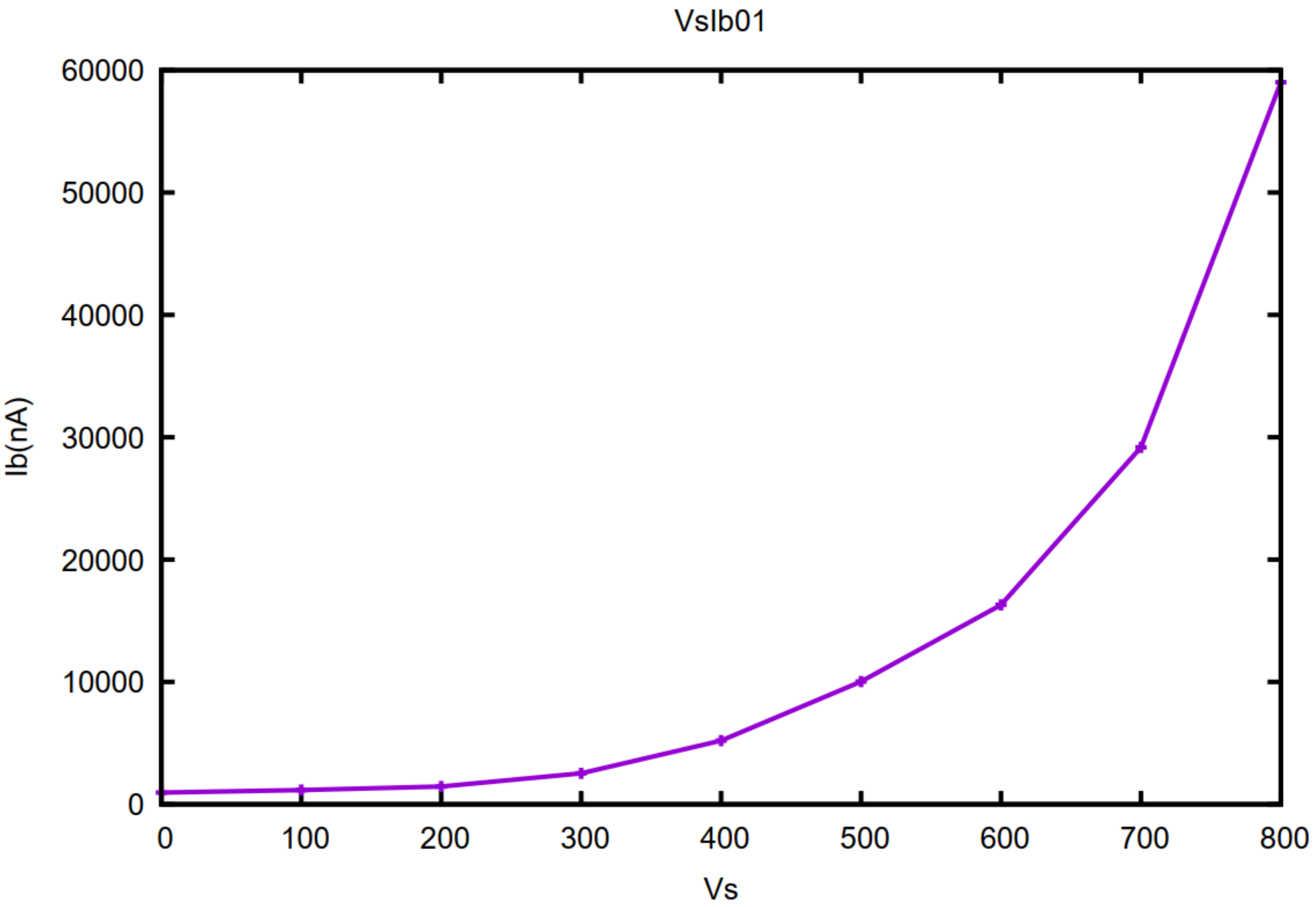
Id-Vg transfer curve, initial @Vds=0.1V



Id-Vg transfer curve, after stress @Vds=0.1V



Drain leakage Idss versus Vd @Vg=Vs=Vb=GND



Bulk/substrate leakage Ib versus Vs
@Vg=Vs=Vd, B=GND

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Application note on G1 (15V) driving

Negative Gate Turn-off

As with most EMODE GaNFET, it is best to use negative turn off gate driving to achieve fast turn off. In such a case, G0 can be left not connected (NC). Negative gate voltage of -1 to -3 is recommended.

Zero Gate Turn-off

When using G1 for driving (either 0-12V or 0-15V),it is best to wire bond a bare die of low voltage diode (max rating 20V, max current 0.5A) between G0 and G1 such that the forward direction of the diode points from G0 to G1. Caution: at light loading (less than 0.5A), turn-off may be slow.

Recommended Rgoff=0 Rgon=0 to 5 Ohm. Recommended driver: 1EDBX275F , or other driver with stronger current capability. When driving multiple Star120 dies (more than 3), it is recommended that isolated auxiliary power supply for driver should be upgraded to support > 0.5A on-state (not only instantaneous peak) current. Reference driver board design is offered to selected customers.

Application note on G0 (6V) driving

G0 can be used as a standard EMODE p-GaN gate. Recommended Rgoff=0 Rgon=5-10 Ohm

Choice of G1 or G0:

For better system reliability, G1 is recommended.