

GaN HEMT Family Adds 190-mΩ, 350-mΩ And 600-mΩ Devices In DFN Packages

[Innoscence Technology](#) has expanded its family of 650-V E-mode GaN HEMT devices by adding 190-mΩ, 350-mΩ and 600-mΩ $R_{DS(ON)}$ devices in industry-standard 8-mm x 8-mm and 5-mm x 6-mm DFN packages. These devices join the previously-announced 140-mΩ, 240-mΩ and 500-mΩ $R_{DS(ON)}$ parts, creating a significant portfolio of available devices. Part numbers for these devices are shown in the table.

The 650-V HEMTs are all qualified to JEDEC standards for chip and package. Moreover, the Innoscence devices have also passed dynamic high temperature operating life test (DHTOL) reliability testing according to JEP180, which is the newly-released JEDEC’s guidelines dedicated to GaN technology. In addition, Innoscence’s 650-V HEMT (InnoGaN) devices have undergone accelerated life tests beyond 1000 V that give lifetime calculations of 36 years at 80% of the rated voltage (520 V; 150°C; 0.01% failure rate).

The new devices also feature very good drain source voltage transient (V_{DS} transient) of 800 V for non-repetitive events with an extended pulse time up to 200 μs and a pulsed (V_{DS} pulsed) characteristic for repetitive pulse up to 100 ns of 750 V for the 190-mΩ $R_{DS(ON)}$ parts. These are best-in-class characteristics, according to the vendor. The 190-mΩ, 350-mΩ and 600-mΩ $R_{DS(ON)}$ devices all feature a strong ESD protection circuit embedded in the die to ease mass production assembly of these device in package and easy handling.

Possible applications for these devices include PFC converters, dc-dc converters, LED drivers, fast battery chargers, notebook and all-in-one (AiO) adapters and power supplies for desktop PCs, TVs, and power tools.

Comments Yi Sun, Sr VP of product development at Innoscence, “These new devices complete our 100- to 600-mΩ device portfolio at 650 V. I am especially happy to add the 650 V/190 mΩ, as it is becoming a standard in the GaN industry that offers greater flexibility to customers upon selecting suppliers for their applications.”

For more information, please see the [website](#).

Table. Key specifications for Innoscence’s latest 650-V E-mode GaN HEMT in DFN packages.

Part number	Package	V_{DS} max (V)	$R_{DS(ON)}$ typ. (mΩ)	$R_{DS(ON)}$ max (mΩ)	Q_G (nC)	Q_{OSS} (nC)	I_D max (A)	I_{DPuls} max (A)
INN650D190A	DFN 8x8	650	138	190	2.8	24.5	11.5	20.5
INN650DA190A	DFN 5x6	650	138	190	2.8	24.5	11.5	20.5
INN650N190A	Wafer	650	138	190	2.8	24.5	11.5	20.5
INN650D350A	DFN 8x8	650	270	350	1.5	13	6	10
INN650DA350A	DFN 5x6	650	270	350	1.5	13	6	10
INN650N350A	Wafer	650	270	350	1.5	13	6	10
INN650DA600A	DFN 5x6	650	470	600	0.7	7.3	3.3	6
INN650N600A	Wafer	650	470	600	0.7	7.3	3.3	6