

Wafer datasheet  
Bluesky-p2p120v2  
Bluesky-3g120  
(900V/120A)  
(650V/120A)

## Features

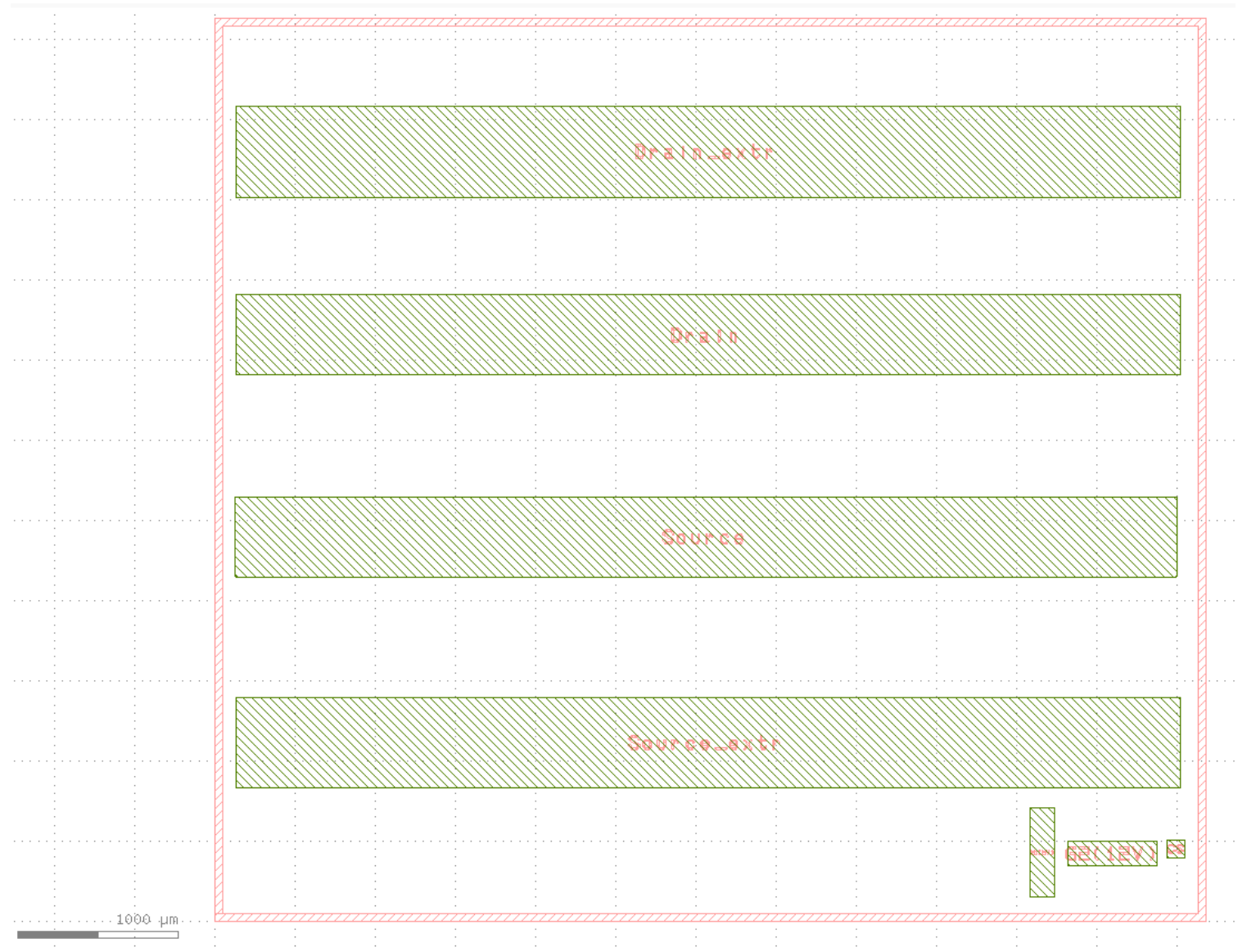
**Choice of original 6V gate driving or  
0-12 or 0-15V regulated gate driving**

**Regulated gate driving enables anti-ringing  
Protection / ESD protection**

**Lossless source side current sensing**

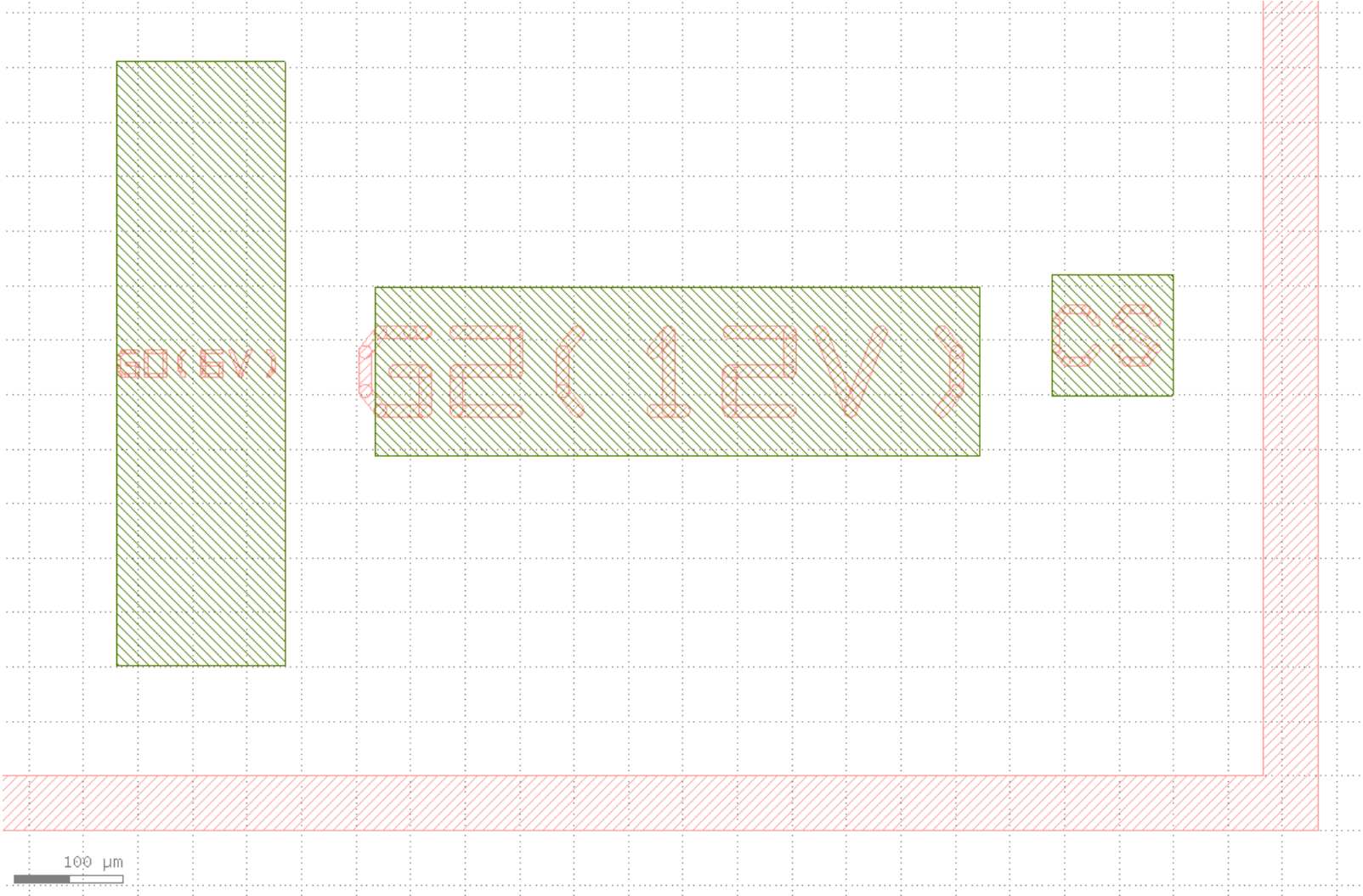
Device-name    x-size    y-size

p2p120v2    6182.60    5634.28



Device-name    x-size    y-size

p2p120v2    6182.60    5634.28



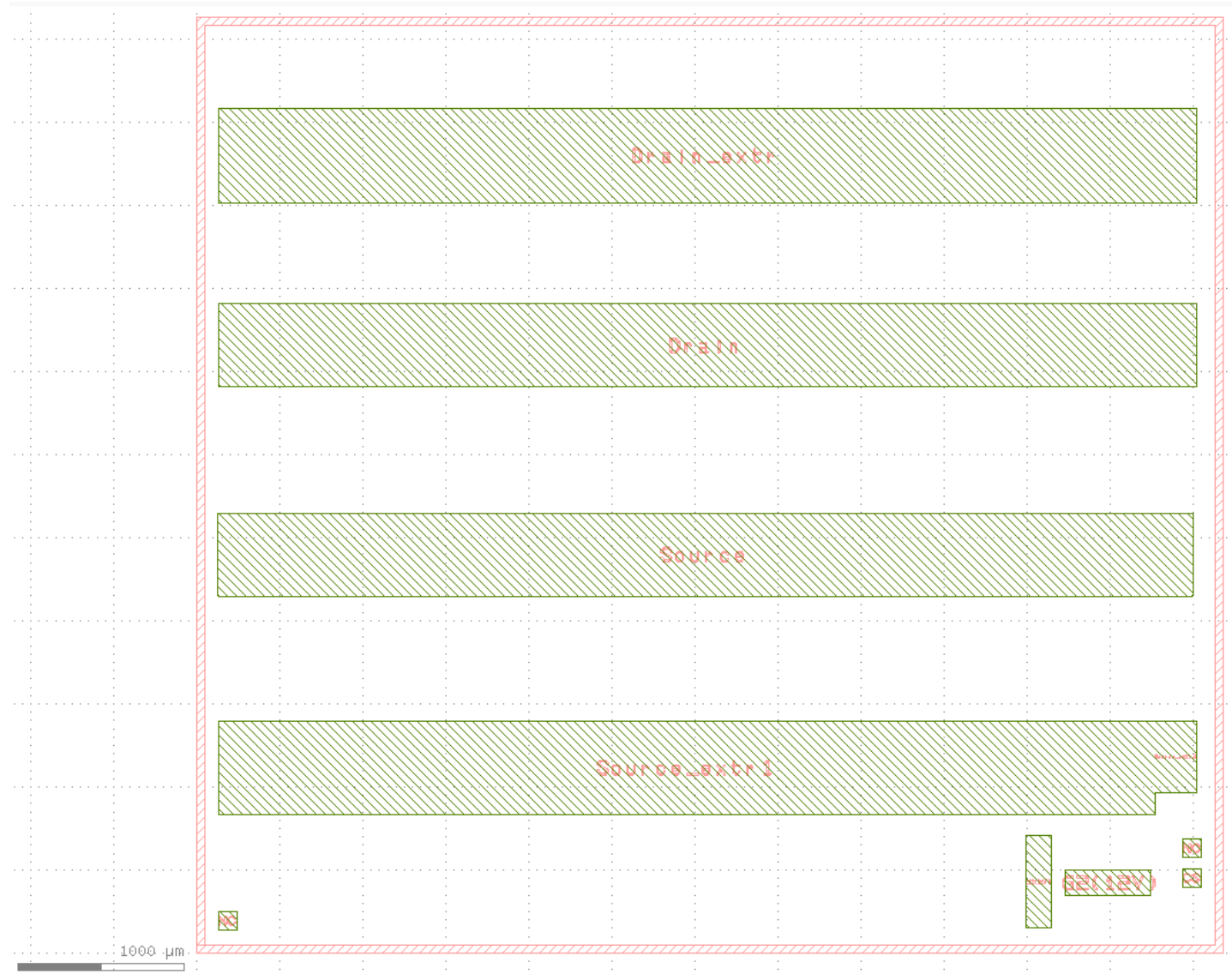
p2p120v2

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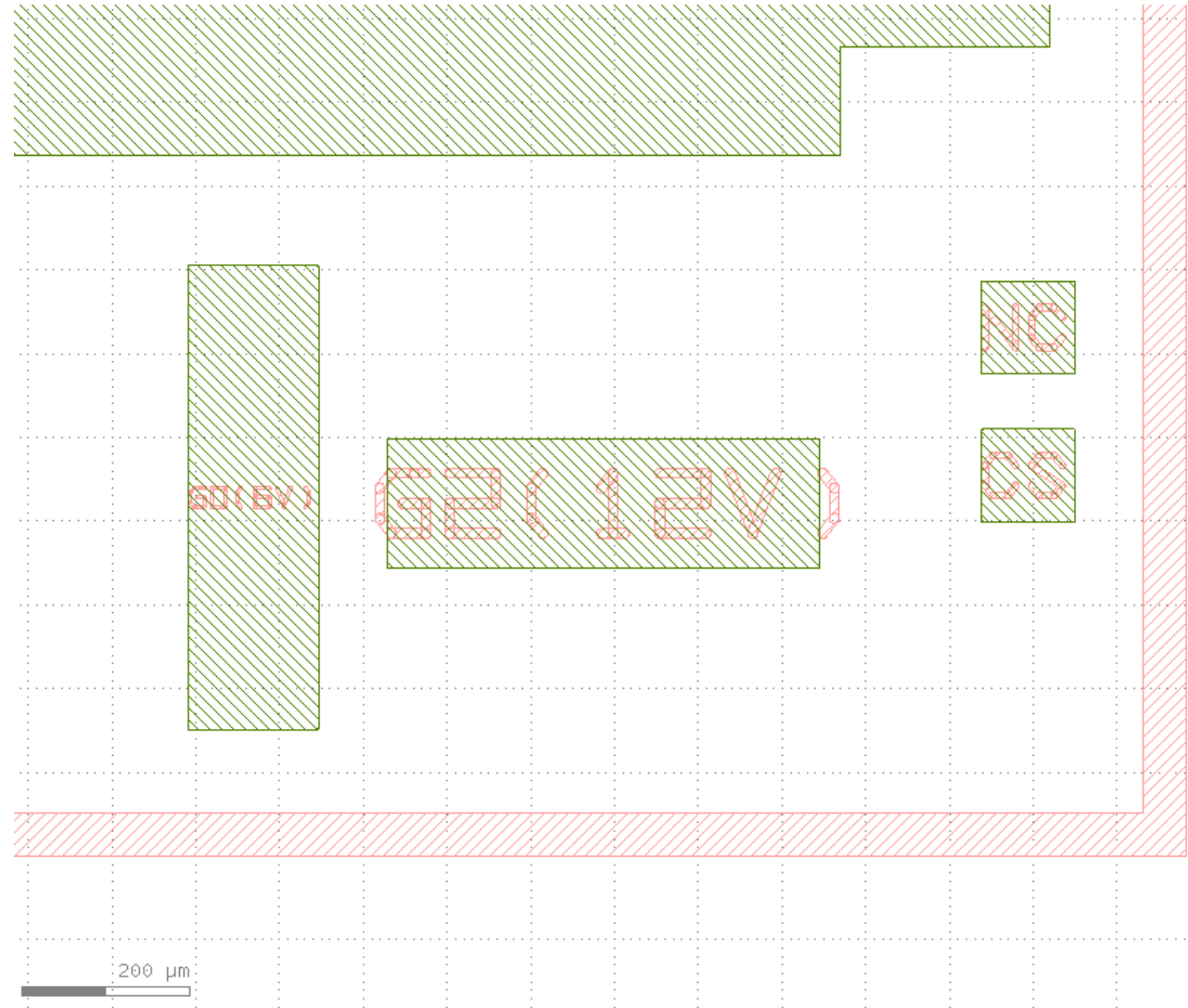
PAD	Dx	Dy	Center_x	Center_y
Source	5868.47	500.00	3062.04	2397.14
Source_extr	5889.47	560.00	3074.54	1116.70
Drain	5889.47	500.00	3074.54	3657.14
Drain_extr	5889.47	567.00	3074.54	4799.98
CS	111.00	111.00	5993.77	454.30
G0(6V)	155.00	555.00	5157.70	428.30
G2(12V)	585.00	185.00	5594.95	421.30

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Device-name    x-size    y-size  
3g120        6182.60    5634.28



Device-name    x-size    y-size  
3g120        6182.60    5634.28



Device-name    x-size    y-size  
3g120        6182.60    5634.28

<b>3g120</b>				
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<b>PAD</b>	<b>dx</b>	<b>dy</b>	<b>center_x</b>	<b>center_y</b>
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Source	5868.47	500.00	3062.04	2397.14
Source_extr1	5639.47	561.00	2949.54	1117.20
Source_extr2	250.00	431.00	5894.27	1182.20
Drain	5889.47	500.00	3074.54	3657.14
Drain_extr	5889.47	570.00	3074.54	4798.48
CS	111.00	111.00	5993.77	454.30
G0(6V)	155.00	555.00	5068.90	428.30
G2(12V)	585.00	185.00	5506.15	421.30
NC	111.00	111.00	5993.77	631.30
NC	111.00	111.00	188.88	196.30
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# Basic specifications

Back metal	None
Front metal	AlCu 4um
Wafer diameter	6 inch
Wafer thickness before dicing	1000 um
Recommended die thickness after dicing	250-300um
Street width	80 um
Recommended storage	N2 environment

# Wire bonding suggestion

Larger pads use 10mil or 12mil Al .

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

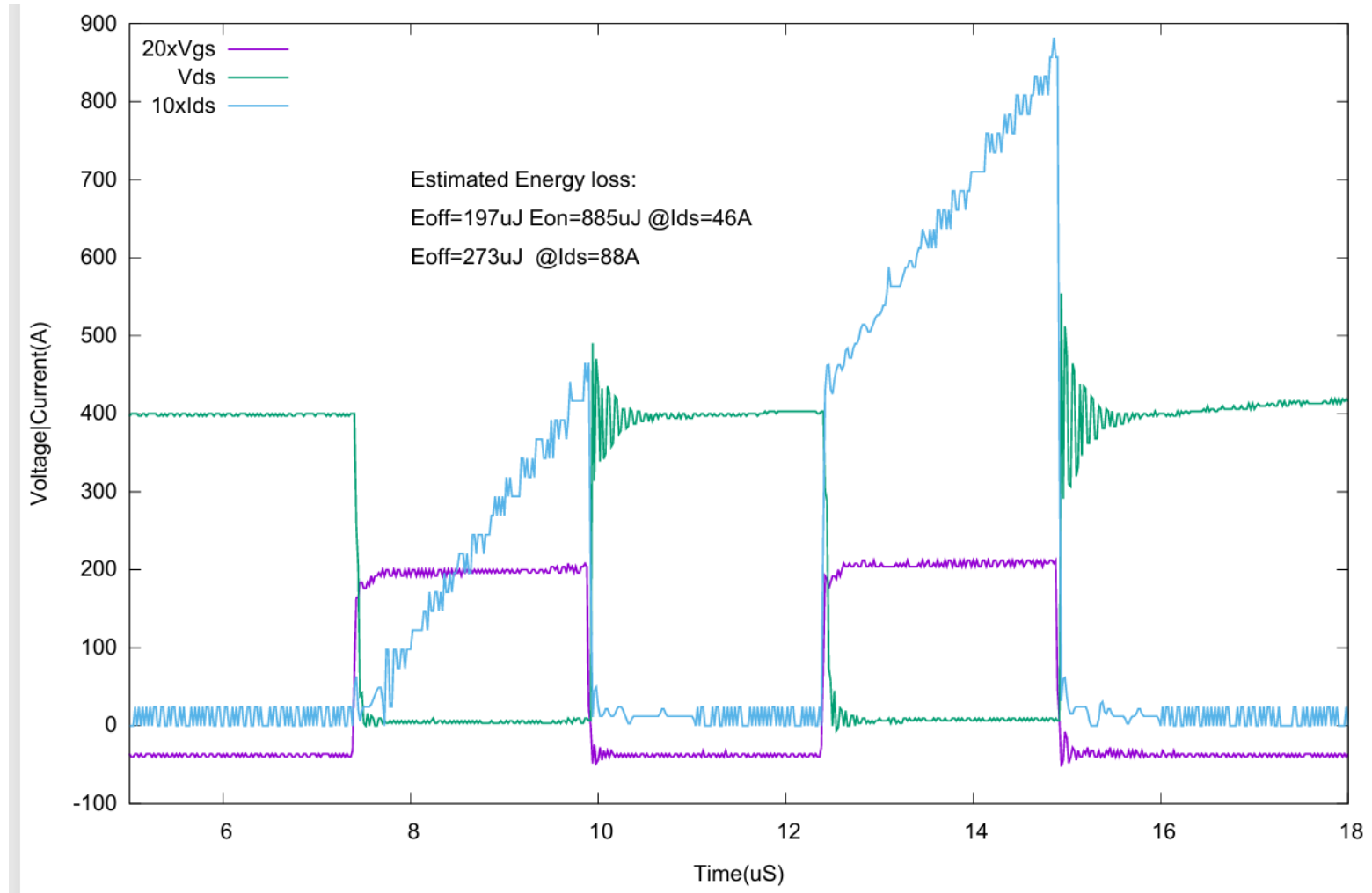
Backside must be glued to backplate using conductive glue

Backplate must be connected to the source of the GaNFET using wire bonding

# Characteristics

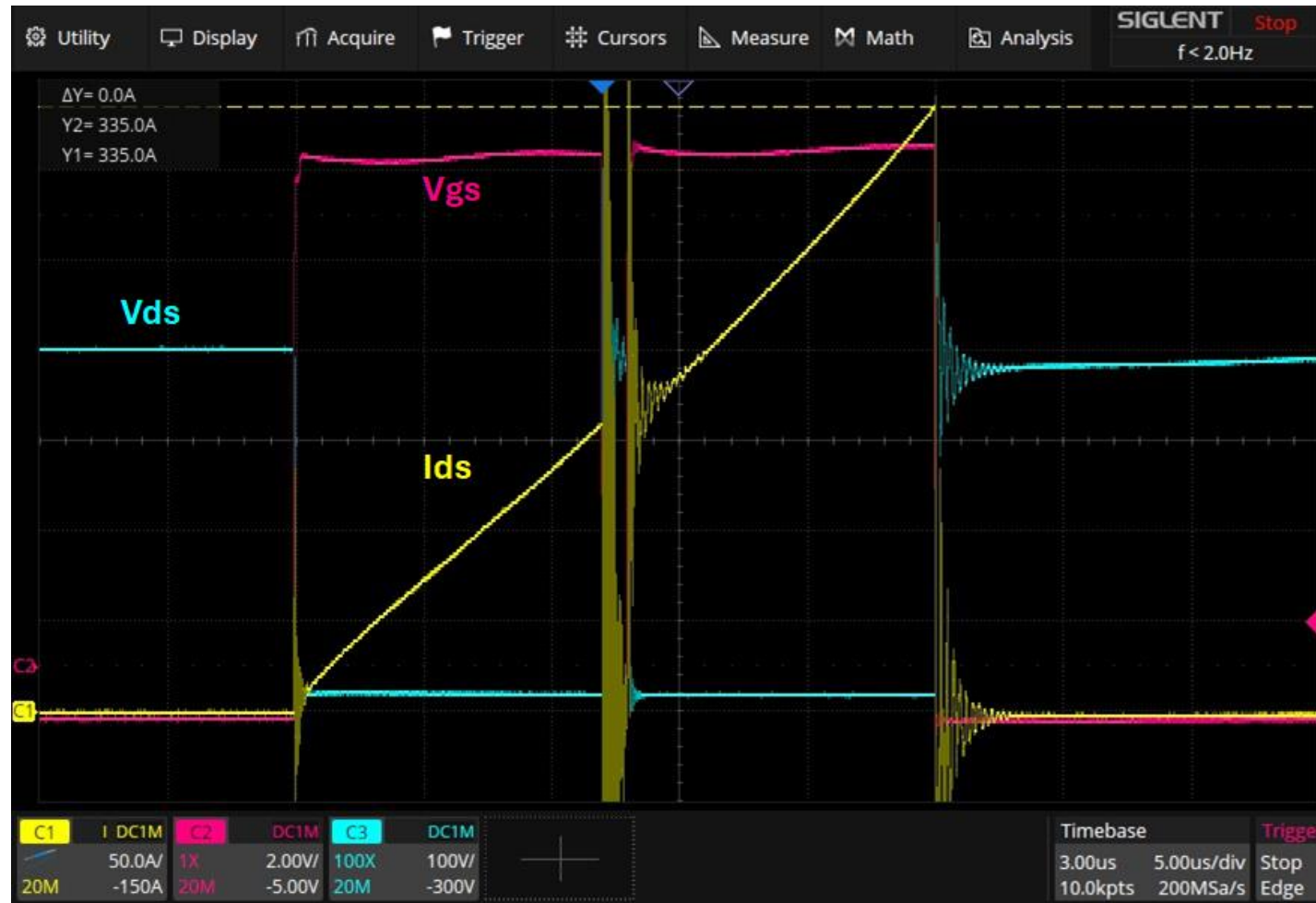
		Condition	min	typical	max	
Ids-max	Max current at 125C	Vgs=6/15 125C		120		A
Ids-max	Max current at 25C	Vgs=6/15 25C		240		A
Vds-max	D-S breakdown voltage	Vgs=0 25C < 100uA		900		V
Vg0s	Original gate voltage		-3		7	V
Vg1s	Regulated		-20		20	
Vgth (G0)	Gate threshold voltage	Vgs=Vds Ids=35mA		1.3		V
Vgth (G1)	Regulated threshold	Vg1s=Vds Ids=35 mA		3.5		V
Idss	Drain leakage	Vg1s=0 / Vg0s=0 25C Vds=900			100	uA
Igss	Forward gate leakage	Vg0s=6/Vg1s=15 Vds=0			1/150	mA
Rdson	On resistance	Vg0s=6/Vg1s=15 Ids=1A 25C		12		mOhm
Rdson	On resistance	Vg0s=6/Vg1s=15 Ids=1A 150C		26		mOhm
Vcs	Current sensing	Ids=+/-120A	-2.5		2.5	V
Qg	Gate charge	Vbus=500V Turn-off from Ids=120A Vg0s from 6 to 0 25C		29		nC

# Double pulse testing



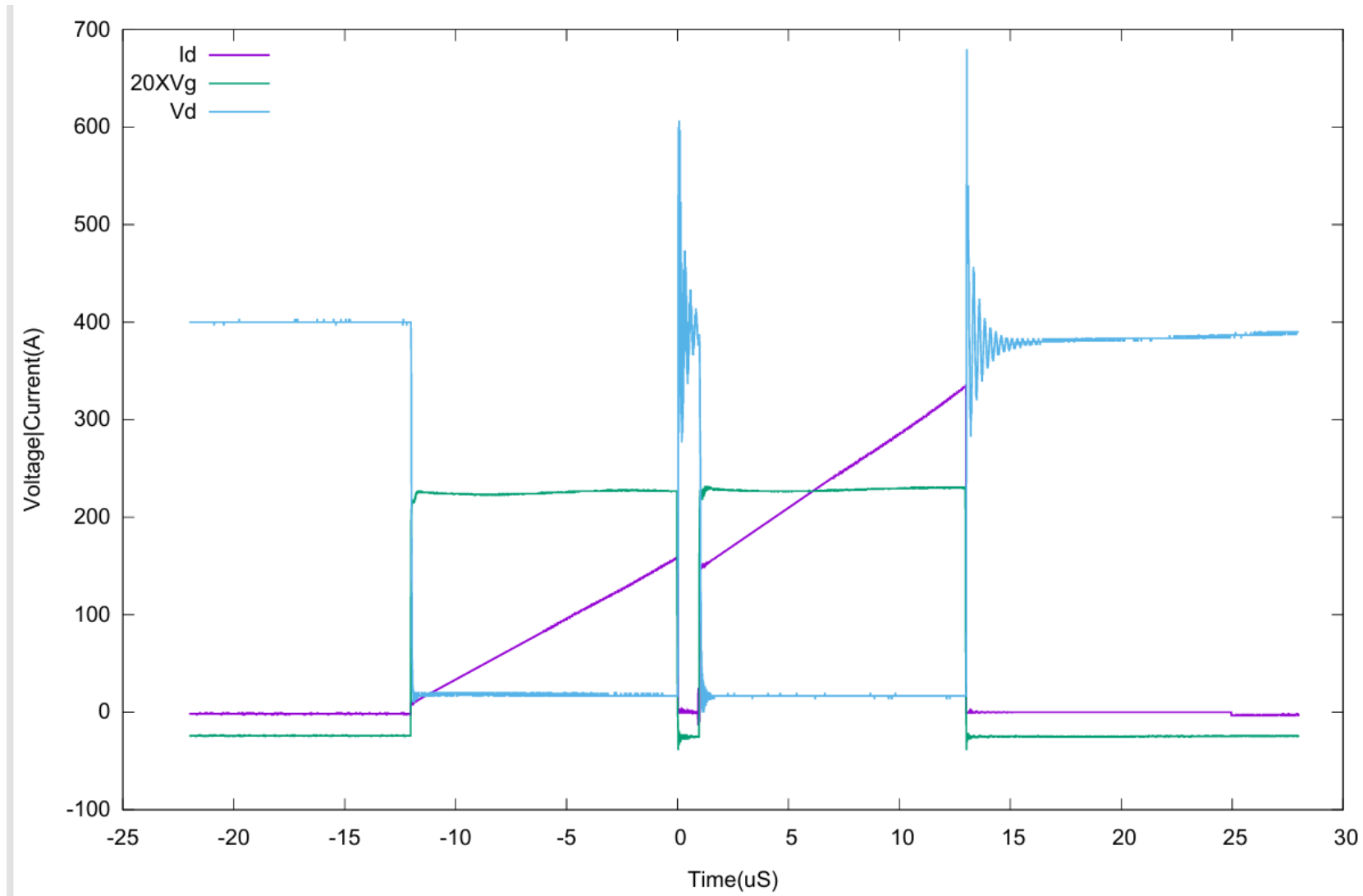
Double pulse testing for bare die packaged within TO247-4.  $R_{gon}=10$   $R_{goff}=0$ .  $V_g$  from -2 to 10. Peak to peak averaging method were used for  $I_{ds}(t)$  to remove some strong ringing near switching edge in order to estimate  $E_{on}/E_{off}$ .

# Double pulse testing (3-parallelized TO247-4)



Double pulse testing for bare die packaged within TO247-4.  $R_{gon}=2$   $R_{goff}=0$ .  
 $V_g$  from -1 to 12.

# Double pulse testing (3-parallelized TO247-4)



Ring at Id  
smoothed out  
for clarity.

Double pulse testing for bare die packaged within TO247-4.  $R_{gon}=2$   $R_{goff}=0$ .

$V_g$  from -1 to 12.  $E_{off}$  and  $E_{on}$  at 168A are 600uJ and 2350 uJ, respectively.  $E_{off}$  at 335A is 700 uJ.

# Application note on G1 (15V) driving

When using G1 for driving (either 0-12V or 0-15V):

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.

G1 comes with ESD protection and anti-ringing protection.

Recommended  $R_{goff}=0$   $R_{gon}=0$  to 5 Ohm.

# Application note on G0 (6V) driving

G0 is unprotected against ESD at this version and can be used as a standard EMODE p-GaN gate.

Recommended  $R_{goff}=0$   $R_{gon}=5-10$  Ohm