GaNPower International Inc.

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

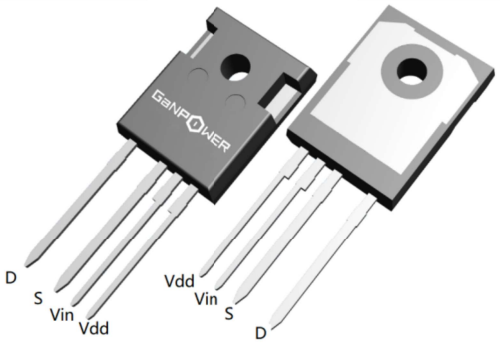
GPI120R12T74IC

N-channel 1200V 120A GaN Power HEMT in TO247-4 Package

Datasheet version 1.0 Preliminar

Features

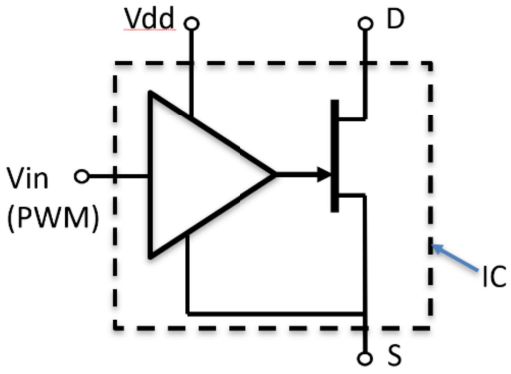
BV_{dss}	Rdson	DC bus	I_{ds}
1200 V	12 mΩ	800-1000 V	120 A



- Ultra-low R_{DS}(on)
- High dv/dt capability
- Fast switching
- Low Profile
- Suitable for DC bus voltage of 800-1000 V

Applications

- Switching Power Applications
- Power adapters and power delivery chargers
- Start up procedure: Please set Vdd to be a normal operation voltage (e.g., 6.5 V) before turning on the high voltage power supply or apply high voltage to the drain. Vdd is the power supply for the internal gate driver in our GaN Power IC. Only when a normal operation voltage (e.g., 6.5 V) is applied to Vdd, will the internal driver and GaN HEMT work properly.



Description

These devices are power IC based on Power GaN HEMTs using proprietary E-mode GaN on silicon technology. The gate driver is integrated with the main power transistor resulting in fast switching, high system power density and low cost.

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Device Characteristics

Basic Parameters				Test data			
	Parameters		**Conditions**	**Min**	**Typical**	**Max**	**Unit**
1	BV_{dss}[1]	Drain-Source breakdown voltage	V_{in}=0V, V_{dd}=6.5V . I_d<1mA		1200		V
2	R_{dson}	Static drain-source on resistance, T_C = 25℃	V_{in}=6V, V_{dd}=6.5V, I_d=24A,		12	18	mΩ
3	R_{dson}	Static drain-source on resistance, T_C = 125℃	V_{in}=6V, V_{dd}=6.5V, I_d=24A,		30		mΩ
4	V_{dd}	Drive supply voltage		5	6.5	8	
5	V_{in}	PWM input pin voltage		5	6.5	8	
6	I_{ddq}	Drive supply (V_{dd}) quiescent leakage current	V_{dd}=6.5V V_{in}=0V		42		μA
Switching Performance				**Test data**			
	Parameters		**Conditions**	**Min**	**Typical**	**Max**	**Unit**
1	$t_{d(on)}$	Turn-on delay time	V_{bus}=800V I_d=2A V_{dd}=6.5V V_{in}=-3/6.5V		10		ns
2	t_r	Rise time			30		ns
3	$t_{d(off)}$	Turn-off delay time			25		ns
4	t_f	Fall time			80		ns

[1] BVdss refers to DC withstanding voltage. Taking the switching surge voltage into account, this product is recommended for DC bus voltage of 800-1000V.

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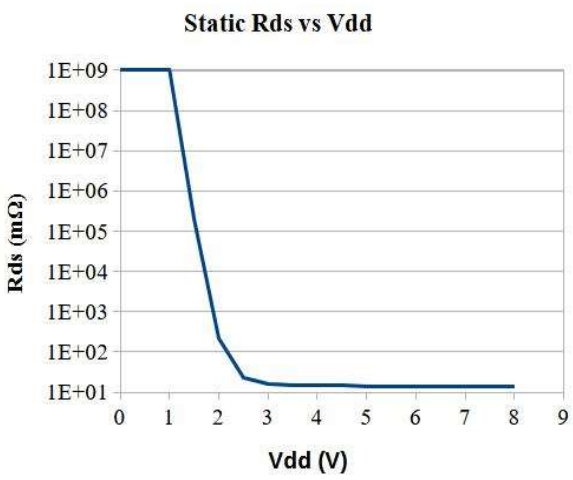
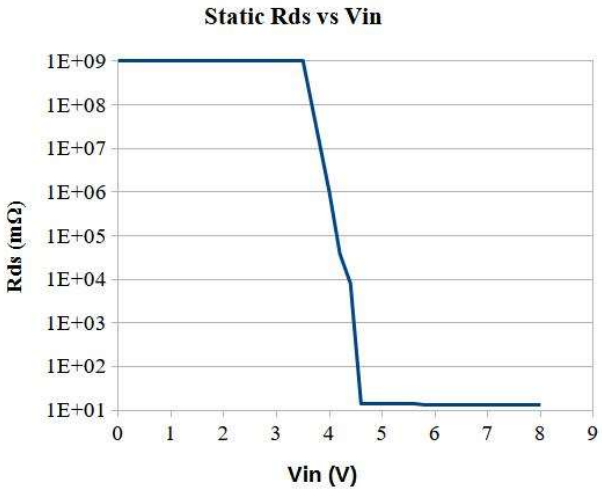
Electrical Performance



Static Rds vs Vdd @Vin=6V



Static Rds vs Vin @Vdd=6.5V

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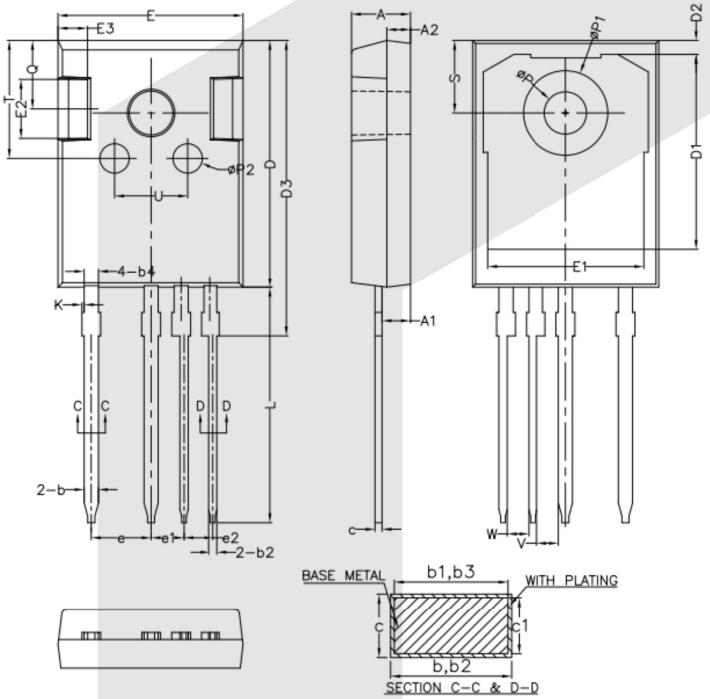
Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
b	1.16	–	1.29
b1	1.15	1.20	1.25
b2	0.66	–	0.79
b3	0.65	0.70	0.75
b4	1.16	–	1.29
c	0.59	–	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
D3	24.97	25.12	25.27
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
e	4.98	5.08	5.18
e1	2.69	2.79	2.89
e2	2.44	2.54	2.64
K	0	–	0.20
L	19.80	19.92	20.10
P	3.50	3.60	3.70
P1	–	–	7.40
P2	2.40	2.50	2.60
Q	5.60	–	6.00
S	6.00	6.15	6.30
T	9.80	–	10.20
U	6.00	–	6.40
V	1.44	1.84	2.24
W	1.44	1.84	2.24

NOTES:
1.ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.
2.EJECTION MARK DEPTH $0.10^{+0.15}_{-0.05}$.

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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.