GMR10C000 Isolated Module (Triple Output)

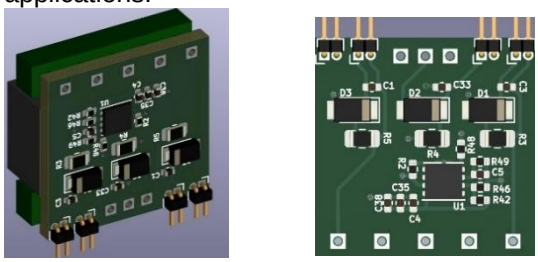
Product and Application Information

PRELIMINARY

1.0 Description

The GMR10C000, a 5W module, typically requires 22 VDC input, is a flyback converter with isolated 3-output module. Accompanied with GMR10D000 dual output Bias Power Controller for high power / high voltage applications, it provides all the floating biases for Upper switches and the lower switches. This series is specifically suitable for HV sources, even if bipolar, and system design demands stringent control of the fast switching power devices such as GaN, SiC. For IGBTs, module provides enough power for proper turn-Off bias as well.

An outstanding behavior of the control scheme applied is fast transient recovery- expected in its native applications.

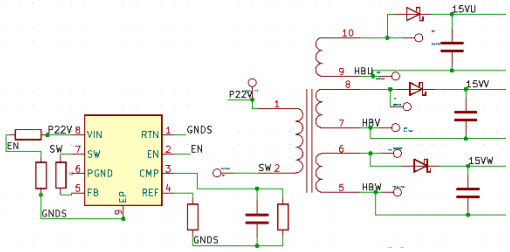


GMR10C000 Module Views

Figure 1

Features

* **Easy integration into systems board for** system start-up for both analog and digital multiple power devices.
* **Allows biasing multiple HV Gallium Nitride, Silicon Carbide, IGBT and MOSFETs**
* **Does not require detailed thermal management operating at its max power and temp.**
* **Companion modules allow easy integration with multiple gate drivers: 5v, 6v 12v or 15v. Options with -2, -3, -4 or -5v Turn OFF bias**



Equivalent schematic

Figure 2

Table 1. Table of Performance and Geometrical Information Reference to Plots

3 Outputs with load	Pkg Total Power Dissipation with load	Exposed IC dissipation with load	Exposed diode Dissipation	Module Efficiency	Module Pinouts & footprint
Fig 3	Fig 4	Fig 5	Fig 6	Fig 7	Fig 8 a-c

2.1 Test Setup Requirements

Safety: This evaluation module is not encapsulated and there are accessible voltages that are less than 50 V_{DC}. No special safety regulations are applicable for this module in its own test bed.

Voltage Source: Input 22VDC
Voltmeter: Digital voltage meter

Power Analyzer: Capable of measuring 1 mW to 20 W of input power and capable of handling 30 V input voltage. Some power analyzers may require a precision shunt resistor for measuring input current to measure input power of 0.5 W or less. Please read the power analyzer's user manual for proper measurement setups for full power and for stand-by power.

Oscilloscope:

- 4-Channel, 100 MHz bandwidth.
- Probes capable of handling 50 V.

Output Load: Resistive or electronic load capable of handling 5 W at 15 V.

Recommended Wire Gauge: Insulated 28 AWG to 26 AWG.

WARNING

Caution: Do not leave Module powered when unattended

2.2 Test Setup Diagram

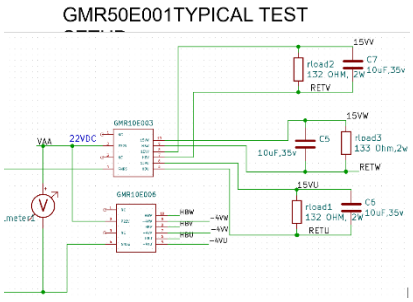


Figure 2. Module Test Setup Diagram (similar loads for -ve bias)

2.3 Eval Kit and Test Fixture:

Ganmar offers an Evaluation kit with 2 Module installed in sockets. One is GRM50E001(for 15V driver ON value) and the second one if for -4V floating outputs loaded (for most device Turn-Off). The Evaluation board is a high-performance Test Fixture. It allows users to explore isolation characteristics, output regulation, cross-coupling and output power, conducted/radiated EMI, temperature variation under user's ambient conditions. User can then determine if any heat sinking or EMI containment by adding a shielding is required. For technical help in this module integration, contact sales at Ganmar Technologies.

3.0 **Objective Performance Specifications**

The Design is from a simulation with only one output but with total expected input power. As such, the performance plots represent what is observed in a prototype design verification Triple output brass board.

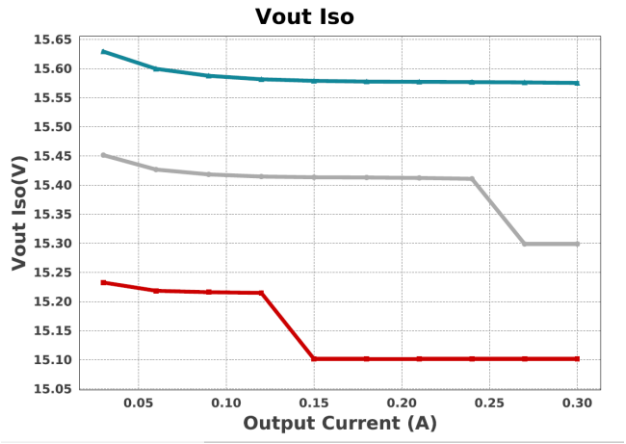


Figure 3. Outputs with Load

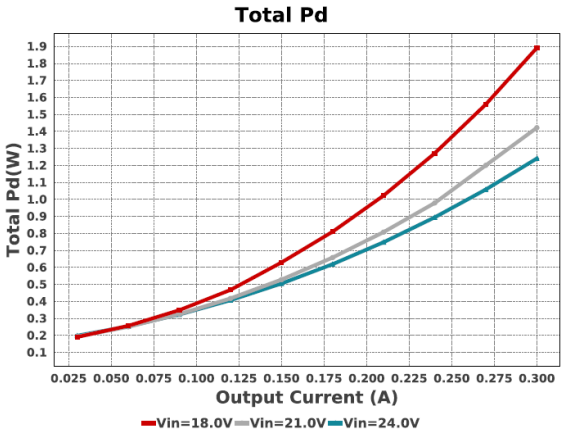


Figure 4. Total Power Dissipation with load

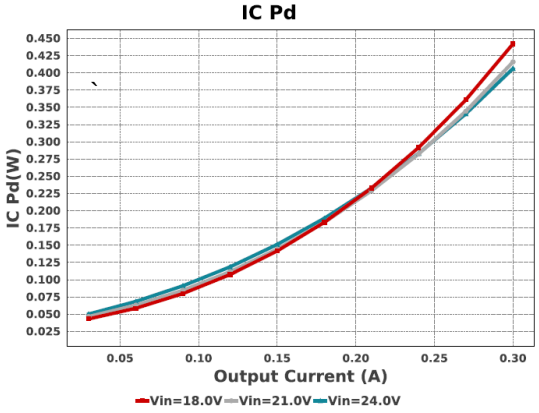


Figure 5. Exposed IC dissipation

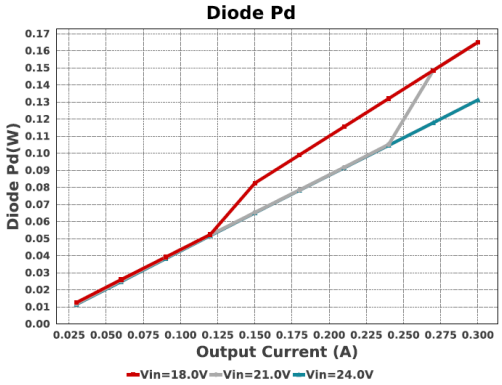


Figure 6. Exposed diode dissipation

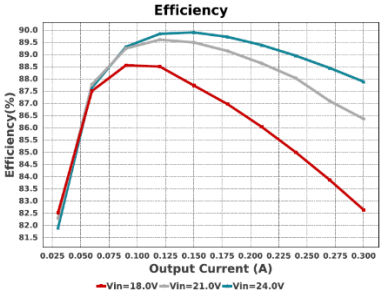
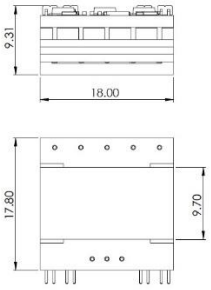


Figure 7. Module Efficiency (15V output, total power 5W)

4.0 Mechanical

Dimensions : mm



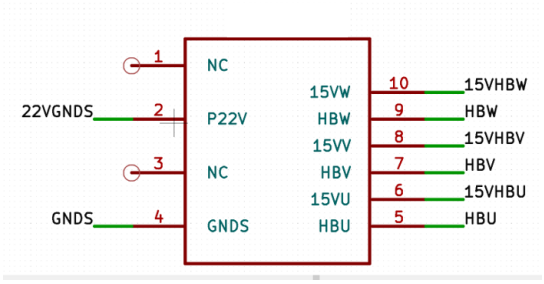


Figure 8a(Geom Dimensions) in mm (b) MODULE Pinouts

Figure 8c: Suggested Footprint on PCB

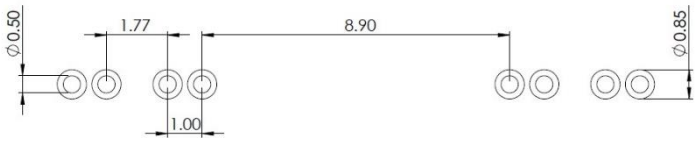


Table 2: List of Options for Turn-On and Turn-Off Output values

Action	GaN Systems	iGaN	Transphorm GaN or MOSFETs	WoolfSpeed:SiC or MOSFETs
Turn-On	+5V GMR10C001	+6V GMR10C003	+12V GMR10C005	+15V GMR10C007
Turn-Off	-2V GMR10C002	-4V GMR10C004	-4V GMR10C006	-5V GMR10C008

Note that Turn-Off modules can be field-set if users deem it necessary. Contact Tech support for further questions.