

Application Note



CAN-1200

Date: 8/6/15

Rev 0

1. Introduction

For converting the CREE half bridge evaluation board (P/N CRD8FF1217P-1) found in evaluation kits (P/N KIT8020CRD8FF1217P-1) to use the new 900V Gen3 MOSFET (P/N C3M0065090D). The conversion can be made by only replacing a few components on the board. The change is necessary due to the differences in gate drive requirements between the Gen2 (+20/-5) and Gen3 MOSFETs (+15/-3V).

2. Parts List

The following new parts referenced in Table 1 are needed to replace the components on the evaluation board to properly drive the new CREE Gen3 MOSFET. Please reference the schematic for the evaluation board in the Kit user manual or see Figure 5 where the affected components are highlighted in red.

Table 1 Components list to make the conversion to use C3M0065090D MOSFET.

Ref. No.	Mfg.	Mfg. P/N	Description	QTY
Q2, Q1	CREE	C3M0065090D	900V, 65 mohm Gen3 MOSFET	1 or 2
U4, U3	Murata	MEJ2D1209SC	12V, +/-9V, 2W iso power supply	2
Alt. U4, U3	Mornsun	G1209S-2W	12V, +/-9V, 2W iso power supply	2
ZD1, ZD4	Diodes Inc.	DDZ18C-7	18V Zener	2
ZD3, ZD6	ON Semi	MMSZ3V0T1G	3V Zener	2
ZD7, ZD8	ON Semi	MMSZ4706T1G	19V Zener	2
R1, R2, R6, R7	Any	Generic	4 Ohm, 1%, 1206 pkg. resistor	4

3. Testing

After replacing the components the test board is now ready to be used for evaluating the C3M MOSFET. Please follow the directions and safety notes as stated in the User's Manual for KIT8020CRD8FF1217P-1. In Figure 1 below is an example test circuit with critical output waveforms shown in Figures 2. Detailed waveforms of turn-on and turn off are shown in Figure 3 and 4 respectively.

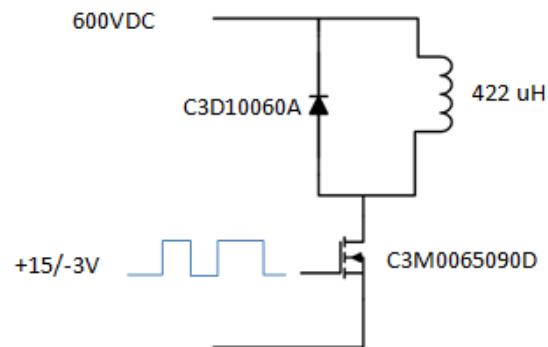


Figure 1 Double pulse test circuit.

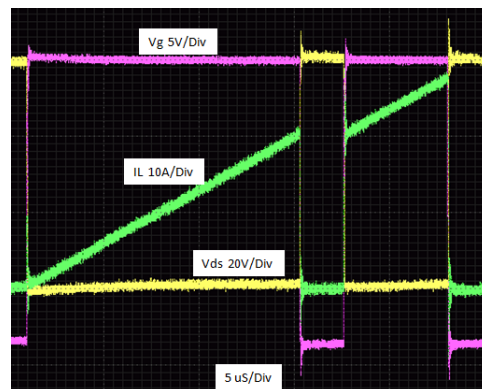


Figure 2 Double pulse test waveform.

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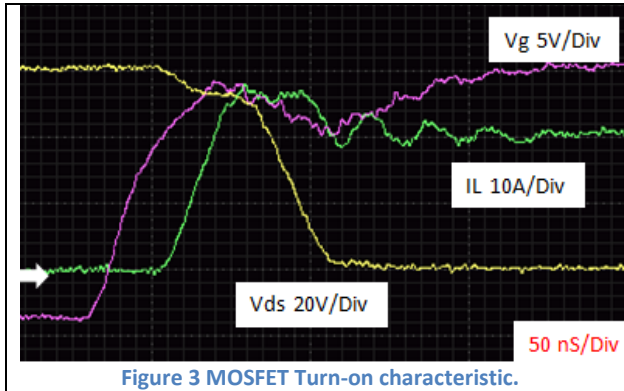


Figure 3 MOSFET Turn-on characteristic.

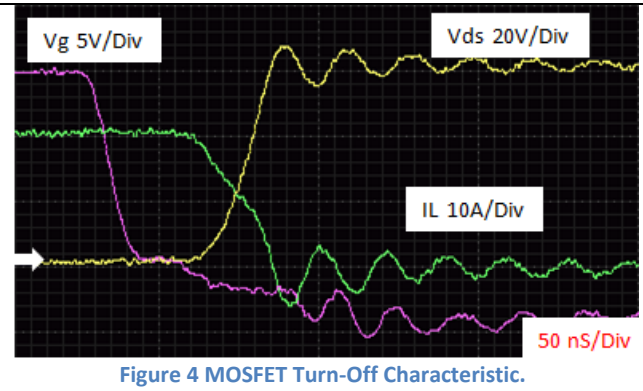


Figure 4 MOSFET Turn-Off Characteristic.

4. Schematic Reference

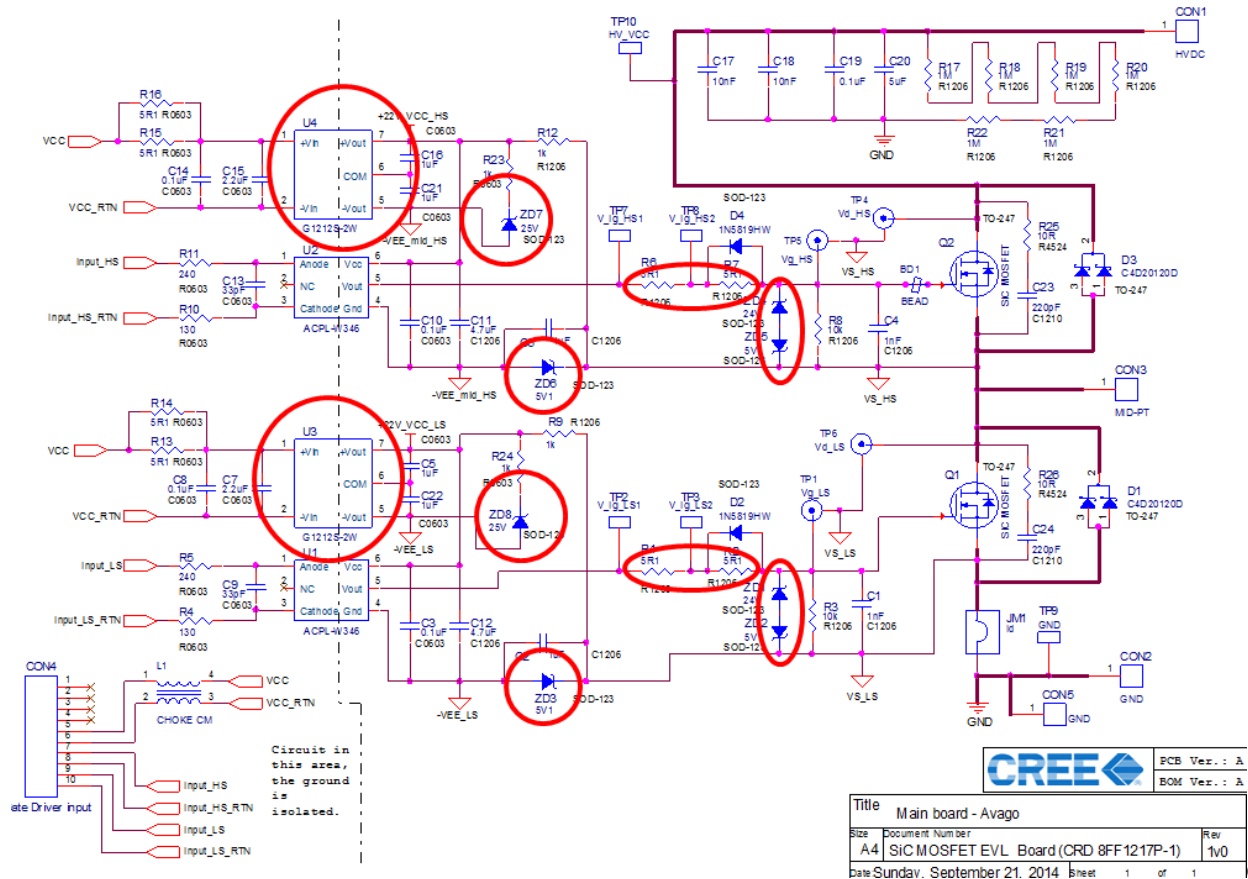


Figure 5 Evaluation board schematic for board CRD8FF1217P-1.

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