GaNPower International Inc.

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230 -3410 LOUGHEED HWY
VANCOUVER, BC, V5M 2A4 CANADA

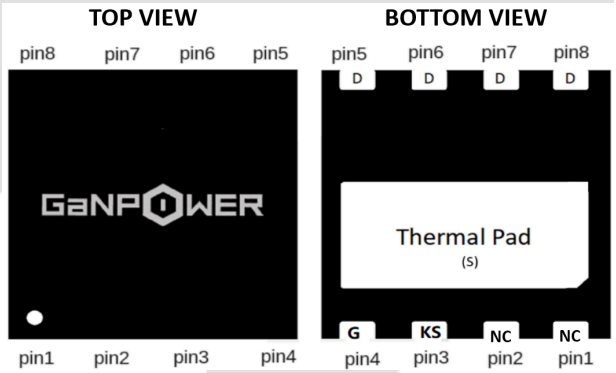
GP120R90DF88

N-channel 1200V 20A GaN Power HEMT in DFN88 Package

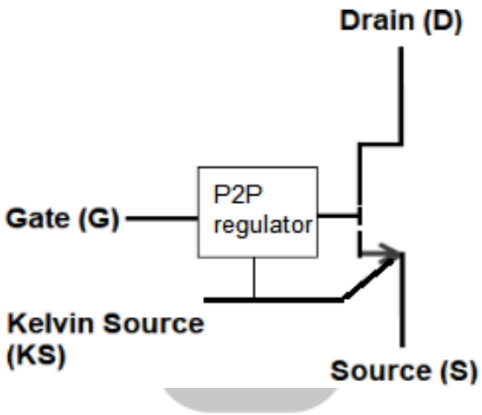
Preliminary Datasheet version: 1.0

Features

BV_{dss}	R_{dson}	I_{ds}	V_{GS}	$V_{GS(TH)}$
1200V	90mΩ	20A	-1V to 15V	3.7 V



- Ultra-low R_{DSON}
- High dv/dt capability
- Extremely low input capacitance
- Zero Qrr
- Outstanding switching performance
- Low Profile
- **Upgraded P2P GaN with input regulator IC to match input lead and voltage of existing SiC MOSFET**



Applications

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

Description

These devices are N-channel 1200V Power GaN HEMTs based on proprietary E-mode GaN on silicon technology, integrating an input regulator circuit to match input lead and voltage of existing SiC MOSFET in a pin-to-pin (P2P) fashion. 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.

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Device Characteristics

Basic Parameters				Test data			
	Parameters		**Conditions**	**Min**	**Typical**	**Max**	**Unit**
1	$V_{GS(TH)}$	Zero gate voltage drain current, T_c = 25℃	V_{DS} = V_{GS} I_D = 3mA	3.5	3.7		V
2	BV_{DSS}	Drain-Source breakdown voltage	V_{GS} = 0V I_D < 20μA		1200		V
3	I_{DSS}	Zero gate voltage drain current, T_C = 25℃	V_{GS} = 0V V_{DS} = 1200V	0.5	1.0	3.0	μA
4	I_{GSS}	Gate-Source Leakage @ 25℃	V_{GS} = 15V V_{DS} = 0V		50	70	mA
5	R_{DSON}	Static drain-source on resistance, T_C = 25℃	V_{GS} = 15V	90	102	120	mΩ
Switching Performance				**Test data**			
	Parameters		**Conditions**	**Min**	**Typical**	**Max**	**Unit**
1	$t_{D(ON)}$	Turn-on delay time	V_{DS} = 800V I_D = 9.5A V_{GS} = +15V/-1V R_{GON} = 2Ω R_{GOFF} = 0Ω		21		ns
2	t_R	Rise time			61		ns
3	$t_{D(OFF)}$	Turn-off delay time			12		ns
4	t_F	Fall time			28		ns

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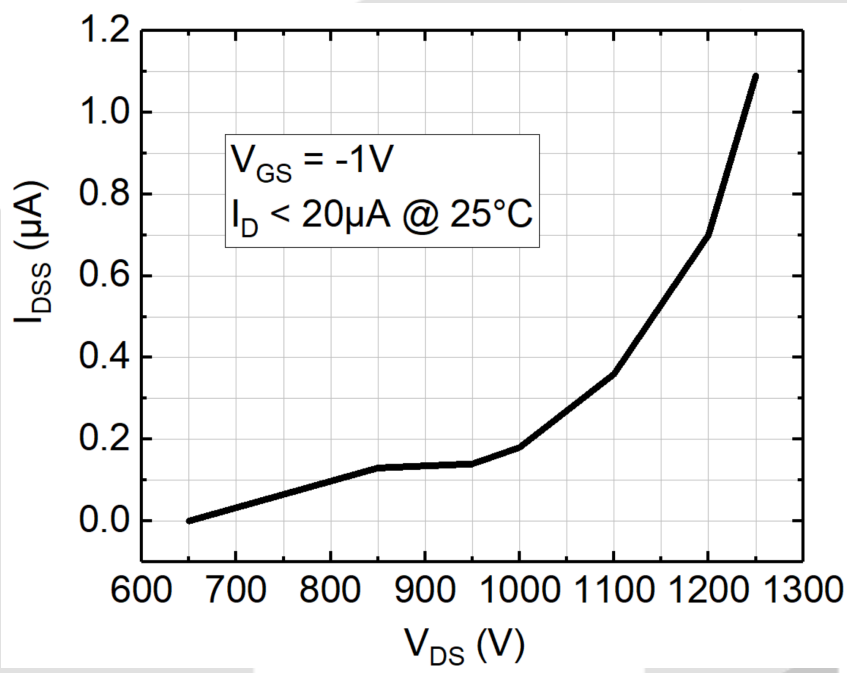
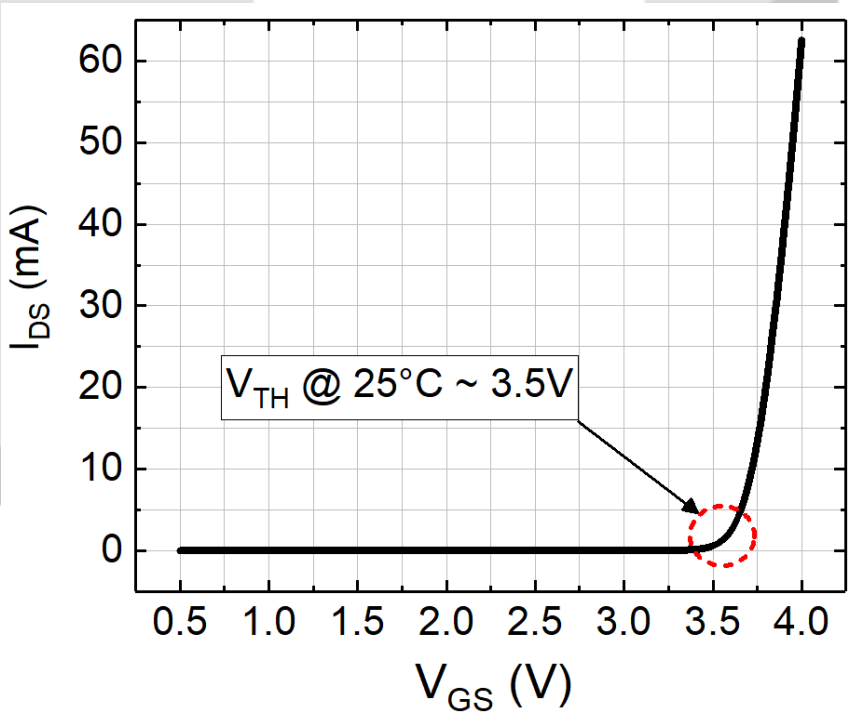
Electrical Performance





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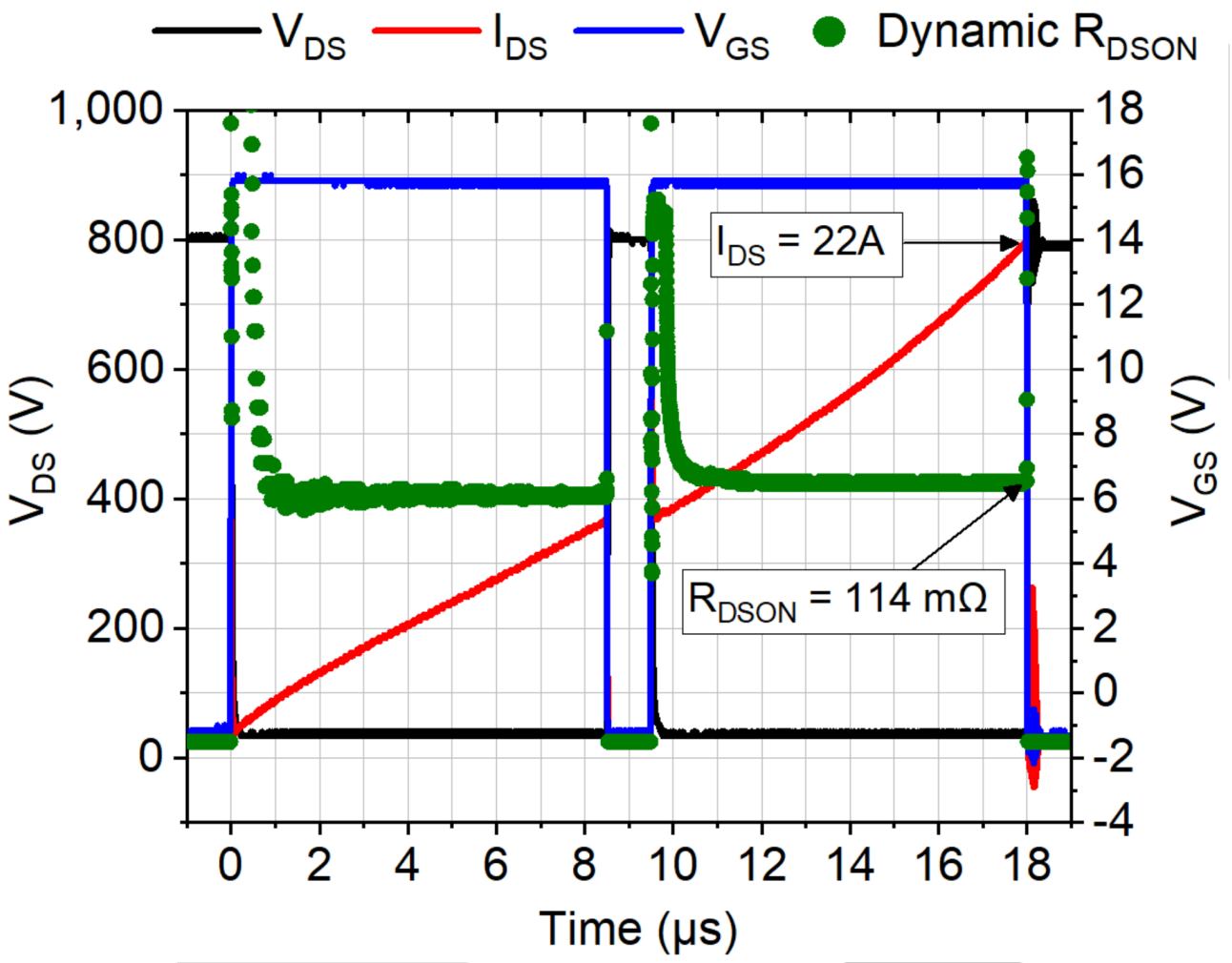

DPT @ 25°C: V_{BUS} = 800V, L-load = 360µH

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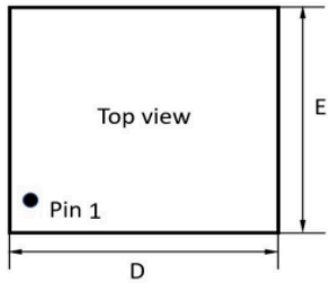
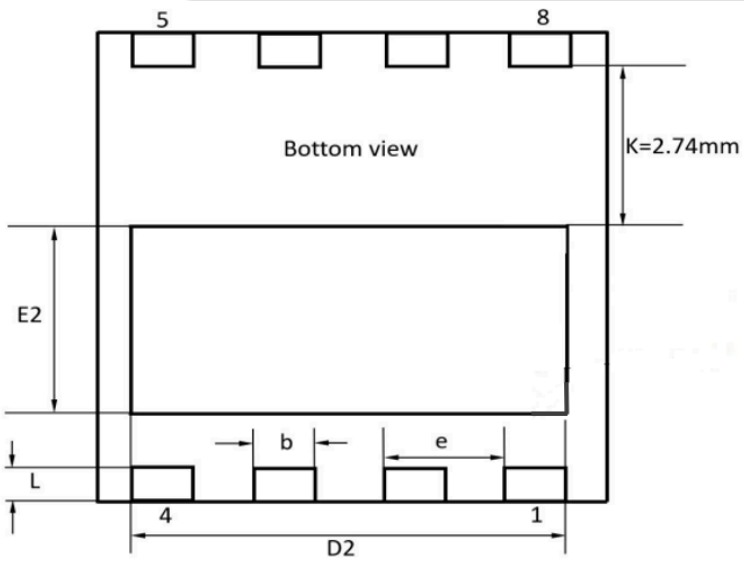
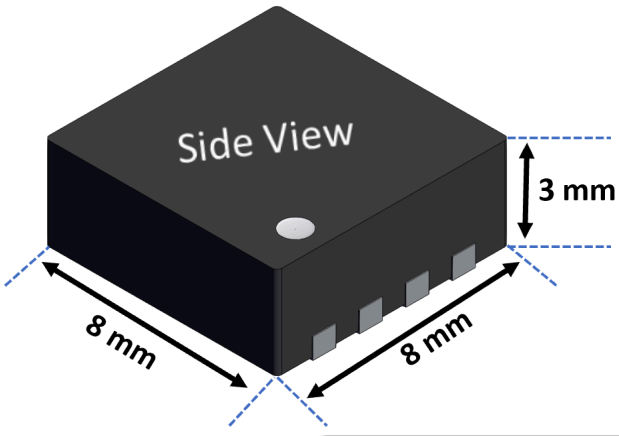
Package Information



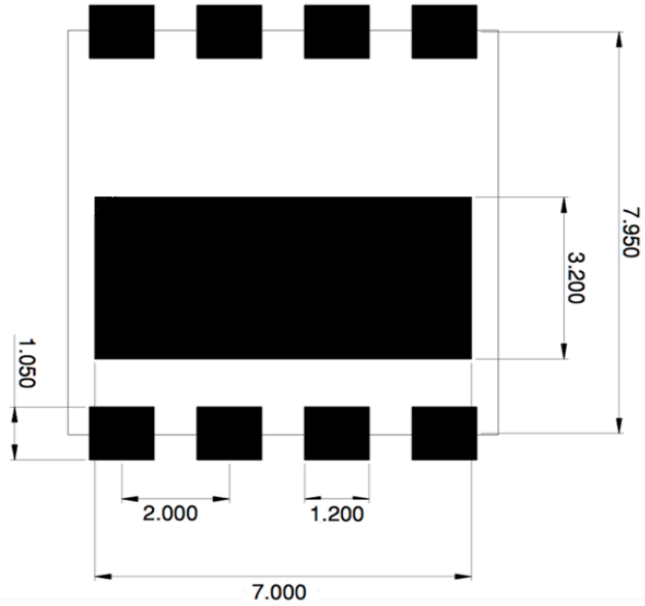
D=8; E=8; e=1.95; b=0.97;
L=0.57; D2=6.82; E2=3.19

8LEAD DFN (8x8x3 mm)
Pitch 1.95mm)
IMPORTANT: Please connect the bottom thermal pad to the source electrode on PCB





Land Pattern View



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Further Information

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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.