GaN Power Switch Increases Output Of Display PSUs To 75 W

Power Integrations (PI) has expanded its InnoSwitch3-MX isolated switcher IC family with the addition of three new PowiGaN devices. As part of a chipset with Power Integrations' InnoMux controller IC, the new switcher ICs now support display and appliance power supply applications with a continuous output power of up to 75 W without a heatsink.

Previously introduced members of the InnoSwitch3-MX family contain a silicon power switch, a 650-V or 725-V rated MOSFET, which limits the output power to about 40 W to 45 W, going by PI's reference designs (see "Chipset Makes Flybacks More Efficient In Powering Displays"). With the introduction of a 750-V GaN power switch in the switcher IC, power supplies based on the InnoSwitch3-MX now can deliver the higher, 75-W output. According to Doug Bailey, VP of marketing at Power Integrations, this higher power capability enables InnoSwitch3-MX to address the needs of larger TVs and "prosumer" monitors up to 55 in. (see Fig. 1).

With a high breakdown voltage of 750 V, the PowiGaN InnoSwitch3-MX parts are also extremely robust and highly-resistant to the line surges and swells commonly-seen in regions with unstable mains voltages. The part numbers for the PowiGaN InnoSwitch3-MX devices are the INN3478C, INN3479C, INN3470C InnoSwitch3 (see the table).

InnoSwitch3-MX flyback switcher ICs combine the primary switch, the primary-side controller, a secondary-side synchronous rectification controller, and PI's innovative FluxLink high-speed communications link. The InnoSwitch3-MX receives control instructions from its chipset partner, the InnoMux IC, which independently measures the load requirements of each output and directs the switcher IC to deliver the right amount of power to each output, maintaining accurate regulation of current or voltage (see Fig. 2).

Comments Power Integrations' product marketing manager Edward Ong, "By using our PowiGaN technology we are able to address higher-output applications in TVs, monitors and appliances that employ LED displays. The chipset increases efficiency beyond the requirements of all mandatory regulations and improves manufacturers' scores in EU efficiency labeling programs."

Samples of the INN3478C, INN3479C, INN3470C InnoSwitch3-MX ICs are available now in the InSOP-24D package (see Fig. 3) with prices starting at $2.52, $3.14 and $3.71, respectively in 10,000-piece quantities. Technical support for the chipset is available from the Power Integrations website.

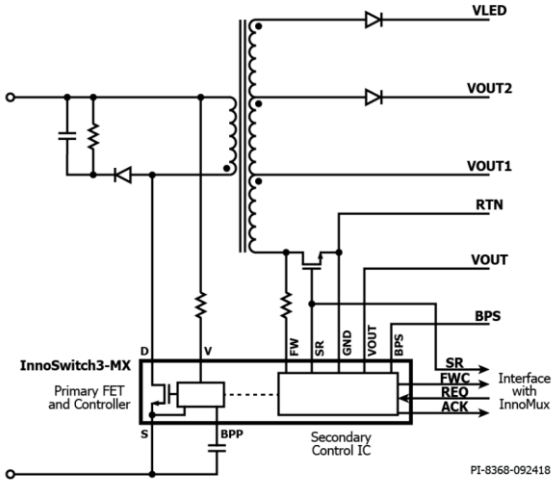

Fig. 1. InnoSwitch3-MX is an offline multiple-output QR flyback switcher IC with an integrated power switch, synchronous rectification and FluxLink feedback. In the three new PowiGaN models, the 650- or 725-V silicon MOSFET is replaced by a 750-V GaN switch that increases the power supply output to 75-W without a heatsink. This capability enables an InnoSwitch3-MX-based power supply to satisfy the power requirements of TVs and monitors up to 55 in.

Table. The three new PowiGaN members of the InnoSwitch3-MX isolated switcher IC family, which are highlighted below, enable display power supplies to deliver higher power than the all-silicon members of the family.

Product	BV rating	85 to 265 Vac	
		Nominal Continuous	Max Continuous
INN3464C	650 V	18 W	23 W
INN34x5C	650/725 V	22 W	28 W
INN34x6C	650/725 V	28 W	35 W
INN34x7C	650/725 V	35 W	44 W
INN3468C	650 V	40 W	50 W
INN3478C	750 V	55 W	65 W
INN3479C	750 V	65 W	75 W
INN3470C	750 V	75 W	85 W

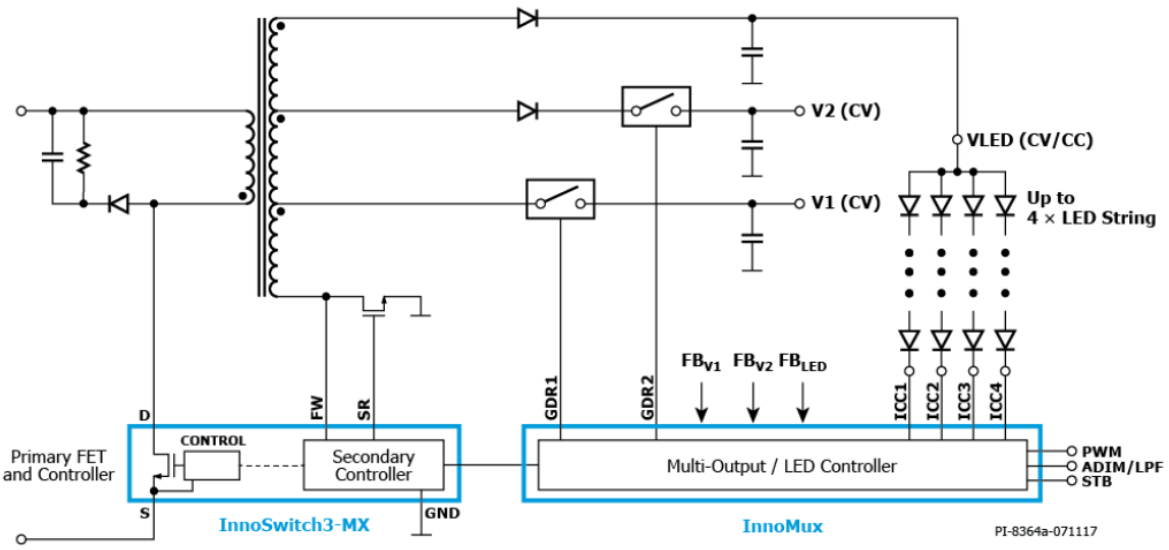

Fig. 2. The InnoMux chipset employs a unique single-stage power architecture that reduces losses in display applications by 50% when compared to conventional designs, increasing overall efficiency to 91% in constant-voltage and constant-current LED backlight driver designs, according to the vendor. Additionally, by eliminating the need for post regulation (i.e. buck and boost) stages, TV and monitor designers can halve component count, improving reliability and reducing manufacturing cost.

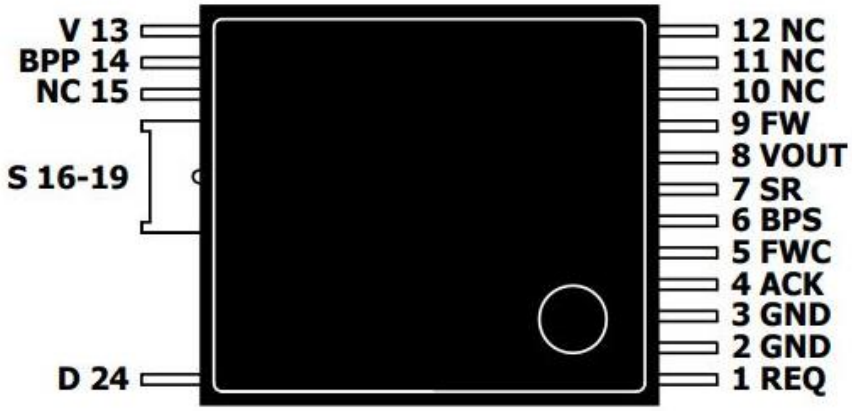

Fig. 3. The InnoSwitch3-MX is offered in a high-creepage, safety-compliant InSOP-24D package.