GaNPower International Inc.

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

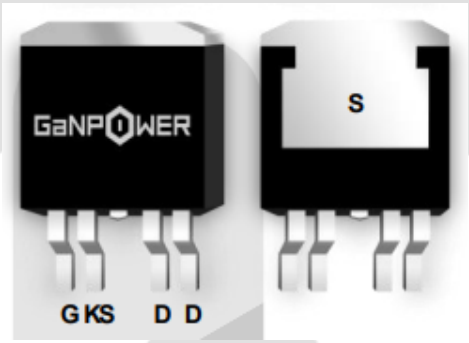
# GP120R150T6

## N-channel 1200V 10A GaN Power HEMT in TO263-5 Package

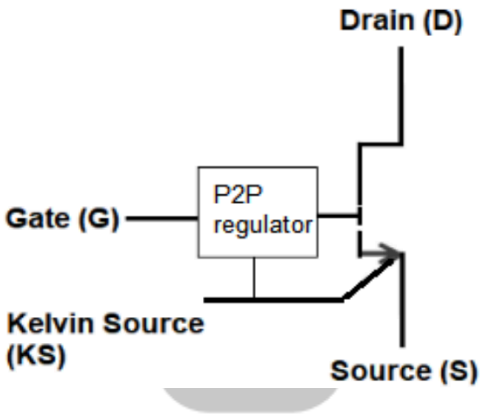
**Preliminary Datasheet version: 1.1**

## Features

| $BV_{dss}$ | $R_{dson}$ | $I_{ds}$ | $V_{GS}$ | $V_{GS(TH)}$ |
|---|---|---|---|---|
| 1200V | 150mΩ | 10A | -3V to 15V | 4.0 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.

GaNPower International Inc.

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

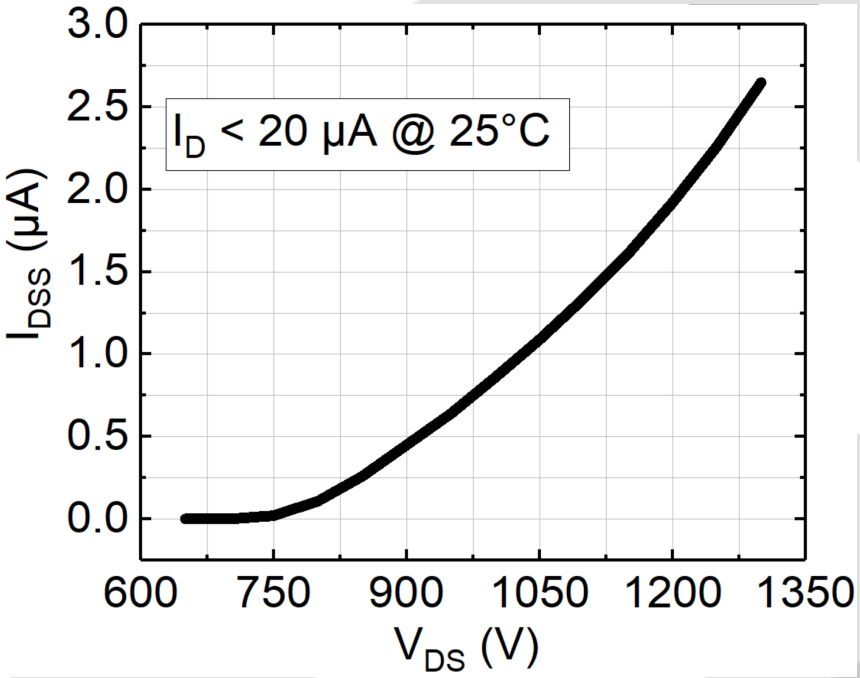
# Device Characteristics

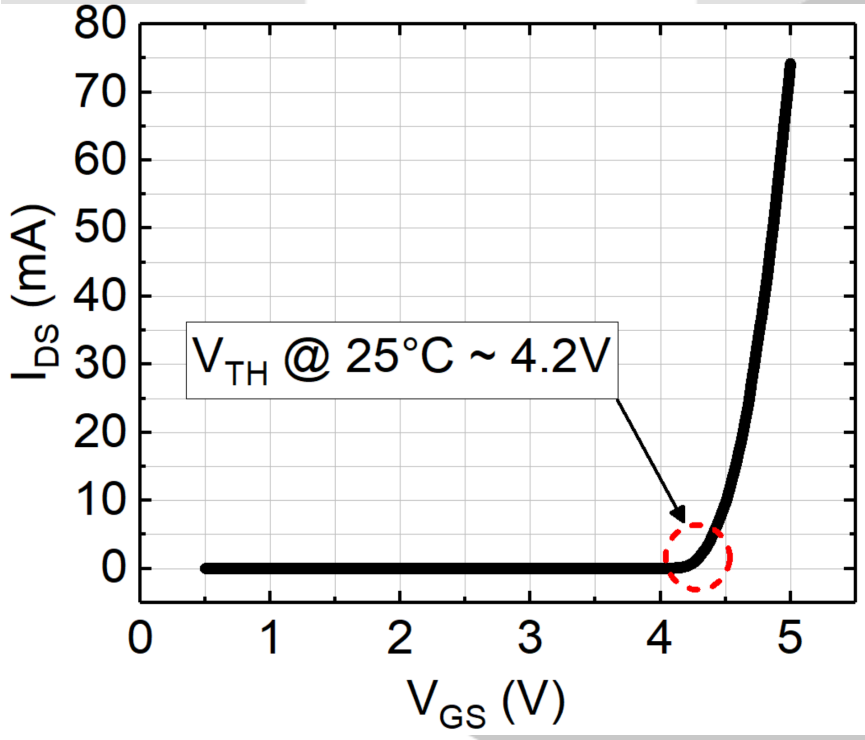
| Basic Parameters | | | | Test data | | | |
|---|---|---|---|---|---|---|---|
| | **Parameters** | | **Conditions** | **Min** | **Typical** | **Max** | **Unit** |
| 1 | $V_{GS(TH)}$ | Zero gate voltage drain current, $T_c$ = 25℃ | $V_{DS}$ = $V_{GS}$<br>$I_D$ = 3mA | 3.7 | 4.0 | 4.2 | V |
| 2 | $BV_{DSS}$ | Drain-Source breakdown voltage | $V_{GS}$ = 0V<br>$I_D$ < 20μA | | 1200 | | V |
| 3 | $I_{DSS}$ | Zero gate voltage drain current, $T_C$ = 25℃ | $V_{GS}$ = 0V<br>$V_{DS}$ = 1200V | | 1.5 | 2.0 | μA |
| 4 | $I_{GSS}$ | Gate-Source Leakage @ 25℃ | $V_{GS}$ = 12V<br>$V_{DS}$ = 0V | | 10 | 20 | mA |
| 5 | $R_{DSON}$ | Static drain-source on resistance, $T_C$ = 25℃ | $V_{GS}$ = 12V | | 150 | 200 | mΩ |
| **Switching Performance** | | | | **Test data** | | | |
| | **Parameters** | | **Conditions** | **Min** | **Typical** | **Max** | **Unit** |
| 1 | $t_{D(ON)}$ | Turn-on delay time | $V_{DS}$ = 800V<br>$I_D$ = 10A<br>$V_{GS}$ = +12V/-1V<br>$R_{GON}$ = 2Ω<br>$R_{GOFF}$ = 0Ω | | 29 | | ns |
| 2 | $t_R$ | Rise time | | | 65 | | ns |
| 3 | $t_{D(OFF)}$ | Turn-off delay time | | | 18 | | ns |
| 4 | $t_F$ | Fall time | | | 24 | | ns |
| 5 | $E_{ON}$ | Switching energy during turn-on | | | 424 | | μJ |
| 6 | $E_{OFF}$ | Switching energy during turn-off | | | 18 | | μJ |

GaNPower International Inc.

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

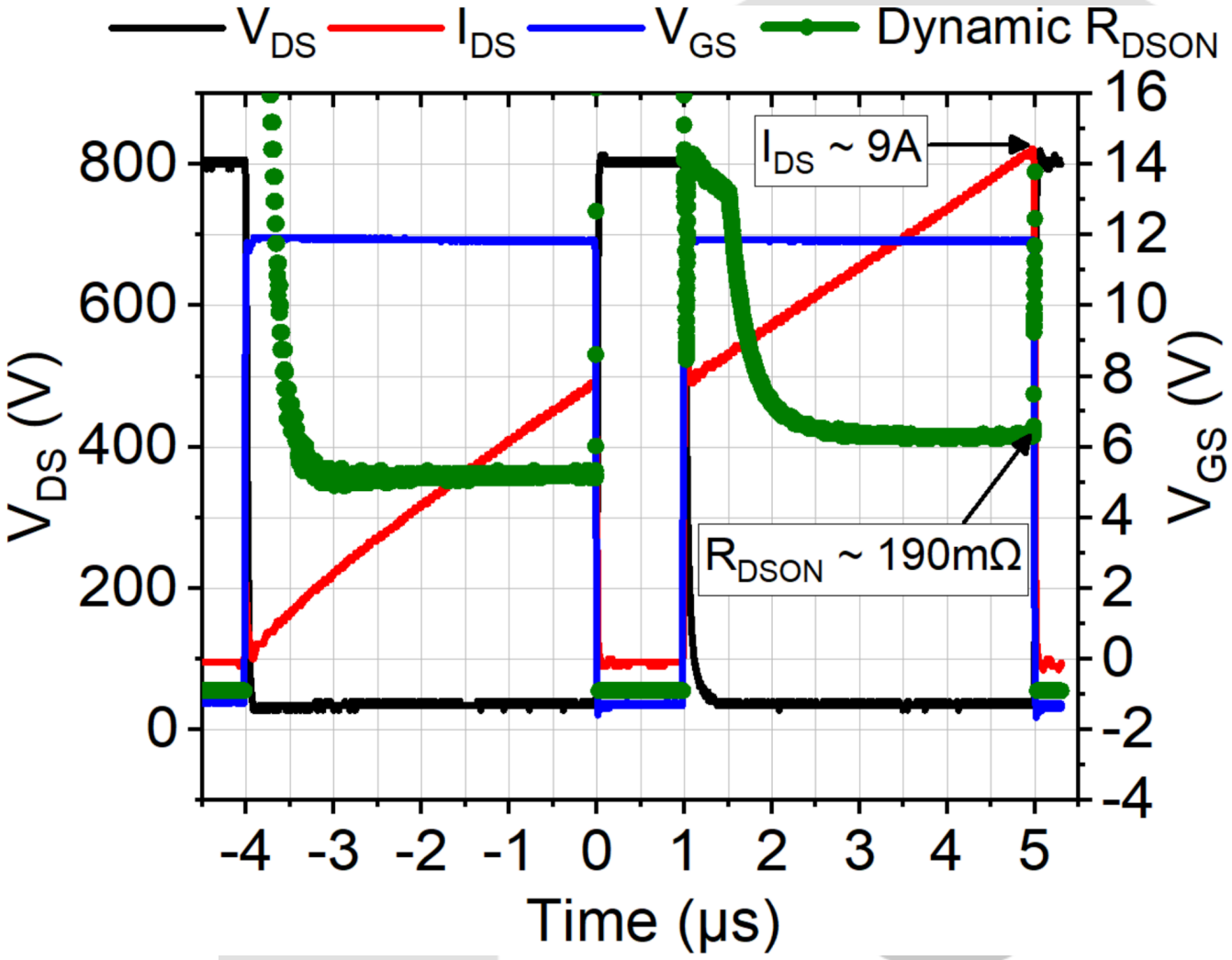
## Electrical Performance



GaNPower International Inc.

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

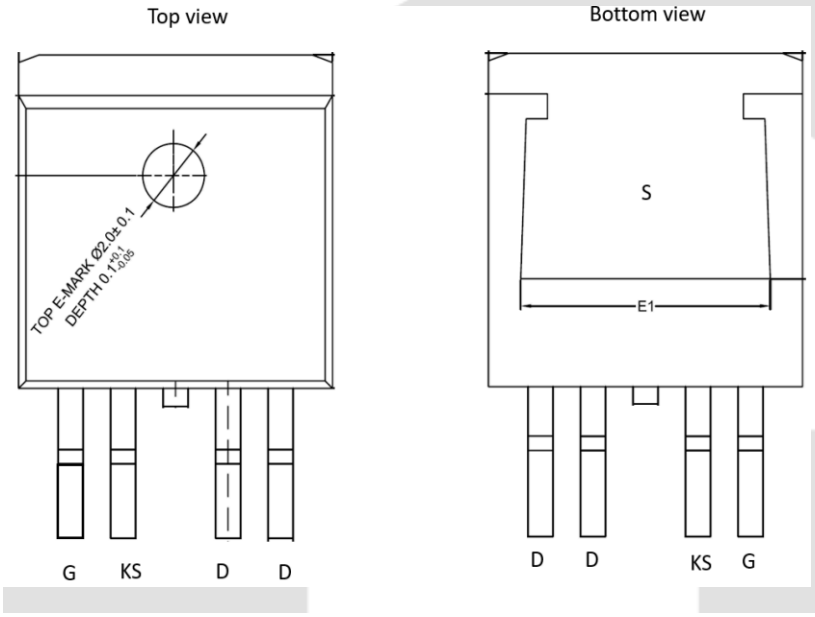


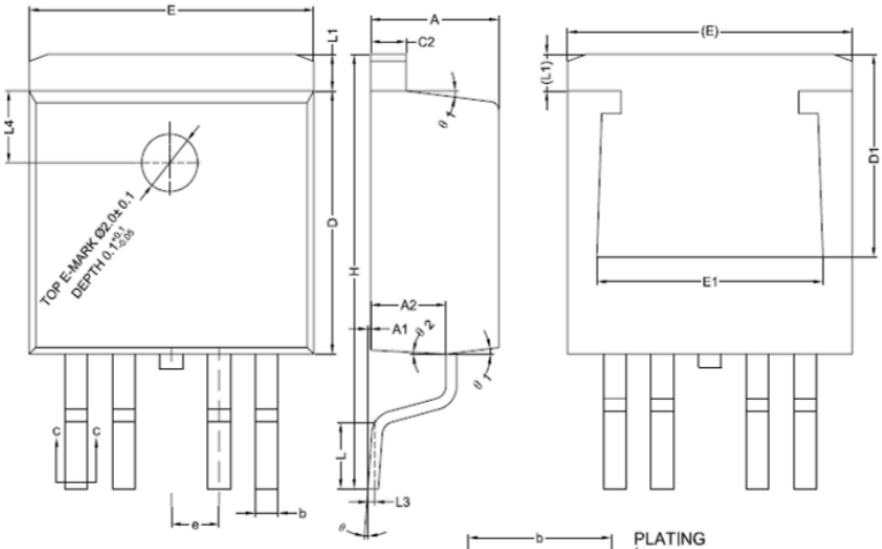

DPT @ 25°C: $V_{BUS}$ = 800V, L-load = 360µH

GaNPower International Inc.

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

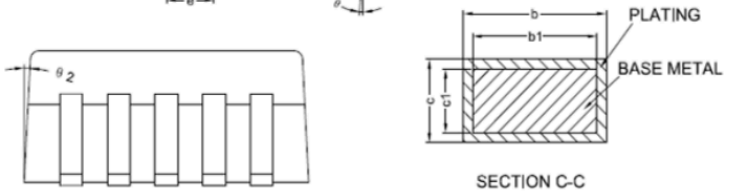
# Package Information




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 | |
| θ | 0° | - | 8° |
| θ1 | 5° | 7° | 9° |
| θ2 | 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.