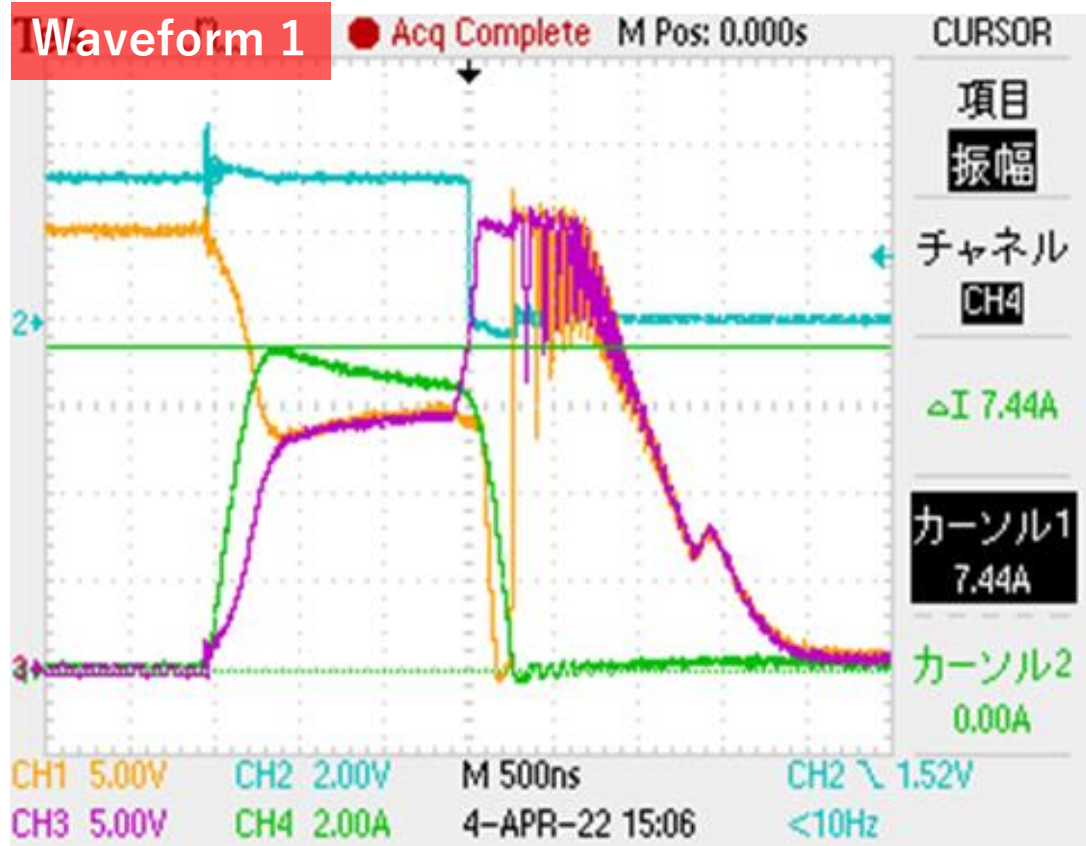


About DRV8426E

About behavior for short-circuit(1)

Customers are conducting short-circuit tests on suppose that the motor is short-circuited.
I got the waveform at the time of short circuit from customer.
Please comment on this behavior.



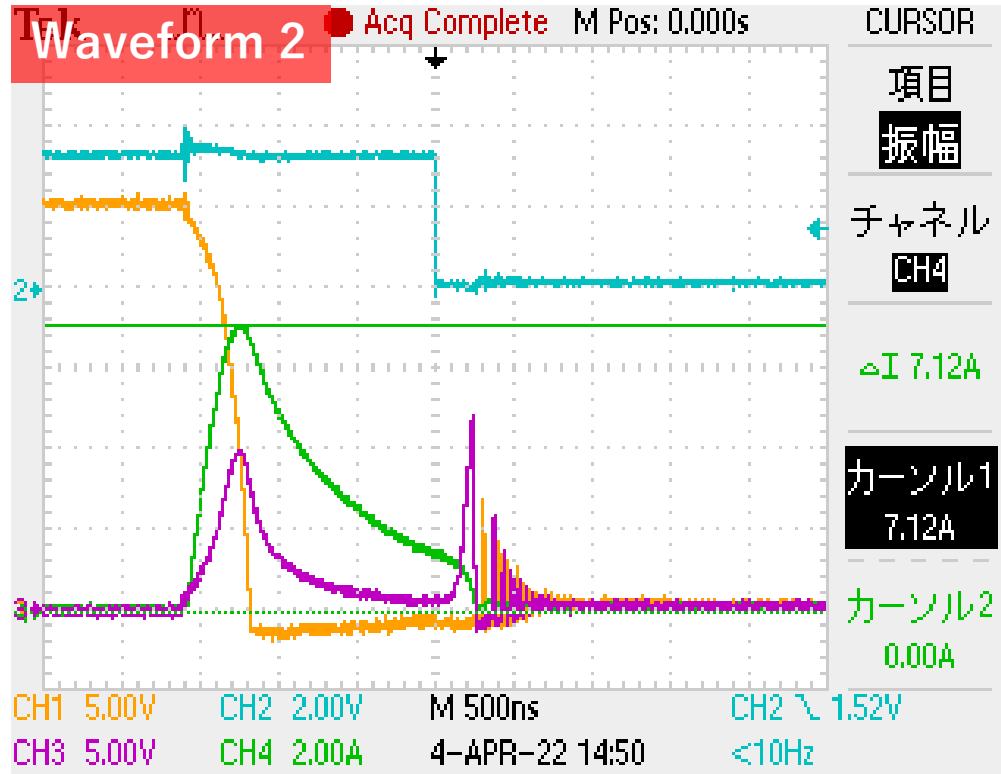
- When short-circuited, it looks like it is clamped at about 7.4A.
- Clamped before I_{trip} 's Blanking time (Typ 1.0 μ s)

<Question>

Is there a factor that limits the current except for I_{trip} function?

Ch1:AOUT1, Ch2:/FAULT,
Ch3:AOUT2, Ch4:Short current

About behavior for short-circuit(2)



Ch1:AOUT1, Ch2:/FAULT,
Ch3:AOUT2, Ch4:Short current

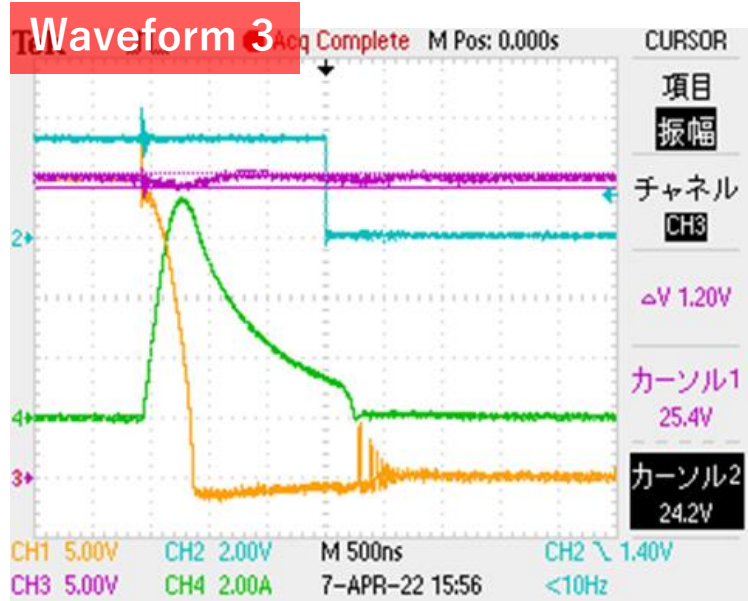
The same short-circuit test as slide 2, but unlike slide 2, nFault asserts after lowering without clamping with 1.8us (Iocp deglitch time), more than 7A current.

I recognize Table 7-6 as a condition of nFault assertion.

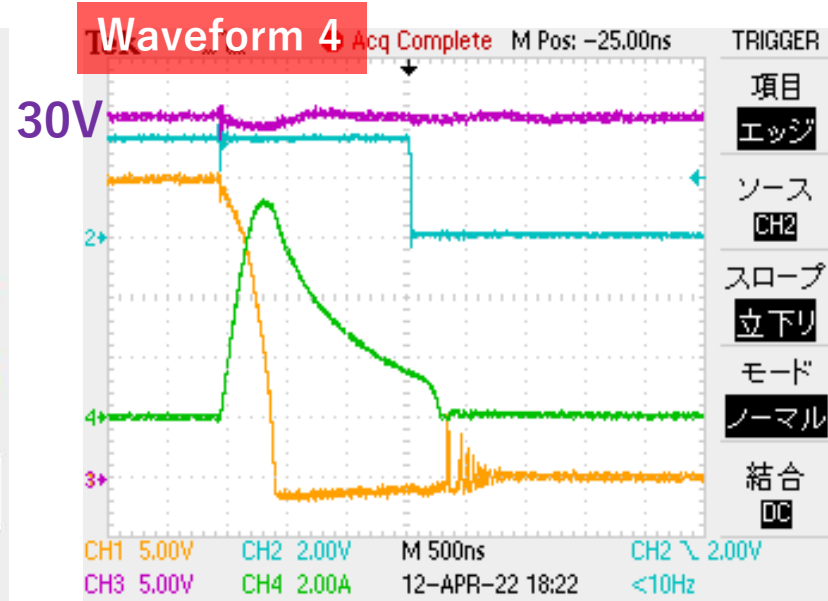
Table 7-6. Fault Condition Summary

FAULT	CONDITION	ERROR REPORT	H-BRIDGE	CHARGE PUMP	LOGIC	RECOVERY
VM undervoltage (UVLO)	$V_M < V_{UVLO}$	nFAULT	Disabled	Disabled	Reset ($V_{DVDD} < 3.9V$)	Automatic: $V_M > V_{UVLO}$
VCP undervoltage (CPUV)	$V_{CP} < V_{CPUV}$	nFAULT	Disabled	Operating	Operating	$V_{CP} > V_{CPUV}$
Overcurrent (OCP)	$I_{OUT} > I_{OCP}$	nFAULT	Disabled	Operating	Operating	Latched
Thermal Shutdown (OTSD)	$T_J > T_{TSD}$	nFAULT	Disabled	Disabled	Operating	Latched

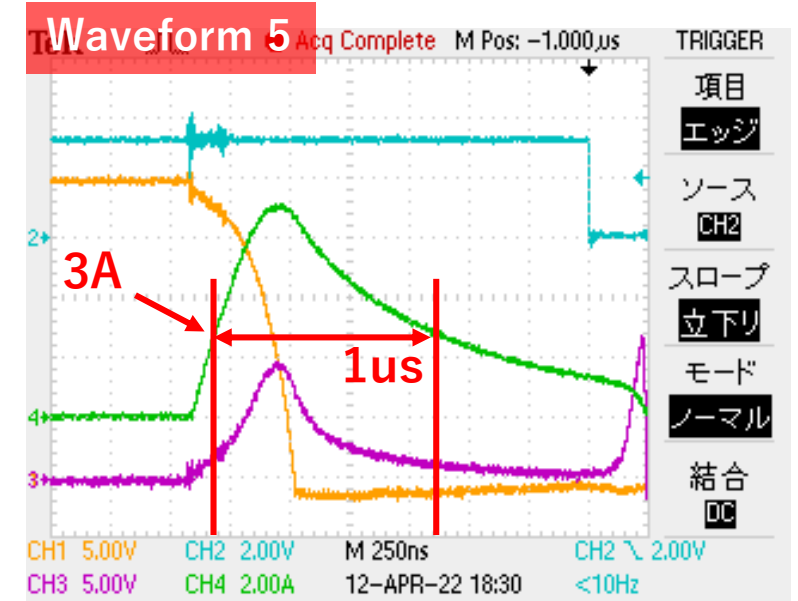
Supplement to slide 3



Ch1:AOUT1, Ch2:/FAULT,
Ch3:VM, Ch4:Short current



Ch1:AOUT1, Ch2:/FAULT,
Ch3:VCP, Ch4:Short current



Ch1:AOUT1, Ch2:/FAULT,
Ch3:AOUT2, Ch4:Short current

- As shown in Waveform 3, the VM is not UVLO.
- As shown in waveform 4, Vcp has no problem ($V_{cp}=30V$).
- Regarding OTSD, I confirmed it with a customer, but it has not risen as much as OTSD.
- The cause of OCP was confirmed in waveform 5, but it was about 1.0 μ s at 3A. Much smaller than deglitch time for I_{ocp} .

<Question>

Although there is no factor to assert nFault, Is there any factor?

The current is dropping before the I_{trip} Blanking time, is there any factor that clamps on the device?

**If you need our customer's circuit,
we will send you it using private message on E2E.**