

## 900-V GaN Power ICs Feature Low On-Resistance And Low Leakage

[GaNPower International's](#) GPI4TIC15DFV and GPI6TIC15DFV 900-V GaN ICs are suitable for dc bus applications with power switching at 400 V to 600 V (Fig. 1). Applications include power adapters and chargers. Static  $R_{DS(ON)}$  for both devices is 85 m $\Omega$  typical and 105 m $\Omega$  max at  $V_{in} = 6$  V,  $V_{dd} = 6.5$  V,  $I_d = 2.5$  A and  $T_c = 25^\circ\text{C}$ . According to the vendor, they offer lower dynamic  $R_{DS(ON)}$  than discrete GaNFETs and ultra-low quiescent leakage current (Fig. 2). The latter benefit applies especially to the GPI4TIC15DFV.

The GPI4TIC15DFV specifies a drive supply ( $V_{dd}$ ) quiescent leakage current of just 0.1 mA at  $V_{dd} = 6.5$  V. Meanwhile for the GPI6TIC15DFV, this value is 6 mA.

The tradeoff for those differences is some faster switching characteristics for the GPI6TIC15DFV. Turn-on delay for the GPI4TIC15DFV is 50 ns typical at  $V_{bus} = 600$  V,  $I_d = 2$  A,  $V_{in} = 6.5$  V and  $V_{dd} = 6.5$  V, while turn-on delay is 40 ns typical for the GPI6TIC15DFV under the same conditions. Similarly, fall time for the GPI4TIC15DFV is 35 ns typical, while for the GPI6TIC15DFV it is 20 ns, under the same test conditions as for turn-on delay.

For more information, see the [product page](#).

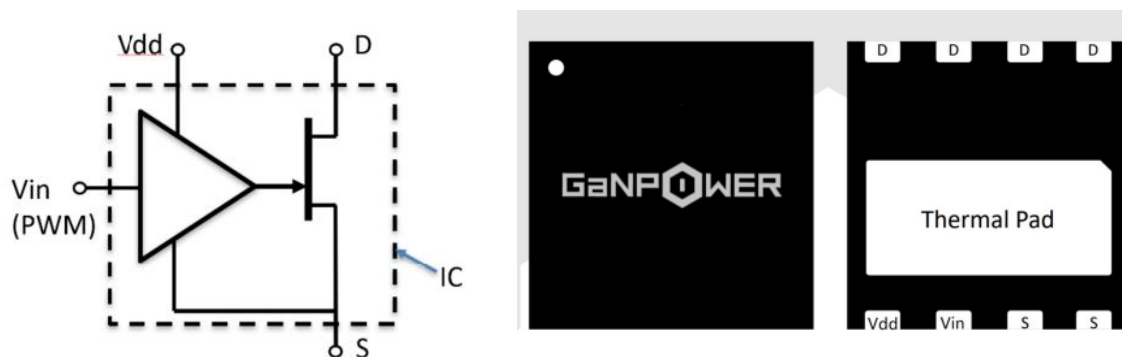
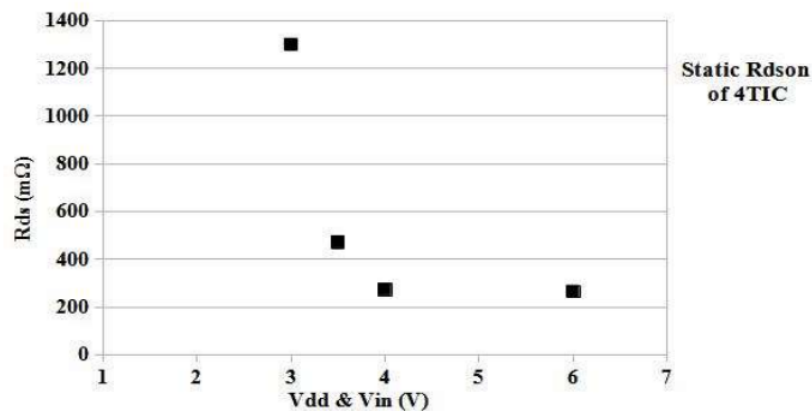
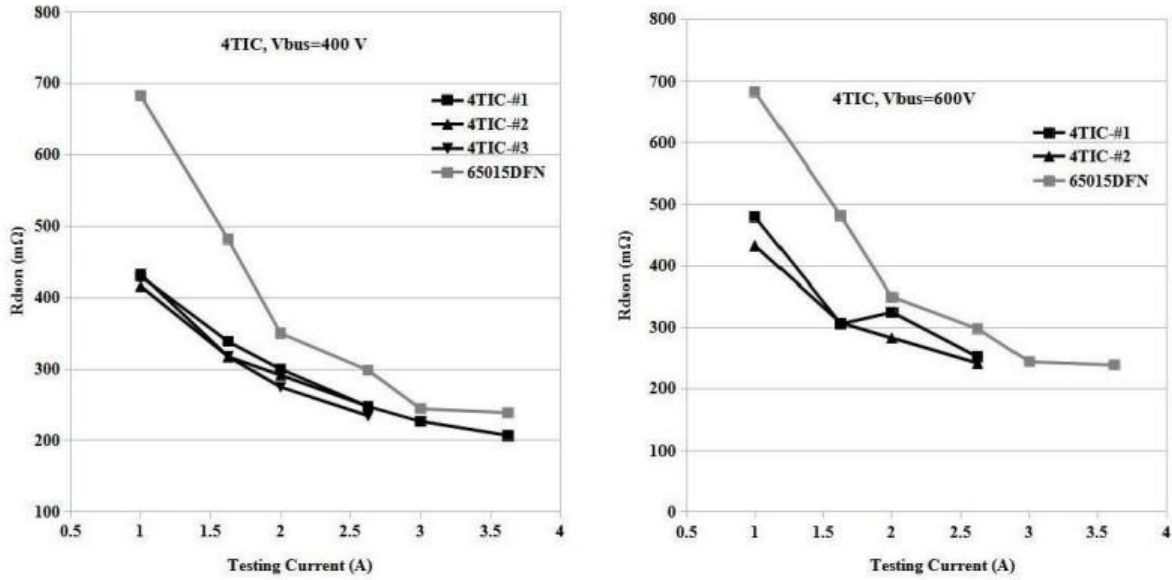


Fig. 1. The GPI4TIC15DFV and GPI6TIC15DFV are GaN power ICs in 8-mm x 8-mm DFN packages. Each device combines a GaN HEMT using proprietary e-mode GaN-on-silicon technology with an integrated gate driver.



(a)



Dynamic  $R_{DS(ON)}$  vs Testing Current @  $V_{bus}=400V, 600V$

(b)

Fig. 2. Static (a) and dynamic  $R_{DS(ON)}$  (b) of the GPI4TIC15DFV. Dynamic  $R_{DS(ON)}$  data was captured the moment just before the GaN power ICs were turned off, in order to exclude any influence of ringing and overshooting. Normally the dynamic  $R_{DS(ON)}$  is measured at 1  $\mu s$  after IC turn-on.