



Final Product/Process Change Notification

Document #:FPCN23766X

Issue Date:23 Mar 2021

Title of Change:	Reduction of Response Time after Boot Refresh to Improve System Transient Response Under a Wider Variety of Output Filters, Controller and System Configuration Options
Proposed First Ship date:	21 Jun 2021 or earlier if approved by customer
Contact Information:	Contact your local ON Semiconductor Sales Office or Ravi.Savanur@onsemi.com
PCN Samples Contact:	Contact your local ON Semiconductor Sales Office or < PCN.samples@onsemi.com >. Sample requests are to be submitted no later than 30 days from the date of first notification, Initial PCN or Final PCN, for this change. Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements.
Additional Reliability Data:	Contact your local ON Semiconductor Sales Office or Pete.Moberg@onsemi.com
Type of Notification:	This is a Final Product/Process Change Notification (FPCN) sent to customers. FPCNs are issued 90 days prior to implementation of the change. ON Semiconductor will consider this change accepted, unless an inquiry is made in writing within 30 days of delivery of this notice. To do so, contact PCN.Support@onsemi.com
Marking of Parts/ Traceability of Change:	Revision on the Part marking will be changed as indicated below.
Change Category:	A feature is updated: design change
Change Sub-Category(s):	Product specific change
Sites Affected:	
ON Semiconductor Sites	External Foundry/Subcon Sites
None	None

Description and Purpose:

As stated in the datasheet: "FDMF5062 and FDMF5071 monitor the Boot-SW voltage. If the voltage across the boot capacitor is lower than 3.3V, the FDMF5062 and FDMF5071 ignore the PWM input signal and starts the boot refresh cycle."

In order to improve the transient performance in a wider range of system designs, output filter selections, and controller configurations, the driver die for FDMF5062 and FDMF5071 will be modified to lower the boot refresh threshold to approximately 2.7V, and improve the time the power stage takes to respond to the PWM signal after a boot refresh. Only metal layers will be changed.

FDMF5062 Datasheet "Functional Description" FROM:**Boot Capacitor Refresh**

FDMF5062 monitors the Boot-SW voltage. If the voltage across the boot capacitor is lower than 3.3 V, the FDMF5062 ignores the PWM input signal and starts the boot refresh cycle. The boot refresh cycle turns on the low side MOSFET for 200 ns every 7 ~ 14 μ s until Boot-SW voltage is above 3.7 V. Usually a single refresh cycle is sufficient to re-charge the boot capacitor

FDMF5062 Datasheet "Functional Description" TO:**Boot Capacitor Refresh**

FDMF5062 monitors the Boot-SW voltage. If the voltage across the boot capacitor is lower than **2.7 V**, the FDMF5062 ignores the PWM input signal and starts the boot refresh cycle. The boot refresh cycle turns on the low side MOSFET for 200 ns every 7 ~ 14 μ s until Boot-SW voltage is above **3.1 V**. Usually a single refresh cycle is sufficient to re-charge the boot capacitor.

**Negative-OCP**

The FDMF5062 can detect large negative inductor current and protect the low side MOSFET. Once this negative current threshold is detected, SPS module takes control and truncates LS on-time pulse (LS FET is gated off regardless of PWM command). Driver will return to responding to PWM commands after 200 ns. So, if PWM is still being commanded LOW by the controller, then LS FET will turn back on.

FDMF5071 Datasheet "Functional Description" FROM:**Boot Capacitor Refresh**

FDMF5071 monitors the Boot-SW voltage. If the voltage across the boot capacitor is lower than 3.3 V, the FDMF5071 ignores the PWM input signal and starts the boot refresh cycle. The boot refresh cycle turns on the low side MOSFET for 200 ns every 7 ~ 14 μ s until Boot-SW voltage is above 3.7 V. Usually a single refresh cycle is sufficient to re-charge the boot capacitor.

Negative-OCP (NOCP)

The FDMF5062 can detect large negative inductor current and protect the low side MOSFET. Once this negative current threshold is detected, **the driver will turn off the low side MOSFET for 200 ns. If the PWM signal remains low, the low side MOSFET will turn back on at the expiration of the 200 ns timer. If at any time the PWM goes high, even during the 200 ns, the high side MOSFET will turn on.**

FDMF5071 Datasheet "Functional Description" TO:**Boot Capacitor Refresh**

FDMF5071 monitors the Boot-SW voltage. If the voltage across the boot capacitor is lower than **2.7 V**, the FDMF5071 ignores the PWM input signal and starts the boot refresh cycle. The boot refresh cycle turns on the low side MOSFET for 200 ns every 7 ~ 14 μ s until Boot-SW voltage is above **3.1 V**. Usually a single refresh cycle is sufficient to re-charge the boot capacitor.

	From	To
Product marking change	5071 C1 XXXXXX	5071 C4 XXXXXX
	5062 A0 XXXXXX	5062 A1 XXXXXX

Reliability Data Summary:QV DEVICE NAME: **FDMF3009**RMS: **W51121, F53306**PACKAGE: **PQFN 5x6 39ld**

Test	Specification	Condition	Interval	Results
HTOL	JESD22-A108	Ta= 125°C, 100 % max rated Vcc	1008 hrs	0/236
HTSL	JESD22-A103	Ta= 150°C	1008 hrs	0/240
TC	JESD22-A104	Ta= -65°C to +150°C	500 cyc	0/240
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	192 hrs	0/239
uHAST	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs	0/240
PC	J-STD-020 JESD-A113	MSL 1 @ 260°C	TC, HAST, UHAST	0/719

QV DEVICE NAME: **FDMF5071**RMS: **W75185**PACKAGE: **PQFN 5x6 39ld**

Test	Specification	Condition	Interval	Results
HTOL	JESD22-A108	Ta= 125°C, 100 % max rated Vcc	168 hrs	0/80

Electrical Characteristics Summary:

Electrical characteristics are not impacted.

**List of Affected Parts:**

Note: Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the **PCN Customized Portal**.

Part Number	Qualification Vehicle
FDMF5062	FDMF5071
FDMF5071	FDMF5071