

## GPI65R12T74IC

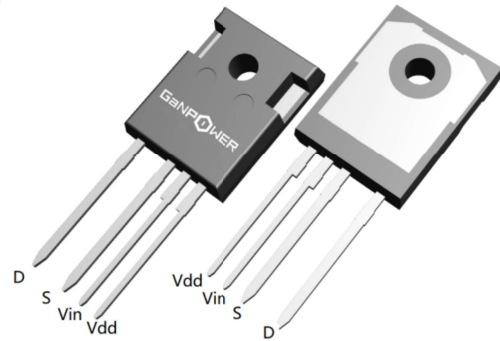
### N-channel 650V 120A GaN Power HEMT in TO247-4 Package

Datasheet version 1.0 Preliminary

### Features

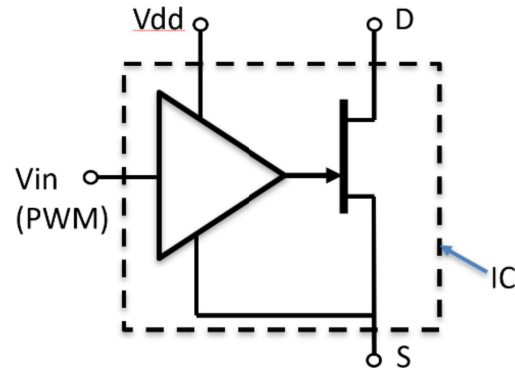
$BV_{dss}$	$R_{dson}$	DC bus	$I_{ds}$
650 V	12 mΩ	400-600 V	120 A

- Ultra-low  $R_{DS(on)}$
- High  $dv/dt$  capability
- Fast switching
- Low Profile
- Suitable for DC bus voltage of 400-600 V



### Applications

- Switching Power Applications
- Power adapters and power delivery chargers
- Start up procedure: Please set  $V_{dd}$  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.  $V_{dd}$  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  $V_{dd}$ , 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

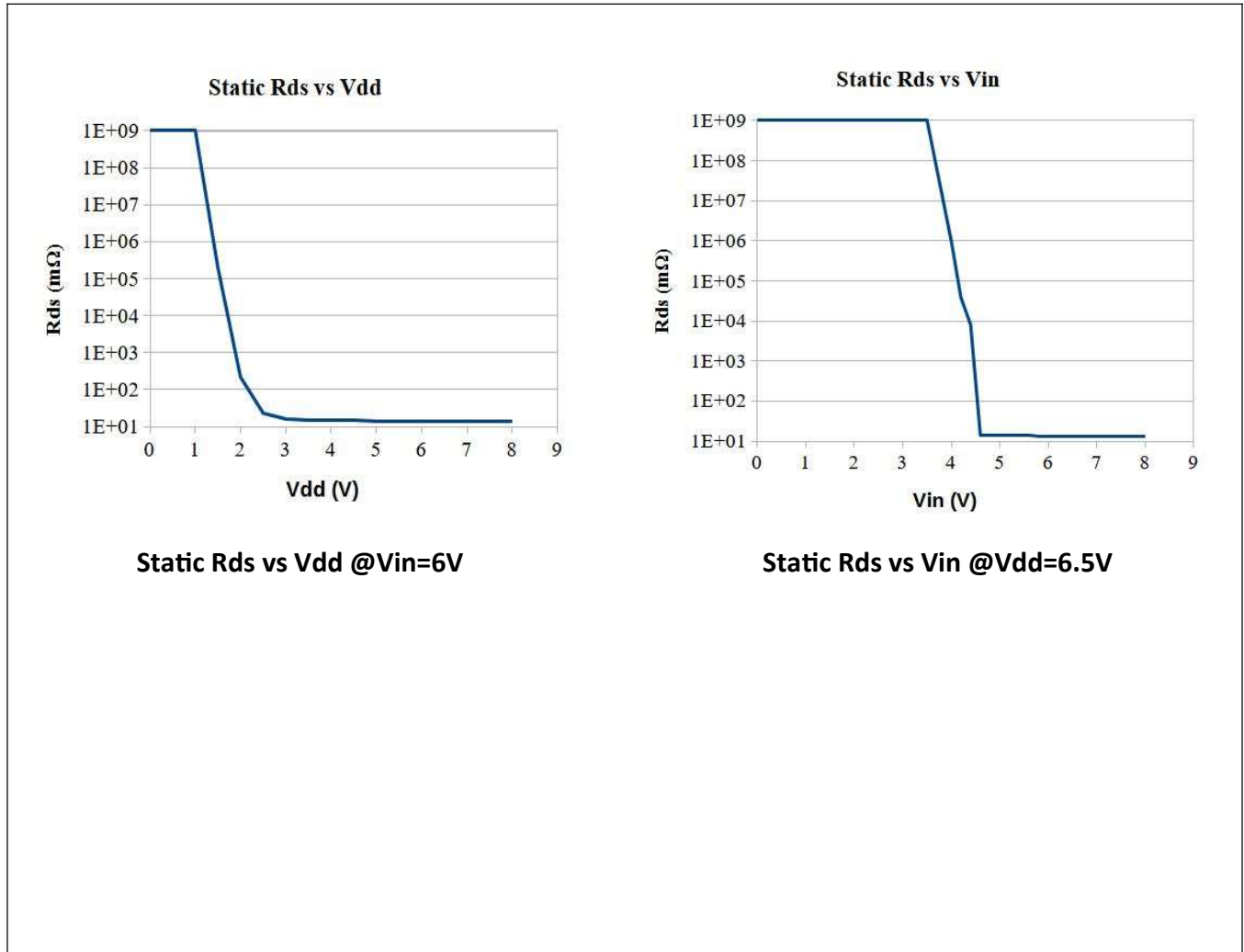
Basic Parameters				Test data			
	Parameters		Conditions	Min	Typical	Max	Unit
1	$BV_{dss}$	Drain-Source breakdown voltage	$V_{in}=0V,$ $V_{dd}=6.5V$ $I_d < 200\mu A$	650			V
2	$R_{dson}$	Static drain-source on resistance, $T_c = 25^\circ C$	$V_{in}=6V,$ $V_{dd}=6.5V,$ $I_d=24A,$		12	18	mΩ
3	$R_{dson}$	Static drain-source on resistance, $T_c = 125^\circ C$	$V_{in}=6V,$ $V_{dd}=6.5V,$ $I_d=24A,$		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	$V_{bus}=400V$ $I_d=10A$ $V_{dd}=6.5V$ $V_{in}=-3/6.5V$		14		ns
2	$t_r$	Rise time			10		ns
3	$t_{d(off)}$	Turn-off delay time			18		ns
4	$t_f$	Fall time			16		ns



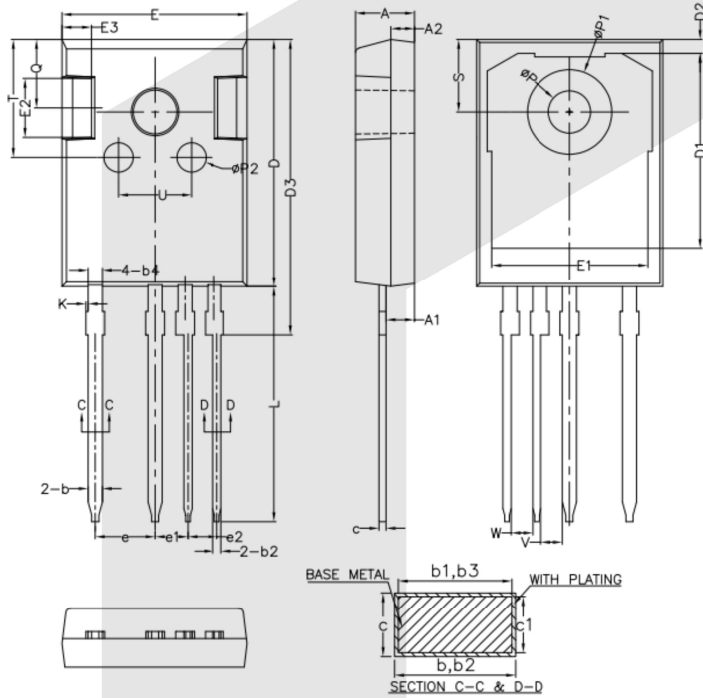
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## Electrical Performance



## 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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**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.