PRELIMINARY

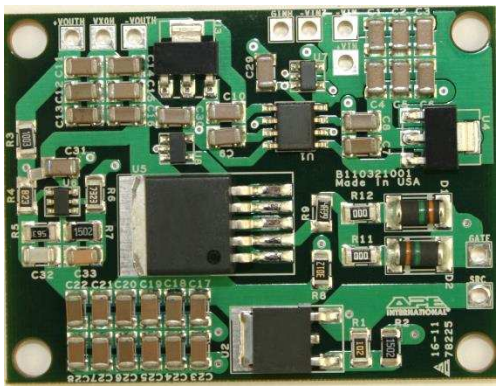
APE MTGD1-0012

Single Channel Isolated SiC JFET (Off) Gate Driver

FEATURES

- **Military Temperature: T_A = 125 °C, T_j = 150 °C**
- **Bi-polar Voltage Rails**
- **Programmable UVLO with hysteresis**
- **±14 A peak, ±4A continuous**
- **500 kHz Switching Frequency**
- **4000V Galvanic Signal Isolation**
- **Capable of Short Excursions to 150°C ambient**

500 kHz, ±14A



Absolute Maximum Ratings				
Symbol	**Parameter**	**Condition**	**Value**	**Units**
V_{DD}	Primary Power supply		-0.5 to 45	V
V_{DD-VSS}	Secondary Power Supply		-0.5 to 40	V
V_I	Logic Level Inputs		-0.5 to 6	V
I_o	Continuous output current	T_A = 25 °C	±4	A
I_o	Peak pulsed drain current	T_A = 25 °C	±14	A
T_j	Operating junction temperatures		-50 to 150	°C
T_{stg}	Storage temperature		-50 to 150	°C
V_{isol}	Insulation test voltage	AC, 1 min.	TBD	V
		AC, 1 s.	TBD	V

Electrical Characteristics

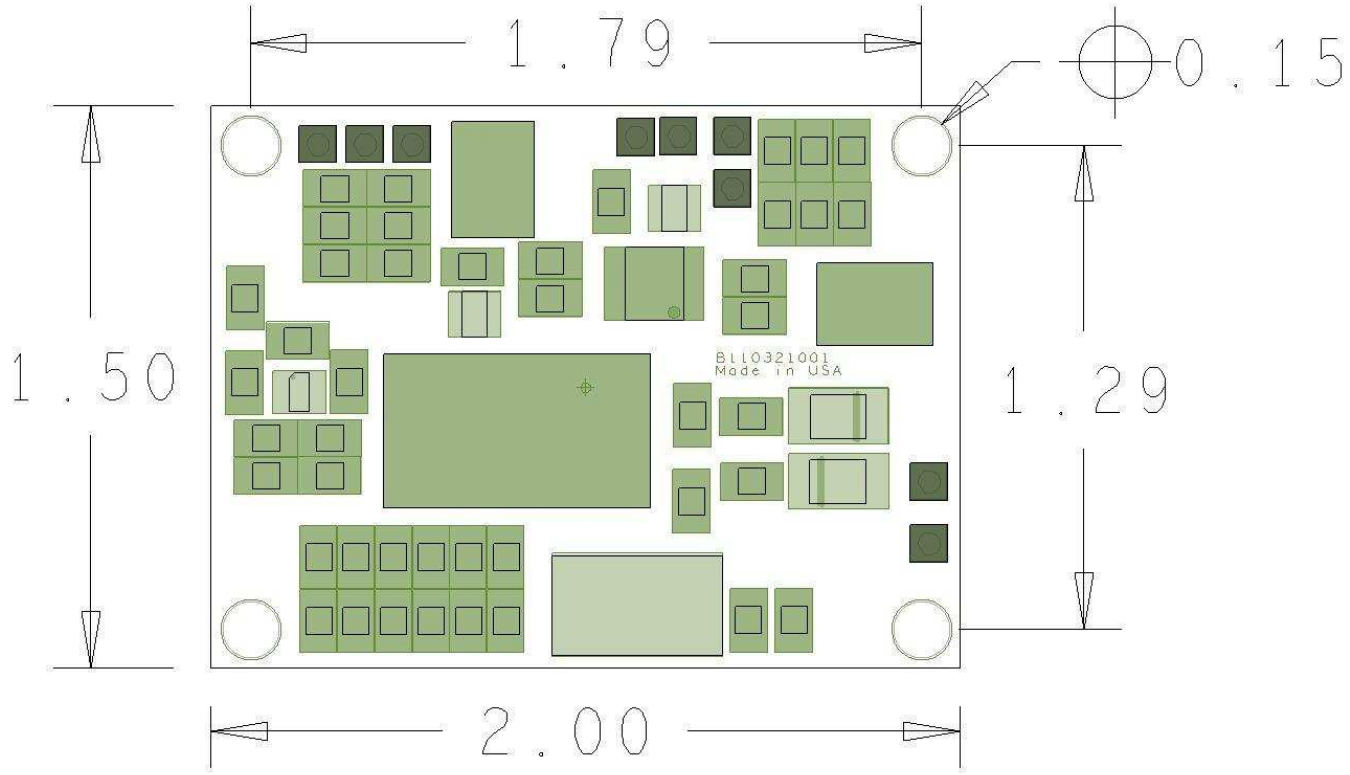
Symbols	Parameter	Condition(s)	Values			Units
			Min.	Typ.	Max.	
VDD_P	Primary Power Supply		6	12	35	V
VDD_S-VSS_S	Secondary Power Supply	UVLO disabled	4.5		35	V
		UVLO enabled	TBD		35	
V_{UVLO}	UVLO	Inactive		TBD		V
		Active		TBD		
		Hysteresis		TBD		
V_{IH}	Logic Level input voltages	High-level input voltage	3.15	-	6	V
V_{IL}		Low-level input voltage	0	-	1.35	
V_{OH}	Output voltage level	High-level output voltage	V_{DD}-0.025V	+5	-	V
V_{OL}		Low-level output voltage	-	-5	Vss+0.025 V	V
V_{IORM}	Working Voltage Isolation			600		V
C_{ISO}	Isolation Capacitance(1)			5		pF
CMTI	Common Mode Transient Immunity		25	40		kV/us
R_G	Output Resistance(2)	High		0.4	0.8	Ω
R_G		Low		0.3	0.6	
t_{on}	Output Rise Time	CLOAD=15nF, VCC=18V T_A=25°C		25		ns
t_{off}	Output Fall Time	CLOAD=15nF, VCC=18V T_A=25°C		18		
F_{sw}	Switching Frequency	Dependent on load, thermal limitation		500		kHz
t_{PHL}, t_{PLH}	Propagation delay	High-to-low/Low-to-High		140		ns

(1) Does not include Isolation Capacitance of external auxiliary isolated power supplies

(2) Output resistance of totem pole IC Additional gate resistance is added with SMD resistors

PACKAGE DIMENSIONS

All dimensions shown are in inches



COMPANION PARTS

Silicon Carbide Schottky Diode, APE-HT-xxxx
Silicon Carbide Discretes, APE-HT-0100 series

DISCLAIMER

ALL PRODUCT, PRODUCT SECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION, DESIGN OR OTHERWISE.

Arkansas Power Electronics International, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “APEI”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

All product data sheets, product manuals and any other product related documentation, and all APEI products, courtesy samples and services are subject to APEI’s Standard Terms and Conditions available online at http://www.apei.net/termsandconditions.pdf.

ALL APEI PRODUCTS, PROTOTYPES AND ANY OTHER DEVICES MADE BY APEI SHALL BE TREATED AS ENGINEERING SAMPLES AND AS SUCH APEI DOES NOT ACCEPT ANY PRODUCT LIABILITY, CLAIMS OR DAMAGES OR FUTURE OBLIGATIONS TO SUPPLY. THE CONTENTS DISCLOSED IN ANY DATASHEET AND ALL OF APEI'S PRODUCTS, PROTOTYPES AND OTHER DEVICES SOLD OR PROVIDED BY APEI ARE "AS-IS" WITH NO WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED. APEI DOES NOT WARRANT THAT ITS ENGINEERING SAMPLES ARE FULLY VERIFIED, TESTED, OR WILL OPERATE IN ACCORDANCE WITH ANY DATA SHEET SPECIFICATIONS. APEI DISCLAIMS ANY OBLIGATIONS FOR TECHNICAL SUPPORT AND BUG FIXES. APEI SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION DIRECT, INDIRECT, INCIDENTAL, SPECIAL, RELIANCE, PUNITIVE, STATUTORY OR CONSEQUENTIAL DAMAGES ARISING FROM OR IN CONNECTION WITH THE CONTENTS OF ANY PRODUCT DATASHEET OR THE USE, INSTALLATION, OR IMPLEMENTATION OF ENGINEERING SAMPLES IN ANY MANNER WHATSOEVER, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY THEREOF. APEI MAKES NO REPRESENTATION THAT ITS ENGINEERING SAMPLES PROVIDE ANY PARTICULAR FUNCTIONALITY, OR THAT ITS ENGINEERNIG SAMPLES WILL MEET THE REQUIREMENTS OF A PARTICULAR USER APPLICATION. APEI DOES NOT WARRANT THAT ITS ENGINEERING SAMPLES ARE ERROR-FREE, NOR DOES APEI MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, WHETHER EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

APEI'S PRODUCTS AND PROTOTYPES ARE ENGINEERING SAMPLES AND ARE NOT DESIGNED OR INTENDED TO BE FAIL-SAFE, FAULT TOLERANT OR FOR USE IN ANY APPLICATION THAT COULD LEAD TO DEATH, PERSONAL INJURY OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE (INDIVIDUALLY AND COLLECTIVELY, "CRITICAL APPLICATIONS"), SUCH AS LIFE-SUPPORT OR SAFETY DEVICES OR SYSTEMS, CLASS III MEDICAL DEVICES, NUCLEAR FACILITIES, APPLICATIONS THAT AFFECT CONTROL OF A VEHICLE OR AIRCRAFT, APPLICATIONS RELATED TO THE DEPLOYMENT OF AIRBAGS, OR ANY OTHER CRITICAL APPLICATIONS. APEI SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION DIRECT, INDIRECT, INCIDENTAL, SPECIAL, RELIANCE, PUNITIVE OR CONSEQUENTIAL DAMAGES IN ANY MANNER WHATSOEVER, ARISING FROM OR IN CONNECTION WITH THE USE OF ITS PRODUCTS, SAMPLES OR PROTOTYPES IN CRITICAL APPLICATIONS, EVEN IF APEI HAS BEEN ADVISED OF THE POSSIBILITY THEREOF.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of APEI.

ORDERING INSTRUCTIONS

An order for one or more parts can be initiated by issuing a purchase order to APEI, Inc. Please e-mail or fax your purchase order to sales@apei.net or +1.866.515.6604, respectively.

APEI, Inc.
535 W. Research Center Blvd.
Fayetteville, AR 72701
Phone: 479.443.5759 / Fax: 866.515.6604
www.apei.net