Freebird
semiconductor

# High-Reliability Power Switching Technology

## Enhancement Mode Gallium Nitride (eGaN®)

**Freebird Semiconductor Series of eGaN® switching power HEMTs have been specifically designed for critical applications in the high reliability or commercial satellite space environments.**

**These devices have exceptionally high electron mobility and a low temperature coefficient resulting in very low RDS(ON) values. The lateral structure of the die provides for very low gate charge (QG) and extremely fast switching times. These features enable faster power supply switching frequencies resulting in higher power densities, higher efficiencies and significantly compact circuitry.**

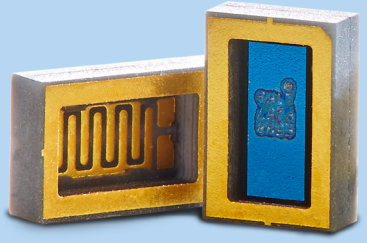
Freebird Semiconductor Corporation is a U.S.A based manufacturing and design company dedicated to addressing High-Reliability power management problems by using emerging semiconductor technologies.

We are focused on delivering Enhancement Mode Gallium Nitride Power Switching Transistors (eGaN® HEMTs) and patented circuits offering disruptive, (r)evolutionary advantages over silicon based solutions into the high-reliability market.

Our high-reliability performance qualification test vehicles are employed with guaranteed radiation hardness assurance offering Total Ionization Dose (TID) Ratings to 300kRrad, Single Event – (SEE) immunity for LET of 83.7 MeV/mg/cm$^2$, with validation up to 1 x 10$^{13}$ Neutrons/cm$^2$.

Freebird Semiconductor Corporation has been assessed and registered by Intertek as conforming to the requirements of AS9100C and ISO 9001:2008 quality management system which is applicable to the design and manufacture of high-reliability semiconductors devices and circuits. The assessment was performed in accordance with the requirements of AS9104/1:2012-01. Intertek is accredited under the Aerospace Management Program and IAQG ICOP scheme.

**Product information, including Abstract Radiation Test Reports and Abstract Qualification Test Reports are available at www.freebirdsemi.com.**

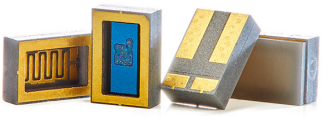


(r)evolutionary High-Reliability GaN Technology

Guaranteed Space-Borne Radiation Hardness for:

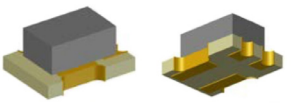
Total Ionization Dose (TID) Single Event Effects (SEE)

## Radiation Hardened FBG Ceramic Hermetic Discrete



| FBS Part Number | $V_{DS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ (mΩ) | $Q_G$ (nC) | Package Style |
|---|---|---|---|---|---|
| FBG04N08AX | 40 | 8 | 24 | 3 | FSMD-A |
| FBG10N05AX | 100 | 5 | 38 | 3 | FSMD-A |
| FBG20N04AX | 200 | 4 | 102 | 2 | FSMD-A |
| FBG04N30BX | 40 | 30 | 6 | 13 | FSMD-B |
| FBG10N30BX | 100 | 30 | 9 | 11 | FSMD-B |
| FBG20N18BX | 200 | 18 | 26 | 9.8 | FSMD-B |
| FBG30N04CX | 300 | 4 | 404 | 2.2 | FSMD-C |

## Radiation Hardened FDA Die Adaptor Discrete



| FBS Part Number | $V_{DS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ (mΩ) | $Q_G$ (nC) | Package Style |
|---|---|---|---|---|---|
| FDA04N08AX2 | 40 | 8 | 16 | 3 | FDA-2 |
| FDA10N05AX2 | 100 | 5 | 30 | 3 | FDA-2 |
| FDA20N04AX4 | 200 | 4 | 100 | 2 | FDA-4 |
| FDA04N30BX1 | 40 | 30 | 4 | 13 | FDA-1 |
| FDA10N30BX1 | 100 | 30 | 7 | 11 | FDA-1 |
| FDA20N18BX3 | 200 | 18 | 25 | 9.8 | FDA-3 |
| FDA30N04CX7 | 300 | 4 | 400 | 2.2 | FDA-7 |

## Radiation Hardened GaN Adaptor Modules — Multi-function Power Modules

### Applications:

Power Switches/Actuators • Single and Multi-Phase Motor Phase Drivers • Commercial Satellite EPS & Avionics • High Speed DC-DC Conversion/Point of Loads

| FBS Part Number | Description |
|---|---|
| FBS-GAM02-P-C50 | 50V,10A Half-Bridge Driver/Logic/Integrated power GaN HEMTs (Development Vehicle) |
| FBS-GAM02P-C-PSE | 50V, 10A Half-Bridge Driver/Logic for use with external Power GaN HEMTs (Development Vehicle) |
| FBS-GAM02-P-R50 | Radiation Hardened 50V, 10A Half-Bridge Driver/Logic/integrated output Power GaN HEMTs |
| FBS-GAM02P-R-PSE | Radiation Hardened 50V, 10A Half-Bridge Driver/Logic for use with external power GaN HEMTs |
| FBS-GAM04-P-C50 | 50V, 10A Dual low-side Driver/Logic/Integrated output power GaN HEMTs (Development Vehicle) |
| FBS-GAM04-P-R50 | Radiation Hardened 50V/10A Dual low-side Driver/Logic/integrated output power GaN HEMTs |
| FBS-GAM04P-C-PSE | 10A Dual low-Side Driver/Logic for use with external power GaN HEMTs (Development Vehicle) |
| FBS-GAM04P-R-PSE | Radiation Hardened 10A Dual low-Side Driver/Logic for use with external power GaN HEMTs |
| FBS-GAM04-P-C100 | 100V, 10A Dual low-side Driver/Logic/Integrated output power GaN HEMTs (Development Vehicle) |
| FBS-GAM04-P-R100 | Radiation Hardened 100V/10A Dual low-side Driver/Logic/integrated output power GaN HEMTs |

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