

## GPIXU30SB5L

### N-channel 1200V 30A GaN Power HEMT in TO263-5L Package

Datasheet version 1.0: Preliminary

### Features

$BV_{dss}$	$R_{dson}$	$I_{ds}$	$Q_g$
1200 V	52 m $\Omega$	30 A	8.25 nC

- Ultra-low  $R_{DS(on)}$
- High  $dv/dt$  capability
- Extremely low input capacitance
- Zero  $Q_{rr}$
- Outstanding switching performance
- Low Profile

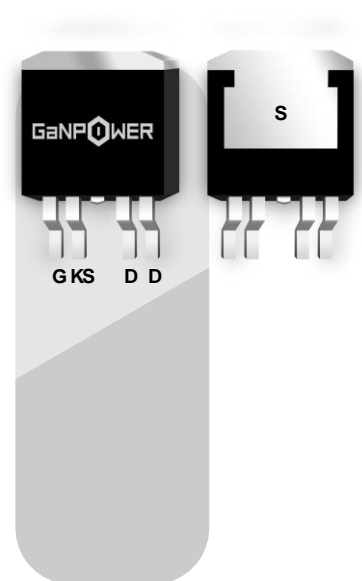
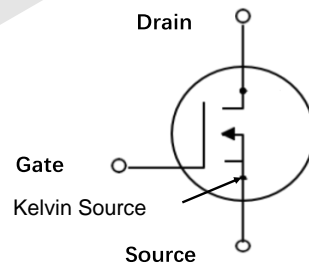
### Applications

- Switching Power Applications
- Server and Telecom Power Applications
- EV OBC and DC-DC Converters
- UPS, Inverters, PV

### Description

These devices are N-channel 1200 V Power GaN HEMTs based on proprietary E-mode GaN on silicon technology. The resulting product has extremely low on state resistance, very low input capacitance and zero reverse recovery charge making it especially suitable for applications which require superior power density, ultra-high switching frequency and outstanding efficiency

### Device Characteristics





GaNPower International Inc.

WWW.IGANPOWER.COM  
 230 -3410 LOUGHEED HWY  
 VANCOUVER, BC, V5M 2A4 CANADA

Static Parameters				Test data			
	Parameters		Conditions	Min	Typical	Max	Unit
1	$V_{gs(TH)}$	Gate threshold voltage	$V_{ds}=V_{gs}$ $I_d=10mA$	0.9	1.3	2.5	V
2	$BV_{dss}$	Drain-Source breakdown voltage	$V_{gs}=0V$ $I_d < 360\mu A$		1200		V
3	$I_{dss}$	Zero gate voltage drain current, $T_c = 25^\circ C$	$V_{gs}=0V$ $V_{ds}=1200V$		52	360	$\mu A$
4	$I_{gss}$	Gate-Source Leakage	$V_{gs} = 6V$ $V_{ds} = 0V$		145	1000	$\mu A$
5	$R_{dson}$	Static drain-source on resistance, $T_c = 25^\circ C$	$V_{gs}=6V$ $I_d=2.5A$		52	76	m $\Omega$
6	$V_{sd}$	Reverse conduction voltage	$I_{sd}=0.8A$ $V_{gs}=0V$	1.5	2.95	3.5	V
7	$R_g$	Gate resistance	$f=25Mhz$ Open drain		1.5		$\Omega$
Dynamic Parameters				Test data			
	Parameters		Conditions	Min	Typical	Max	Unit
1	$C_{iss}$	Input capacitance	$V_{gs}=0V$ $V_{ds}=700V$ $f=1MHz$		236		pf
	$C_{oss}$	Output capacitance			72		pf
	$C_{rss}$	Reverse transfer capacitance			4.6		pf
3	$Q_g$	Gate charge	$V_{ds}=400V$ $I_d=9A$ $V_{gs}=6V$		8.25		nC
	$Q_{gs}$	Gate to source charge			1.5		nC
	$Q_{gd}$	Gate to drain charge			1.8		nC
2	$Q_{rr}$	Reverse recovery charge			0		nC
Switching Performance				Test data			
	Parameters		Conditions	Min	Typical	Max	Unit
1	$t_{d(on)}$	Turn-on delay time	$V_{ds}=800V$ $I_d=1.2A$ $R_g=22/2\Omega$		7		ns
2	$t_r$	Rise time			35		ns
3	$t_{d(off)}$	Turn-off delay time			26		ns
4	$t_f$	Fall time	$V_{gs}=-1.5/6V$		78		ns



GaNPower International Inc.

WWW.IGANPOWER.COM  
230 -3410 LOUGHEED HWY  
VANCOUVER, BC, V5M 2A4 CANADA

## Absolute Max. Ratings

	Symbols	Parameters	Value	Unit
1	$V_{DS-max}$	Breakdown voltage transient @ $T_{case}=25^{\circ}C$	1400	V
	$V_{DS-max}$	Breakdown voltage transient @ $T_{case}=125^{\circ}C$	1250	V
2	$V_{GS-max}$	Gate to source max. transient voltage @ $T_{case}=25^{\circ}C$	-12 to +7.5	V
3	$I_{ds-max}$	Drain to source DC current @ $T_{case}=25^{\circ}C$	30	A
4	$I_{ds-max}$	Drain to source DC current @ $T_{case}=100^{\circ}C$	22	A
5	$dv/dt_{-max}$	Drain to source voltage slew rate	150	V/ns
6	$T_{J-max}$	Max junction temperature	150	$^{\circ}C$
7	$T_{S-storage}$	Storage temperature	-55 to 150	$^{\circ}C$

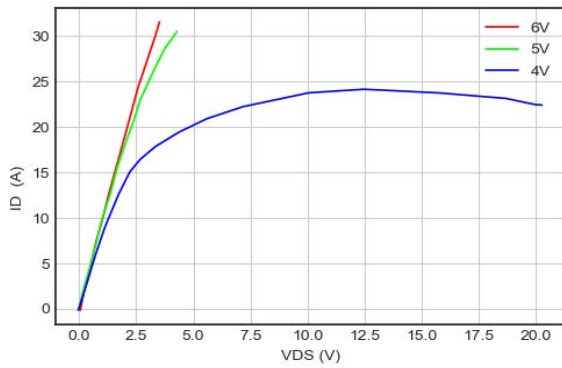
## Thermal and Soldering Characteristics (Typical)

	Symbols	Parameters	Value	Unit
1	$R_{thJC}$	Thermal resistance (junction to case)	0.9	$^{\circ}C/W$
2	$R_{thJA}$	Thermal resistance (junction to ambient)	62	$^{\circ}C/W$
2	$T_{solder}$	Reflow soldering temperature	260	$^{\circ}C$

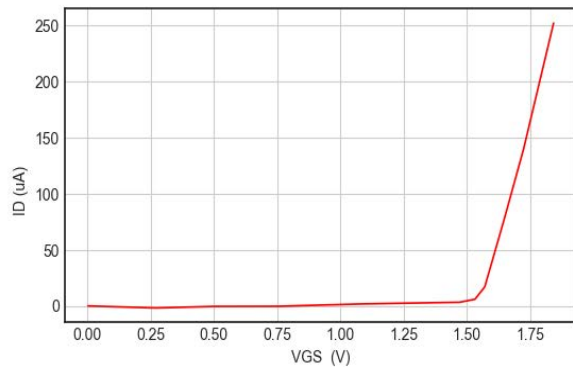
## Ordering

Order Code	Package Type	Packaging Method	Qty
GPIXU30SB5L	TO-263-5		

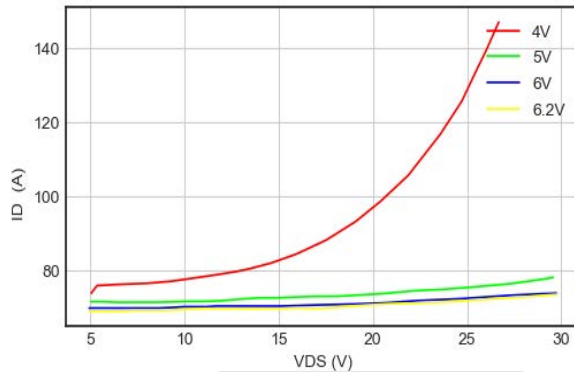
## Electrical Performance



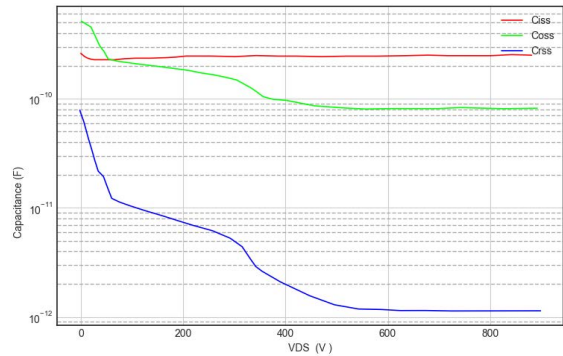
$I_{ds} - V_{ds}$  curve @ 25 °C



$I_{ds} - V_{gs}$  curve @ 25 °C

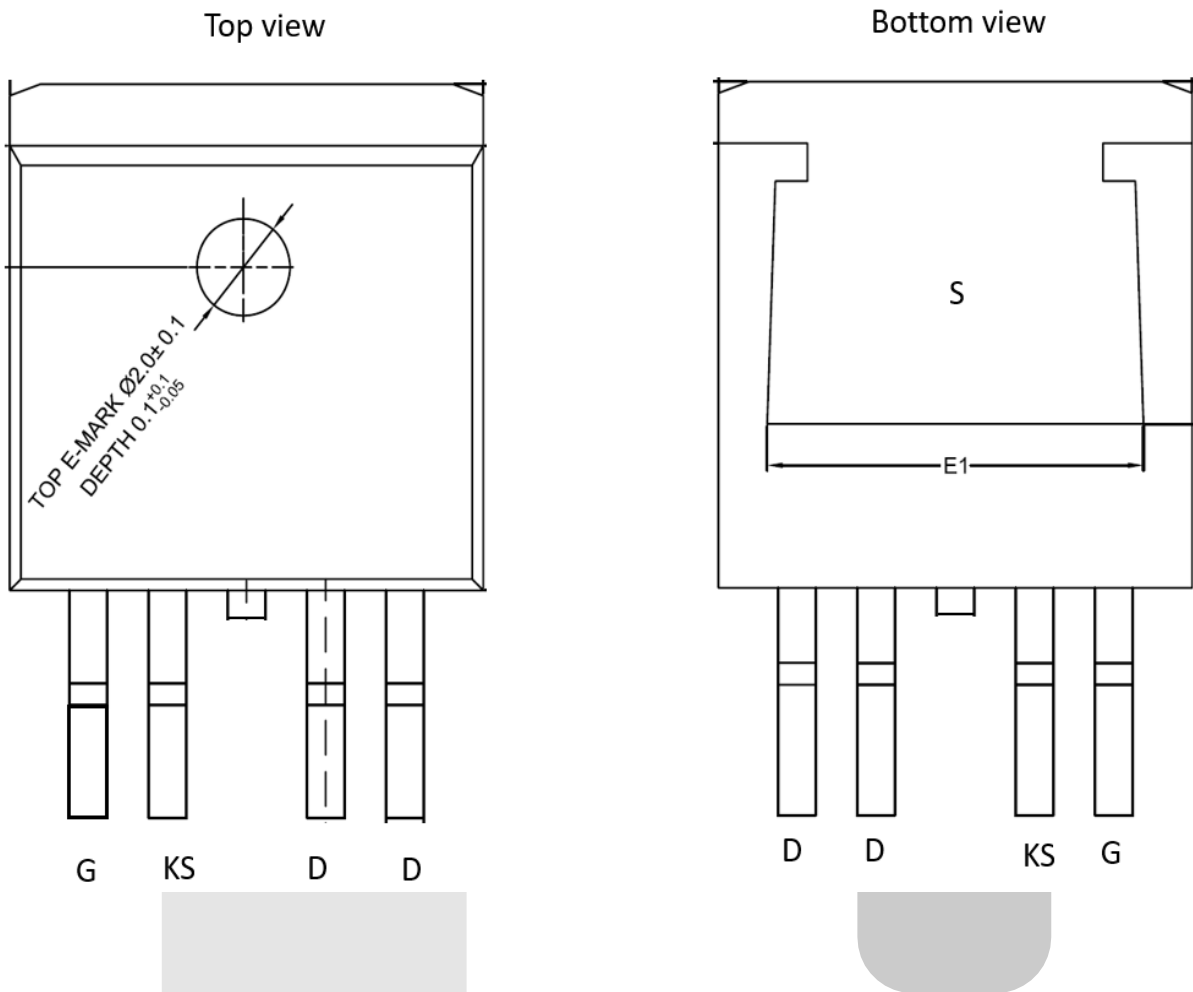


$R_{dson}$  vs.  $I_{ds}$  Pulsed measurement



Capacitance vs.  $V_{ds}$  Curve @ 25 °C

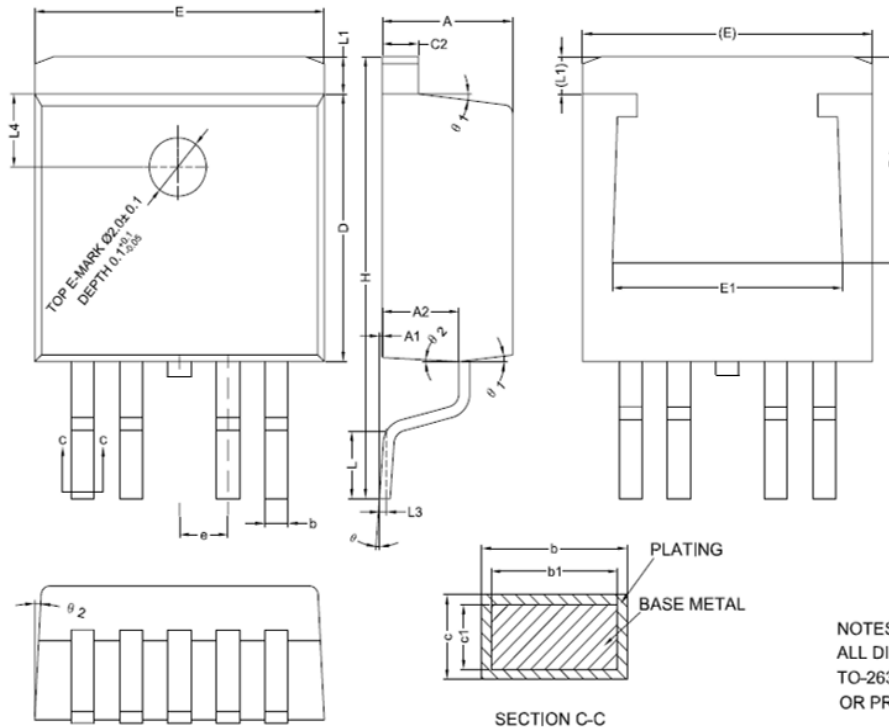
## Package Information





GaNPower International Inc.

WWW.IGANPOWER.COM  
 230 -3410 LOUGHEED HWY  
 VANCOUVER, BC, V5M 2A4 CANADA



COMMON DIMENSIONS  
 (UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.40	4.57	4.70
A1	0	0.10	0.25
A2	2.59	2.69	2.79
b	0.77	-	0.90
b1	0.76	0.81	0.86
c	0.34	-	0.47
c1	0.33	0.38	0.43
c2	1.22	-	1.32
D	9.05	9.15	9.25
D1	6.86	-	7.50
E	10.06	10.16	10.26
E1	7.50	-	8.30
e		1.70BSC	
H	14.70	15.10	15.50
L	2.00	2.30	2.60
L1	1.17	1.27	1.40
L3		0.25BSC	
L4		2.00REF	
$\theta_1$	0°	-	8°
$\theta_2$	5°	7°	9°
$\theta_2$	1°	3°	5°

NOTES:  
 ALL DIMENSIONS REFER TO JEDEC STANDARD  
 TO-263 BA DO NOT INCLUDE MOLD FLASH  
 OR PROTRUSIONS.



GaNPower International Inc.

WWW.IGANPOWER.COM  
230 -3410 LOUGHEED HWY  
VANCOUVER, BC, V5M 2A4 CANADA

## Further Information

**Important Notice**-Unless expressly approved in writing by an authorized representative of GaNPower, GaNPower components are not designed, authorized or warranted for use in lifesaving, life sustaining, military, aircraft, or space applications, nor in products or systems where failure or malfunction may result in personal injury, death, or property or environmental damage. The information given in this document shall not in any event be regarded as a guarantee of performance. GaNPower hereby disclaims any or all warranties and liabilities of any kind, including but not limited to warranties of non-infringement of intellectual property rights. All other brand and product names are trademarks or registered trademarks of their respective owners. Information provided herein is intended as a guide only and is subject to change without notice. The information contained herein or any use of such information does not grant, explicitly, or implicitly, to any party any patent rights, licenses, or any other intellectual property rights. All rights reserved.

**Data Source**– Data here are based on recent tests but all parameters may not be up to date. Actual final test data from packaging production are available for selected customers upon request.