XC8107 Series

85mΩ High-performance Power Switch

■GENERAL DESCRIPTION

The XC8107 series is a P-channel MOSFET power switch IC with a low ON resistance. A current limit, reverse current prevention (prevents reverse current from V_{OUT} to V_{IN}), soft start, thermal shutdown, and an under voltage lockout (UVLO) are incorporated as protective functions. A flag function monitors the power switch status.

The flag output has N-channel open drain configuration, and it outputs Low level signal when over-current or overheating is detected, or when the reverse current prevention is operated. The voltage level which is fed to CE pin determines the status of XC8107. The logic level of CE pin is selectable between either one of active high or active low.

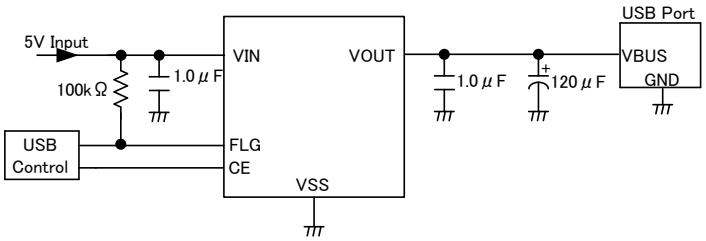
■APPLICATIONS

- ●Set Top Boxes
- ●Digital TVs
- ●PCs
- ●USB Ports/USB Hubs
- ●HDMI

■FEATURES

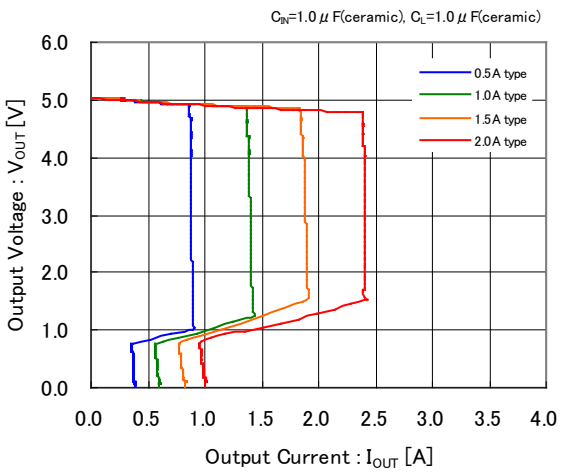
Input Voltage	: 2.5V ~ 5.5V
Maximum Output Current	: 2A
ON Resistance	: 85mΩ@V_{IN}=5.0V *USP-6C 100mΩ@V_{IN}=5.0V *SOT-25 (XC8107A,B) 95mΩ@V_{IN}=5.0V *SOT-25 (XC8107X,Y)
Supply Current	: 40μA@ V_{IN}=5.0V
Stand-by Current	: 0.01μA
Flag Delay Time	: 7.5ms * At over-current detection : 4ms * At reverse voltage detection
Protection	: Reverse Current Prevention Thermal Shutdown Under Voltage Lockout (UVLO)
Functions	: Flag Output CE Pin Input Logic Selectable C_L Discharge Soft-start
Current Limit Response Time	: 2μs *Reference value
Operating Ambient Temperature	: -40℃ ~ 105℃
Packages	: USP-6C SOT-25 (Au wire or Cu wire)
Environmentally Friendly	: EU RoHS Compliant, Pb Free

■TYPICAL APPLICATION CIRCUIT



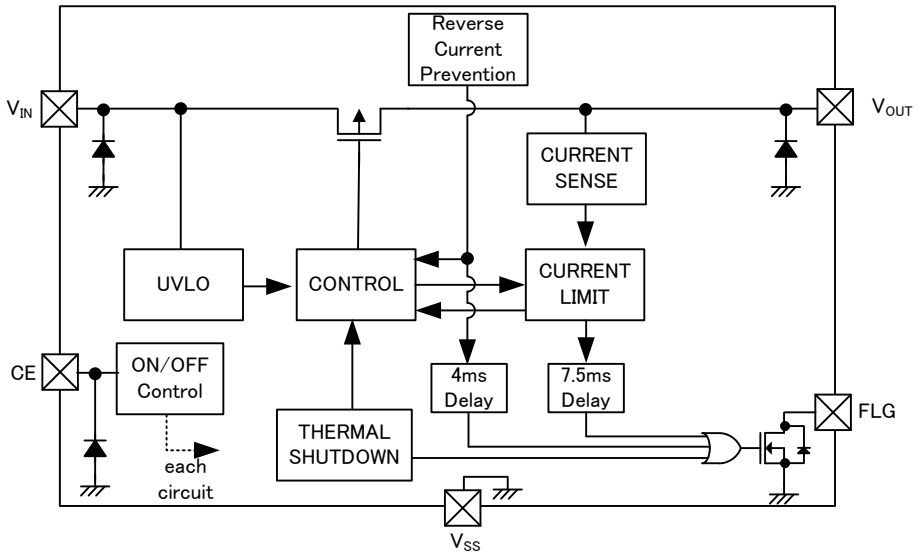
■TYPICAL PERFORMANCE CHARACTERISTICS

XC8107xCxxxR

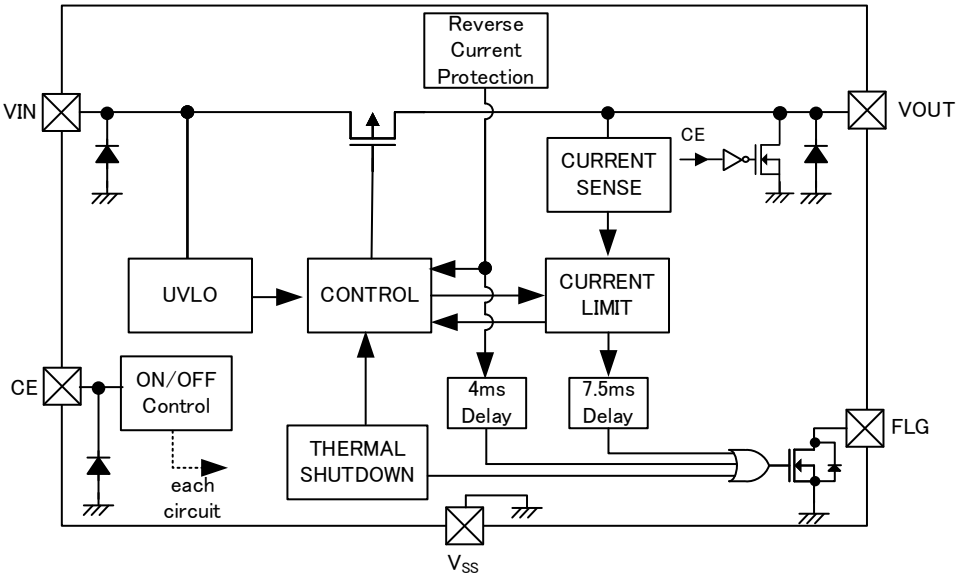


■BLOCK DIAGRAM

XC8107xC / XC8107xD



XC8107xE / XC8107xF



* Diodes inside the circuit are an ESD protection diode and a parasitic diode.

■PRODUCT CLASSIFICATION

●Ordering Information

XC8107①②③④⑤⑥−⑦

DESIGNATOR	ITEM	SYMBOL	DESCRIPTION
①	CE Logic	A	Refer to Selection Guide
		B	
②	Protection Circuits Type	C	
		D	
		E	
		F	
③④	Maximum Output Current	05	0.5A
		10	1.0A
		15	1.5A
		20	2.0A
⑤⑥−⑦ (*1)	Packages	ER-G	USP-6C (3,000pcs/Reel)

(*1) The “-G” suffix denotes Halogen and Antimony free as well as being fully EU RoHS compliant.

●Selection Guide

TYPE ①②	Current Limit / Reverse Current Prevention	CE Logic	C_L Discharge
AC (*2)	Automatic Recovery	Active High	-
AE (*2)			Yes
BC		Active Low	-
BE			Yes
AD (*2)	Latch Protection	Active High	-
AF (*2)			Yes
BD		Active Low	-
BF			Yes

(*2) AC/AD/AE/AF is the standard type.

■PRODUCT CLASSIFICATION

XC8107①②③④⑤⑥−⑦

DESIGNATOR	ITEM	SYMBOL		DESCRIPTION
		Au wire	Cu wire	
①	CE Logic	A	X	Refer to Selection Guide
		B	Y	
②	Protection Circuits Type	C		
		D		
		E		
		F		
③④	Maximum Output Current	05		0.5A
		10		1.0A
		15		1.5A
		20		2.0A
⑤⑥−⑦ (*1)	Packages	MR-G		SOT-25 (3,000pcs/Reel)

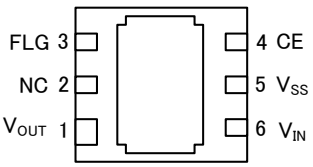
(*1) The “-G” suffix denotes Halogen and Antimony free as well as being fully EU RoHS compliant.

●Selection Guide

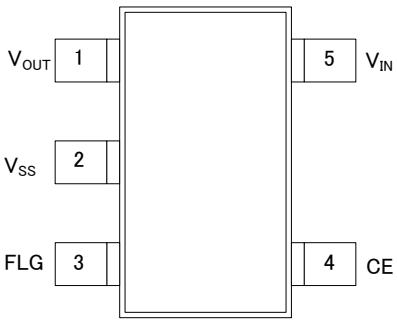
TYPE ①②	Wire	Current Limit / Reverse Current Prevention	CE Logic	C_L Discharge
AC	Au	Automatic Recovery	Active High	-
AE				Yes
BC			Active Low	-
BE				Yes
AD		Latch Protection	Active High	-
AF				Yes
BD			Active Low	-
BF				Yes
XC (*2)	Cu	Automatic Recovery	Active High	-
XE (*2)				Yes
YC			Active Low	-
YE				Yes
XD (*2)		Latch Protection	Active High	-
XF (*2)				Yes
YD			Active Low	-
YF				Yes

(*2) XC/XD/XE/XF is the standard type.

■PIN CONFIGURATION



USP-6C
(BOTTOM VIEW)



SOT-25
(TOP VIEW)

* The dissipation pad for the USP-6C packages should be solder-plated for mounting strength and heat dissipation.
Please refer to the reference mount pattern and metal masking. The dissipation pad should be connected to the V_{SS} (No. 5) pin.

■PIN ASSIGNMENT

PIN NAME		PIN NAME	FUNCTIONS
USP-6C	SOT-25		
1	1	V_{OUT}	Output
2	-	NC	No connection
3	3	FLG	Fault Report
4	4	CE	ON/OFF Control
5	2	V_{SS}	Ground
6	5	V_{IN}	Power Input

■FUNCTION

PIN NAME	SIGNAL	STATUS	Applied voltage to V_{IN}	Applied voltage to V_{OUT}	Pch Driver FET	Reverse Protection
CE	XC8107A:H XC8107X:H XC8107B:L XC8107Y:L	Active	2.5V ~ 5.5V	-	ON	-
			(V_{OUT} - V_{REV}) ~ V_{OUT}	2.5V ~ 5.5V	ON	Backflow from V_{IN} to V_{OUT}
			0V ~ (V_{OUT} - V_{REV})	2.5V ~ 5.5V	OFF	Yes
			0V ~ 2.5V	-	Undefined	Undefined
			-	0V ~5.5V		
	XC8107A:L XC8107X:L XC8107B:H XC8107Y:H	Stand-by	2.5V ~ 5.5V	-	OFF	-
			0V ~ V_{OUT}	2.5V ~ 5.5V	OFF	Yes
			0V ~ 2.5V	-	Undefined	Undefined
			-	0V ~5.5V		
	OPEN	Undefined	-	-	Undefined	Undefined

■ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNITS
Input Voltage		V_{IN}	-0.3 ~ 6.0	V
Output Voltage		V_{OUT}	-0.3 ~ 6.0	V
CE Input Voltage		V_{CE}	-0.3 ~ 6.0	V
FLG Pin Voltage		V_{FLG}	-0.3 ~ 6.0	V
FLG Pin Current		I_{FLG}	15	mA
Power Dissipation (Ta=25℃)	USP-6C	Pd	120 (IC only)	mW
			1000 (40mm x 40mm Standard board) (*1)	
			1250 (JESD51-7 board) (*1)	
	SOT-25		250 (IC only)	
			600 (40mm x 40mm Standard board) (*1)	
			760 (JESD51-7 board) (*1)	
Operating Ambient Temperature		Topr	-40 ~ 105	℃
Storage Temperature		Tstg	-55 ~ 125	℃

* All voltages are described based on the V_{SS}.

(*1) The power dissipation figure shown is PCB mounted and is for reference only.
Please refer to PACKAGING INFORMATION for the mounting condition.

■ELECTRICAL CHARACTERISTICS

Ta=25℃

PARAMETER	SYMBOL	CONDITIONS		MIN.	TYP.	MAX.	UNITS	CIRCUIT
Input Voltage	V_{IN}	-		2.5	-	5.5	V	①
On Resistance	R_{ON}	USP-6C	V_{IN}=3.3V (*1)	-	100	110	mΩ	①
			V_{IN}=5.0V (*1)	-	85	104	mΩ	
		SOT-25 (XC8107A/B)	V_{IN}=3.3V (*1)	-	115	135	mΩ	
			V_{IN}=5.0V (*1)	-	100	120	mΩ	
		SOT-25 (XC8107X/Y)	V_{IN}=3.3V (*1)		110	130	mΩ	
			V_{IN}=5.0V (*1)		95	115	mΩ	
Supply Current	I_{SS}	V_{OUT}=OPEN		-	40	75	μA	②
Stand-by Current	I_{STBY}	V_{IN}=5.5V, V_{OUT}=OPEN V_{CE}=V_{SS} (XC8107A/X) V_{CE}=V_{IN} (XC8107B/Y)		-	0.01	1.0	μA	②
Switch Leakage Current	I_{LEAK}	V_{IN}=5.5V, V_{OUT}=0V V_{CE}=V_{SS} (XC8107A/X) V_{CE}=V_{IN} (XC8107B/Y)		-	0.01	1.0	μA	②
Current Limit	I_{LIMT}	V_{OUT}=V_{IN}-0.3V, XC8107xx05		0.81	0.90	0.99	A	①
		V_{OUT}=V_{IN}-0.3V, XC8107xx10		1.26	1.40	1.54	A	
		V_{OUT}=V_{IN}-0.3V, XC8107xx15		1.71	1.90	2.09	A	
		V_{OUT}=V_{IN}-0.3V, XC8107xx20		2.16	2.40	2.64	A	
Short-Circuit Current	I_{SHORT}	V_{OUT}=0V, XC8107xx05		-	0.45	-	A	①
		V_{OUT}=0V, XC8107xx10		-	0.70	-	A	
		V_{OUT}=0V, XC8107xx15		-	0.95	-	A	
		V_{OUT}=0V, XC8107xx20		-	1.20	-	A	
Current Limit Circuit Response Time (*2)	t_{CLR}	V_{IN}=5.0V, V_{OUT}: OPEN→0V Measure from V_{OUT}=0V to when current falls below a certain I_{LIM} value		-	2.0	-	μs	①
CE "H" Level Voltage	V_{CEH}	V_{IN}=5.5V, XC8107A/X		1.5	-	5.5	V	①
		V_{IN}=5.5V, XC8107B/Y		V_{SS}	-	0.8		
CE "L" Level Voltage	V_{CEL}	V_{IN}=5.5V, XC8107A/X		V_{SS}	-	0.8	V	①
		V_{IN}=5.5V, XC8107B/Y		1.5	-	5.5		
CE "H" Level Current	I_{CEH}	V_{IN}=5.5V, V_{CE}=5.5V		-0.1	-	0.1	μA	①
CE "L" Level Current	I_{CEL}	V_{IN}=5.5V, V_{CE}=0V		-0.1	-	0.1	μA	①
UVLO Detected Voltage	V_{UVLOD}	V_{IN}: 2.2V→1.7V		1.8	1.9	2.0	V	①
UVLO Released Voltage	V_{UVLOR}	V_{IN}: 1.7V→2.2V		1.9	2.0	2.1	V	①
UVLO Hysteresis	V_{UHYS}	-		-	0.1	-	V	①

NOTE:

Unless otherwise stated, V_{IN}=5.0V, I_{OUT}=1mA, V_{CE}=V_{IN} (XC8107A/X) or V_{CE}=V_{SS} (XC8107B/Y)

(*1) I_{OUT}=0.25A (XC8107xx05), I_{OUT}=0.5A (XC8107xx10), I_{OUT}=0.75A (XC8107xx15), I_{OUT}=1.0A (XC8107xx20)

(*2) Design reference value. This parameter is provided only for reference.

■ELECTRICAL CHARACTERISTICS (Continued)

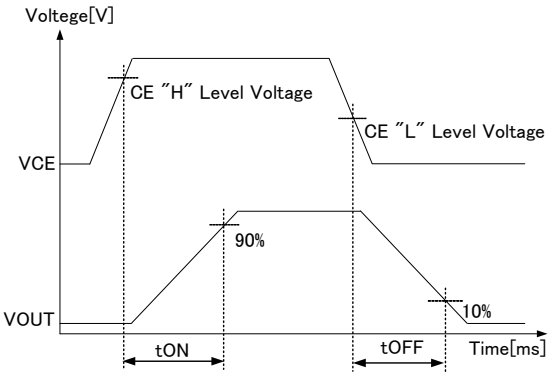
Ta=25℃

PARAMETER	SYMBOL	CONDITIONS		MIN.	TYP.	MAX.	UNITS	CIRCUIT
turn-on time	t_{ON}	R_{LOAD}=10Ω, V_{CE}=0V→2.2V		-	0.60	1.00	ms	①
turn-off time	t_{OFF}	R_{LOAD}=10Ω, V_{CE}=2.2V→0V		-	0.08	0.13	ms	①
FLG output FET On-resistance	R_{FLG}	I_{FLG}=10mA, V_{OUT}=5.5V		-	15	20	Ω	③
FLG output FET Leakage Current	I_{FOFF}	V_{IN}=5.5V, V_{FLG}=5.5V, V_{OUT}=OPEN		-	0.01	0.1	μA	③
FLG delay time	t_{FD1}	over-current condition		6.5	7.5	8.5	ms	①
	t_{FD2}	reverse-voltage condition		2.7	4.0	4.7	ms	①
Reverse Current	I_{REV}	V_{IN}=0V, V_{OUT}=5.5V V_{CE}=5.0V (XC8107A/X) V_{CE}=V_{SS} (XC8107B/Y)		-	0.1	1.0	μA	①
Reverse Current Prevention Detect Voltage	V_{REV_D}	V_{IN}: 5.0V→4.7V V_{OUT}=5.0V	USP-6C	-	140	-	mV	①
			SOT-25 (XC8107A/B)	-	170	-		
			SOT-25 (XC8107X/Y)	-	160	-		
Thermal Shutdown Detect Temperature	T_{TSD}	Junction Temperature		-	150	-	℃	①
Thermal Shutdown Release Temperature	T_{TSR}	Junction Temperature		-	130	-	℃	①
Thermal Shutdown Hysteresis Width	T_{HYS}	Junction Temperature		-	20	-	℃	①
C_L Discharge Resistance (XC8107xE, XC8107xF)	R_{DCHG}	V_{IN}=2.5V, V_{OUT}=2.5V V_{CE}=V_{SS} (XC8107A/X) V_{CE}=V_{IN} (XC8107B/Y)		-	150	210	Ω	①

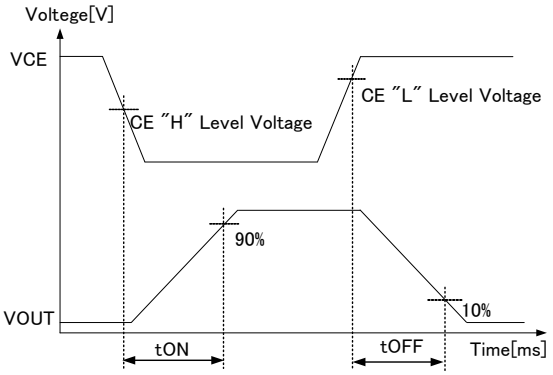
NOTE:
Unless otherwise stated, V_{IN}=5.0V, I_{OUT}=1mA, V_{CE}=V_{IN} (XC8107A/X) or V_{CE}=V_{SS} (XC8107B/Y)

■TIMING CHART

●turn-on time, turn-off time



XC8107A/X

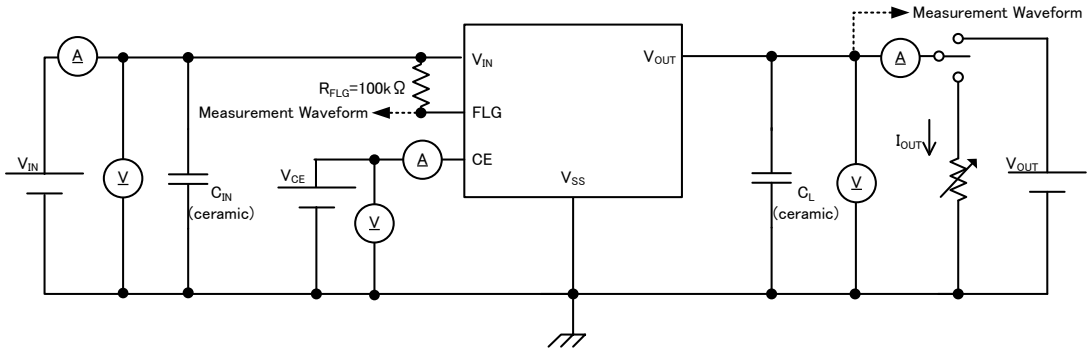


XC8107B/Y

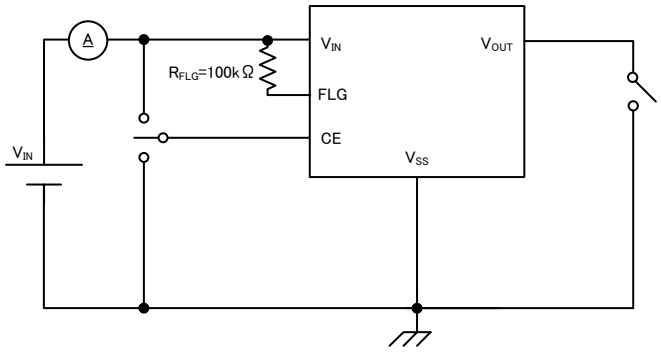
■TEST CIRCUITS

C_{IN}=1.0μF, C_L=1.0μF

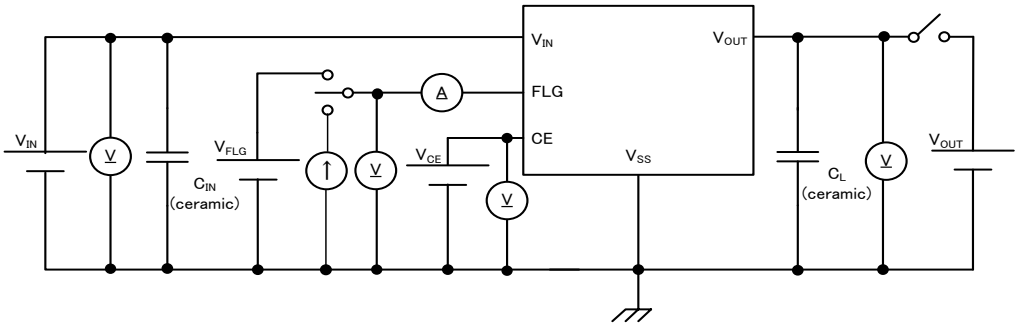
CIRCUIT①



CIRCUIT②



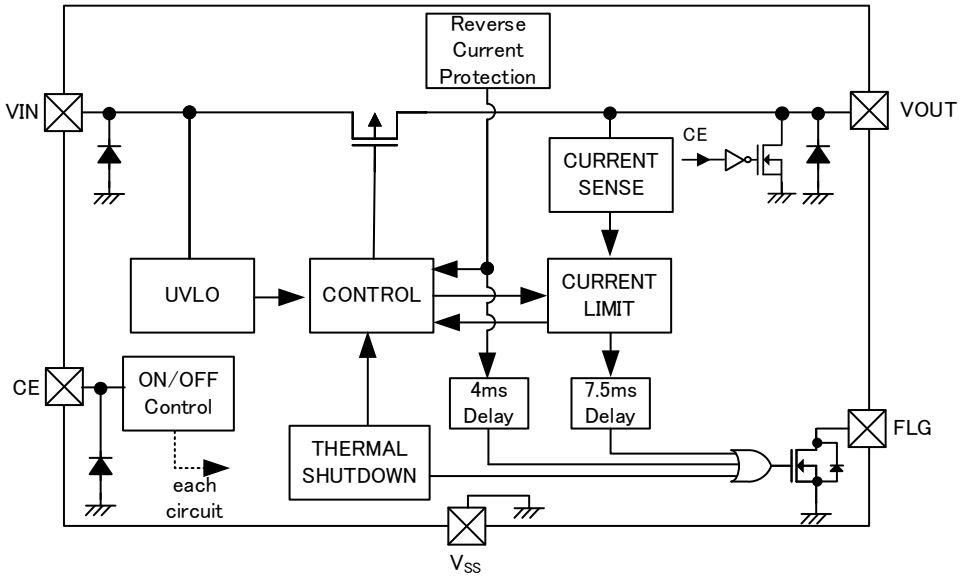
CIRCUIT③



■OPERATIONAL EXPLANATION

The XC8107 series is a P-channel MOSFET power switch IC.

The XC8107 series consists of a CE circuit, UVLO circuit, thermal shutdown circuit, current limiter circuit, reverse current prevention circuit, control block and others. The gate voltage of the power switch transistor is controlled with control block. The current limiter circuit and reverse current prevention circuit will operate based on the output voltage and output current.



BLOCK DIAGRAM (XC8107xE, XC8107xF)

<CE Pin>

The voltage level which is fed to CE pin controls the status of this IC. If either “H” level or “L” level which is defined as the electrical specification is fed to CE pin, then XC8107 can operate in standard manner. However, if the middle voltage which is neither “H” level nor “L” level is fed to CE pin, the consumption current will increase due to the shoot-through current at internal circuits. Also if CE pin is open, the status of XC8107 cannot be fixed and the behavior will be unstable.

<Thermal Shutdown>

For protection against heat damage of the ICs, thermal shutdown function is built in. When the internal junction temperature reaches the temperature limit, the thermal shutdown circuit operates and the power switch transistor will turn OFF. The IC resumes its operation when the thermal shutdown function is released and the IC’s operation is automatically restored because the junction temperature drops to the level of the thermal shutdown release temperature. When the thermal shutdown circuit detects higher junction temperature than the detect temperature, the voltage level of FLG pin is low level. When the thermal shutdown circuit detects lower junction temperature than the release temperature, the thermal shutdown function is released and the voltage level of FLG pin is high level.

<Under Voltage Lockout (UVLO) >

When the V_{IN} pin voltage goes down to lower voltage than UVLO detected voltage, the power switch transistor turns OFF by UVLO function in order to prevent false output caused by unstable operation of the internal circuitry. When the V_{IN} pin voltage goes up to higher voltage than UVLO released voltage, the UVLO function is released and the power switch transistor can turn ON.

<Soft-start Function>

The soft-start circuit can reduce the in-rush current charged on the output capacitor when IC starts up. Additionally, due to the reduction of the in-rush current, the circuit can reduce the fluctuation of the input voltage as well. The soft-start time is optimized internally and defined as turn-on time. (TYP: 0.6ms)

■OPERATIONAL EXPLANATION (Continued)

<Current limiter, short-circuit protection>

When the output current reaches the current limit value, the current limit function is activated.

When the current limiting function operates, the constant current limiting circuit operates to reduce the output voltage while maintaining the output current.

The short-circuit protection function operates when the output voltage drops below 0.7V (TYP.).

The behavior after the current limit or short circuit protection function is activated differs depending on the product type. The operation of each type is as follows.

Automatic Recovery type: XC8107xC, XC8107xE

After 7.5ms (TYP.) has passed since the current limiting function was activated, the FLG pin changes to Low level output.
After the short-circuit protection function operates, the output current is reduced to the short-circuit current.

If the overcurrent state continues, this state is maintained.
When the overcurrent state is resolved and the state below the maximum output current continues for 7.5ms (TYP.), the FLG pin returns to High level output.

Latch off type: XC8107xD, XC8107xF

After 7.5ms (TYP.) elapses when the current limiting function is activated, the FLG pin changes to Low level output and the switch transistor turns off. The off state is maintained regardless of whether the overcurrent state is resolved.

Latch operation is released by turning off the IC with the CE pin signal and then restarting, or by lowering the input voltage below the UVLO detected voltage once and after that raising it higher than UVLO released voltage.

<Reverse current prevention>

An internal circuit is built in that prevents reverse current from the V_{OUT} pin to the V_{IN} pin.
When the difference between input voltage and V_{OUT} pin voltage is higher than the detect voltage set internally, the reverse current prevention circuit activates, and the power switch transistor turns off, then the reverse current from the V_{OUT} pin to the V_{IN} pin is reduced to 0.1 μA (TYP.).

If the reverse-voltage state lasts for 4ms (TYP.), the FLG pin changes to Low level output.

The behavior after the reverse current prevention function is activated differs depending on the product type. The operation of each type is as follows.

Automatic Recovery type: XC8107xC, XC8107xE

On the auto recovery type, when the output voltage drops below the input voltage, the reverse current prevention circuit stops immediately, and the power switch transistor turns on again. If the output voltage remains lower than the input voltage for 4ms (TYP.), the FLG pin returns to High level output.

Latch off type: XC8107xD, XC8107xF

On the latch off type, the power switch transistor remains in the off state even if the reverse voltage state is released.
Latch operation is released by turning off the IC with the CE pin signal and then restarting, or by lowering the input voltage below the UVLO detected voltage once and after that raising it higher than UVLO released voltage.

■OPERATIONAL EXPLANATION (Continued)

<Flag function>

The flag circuit is built in which monitors the state of the power switch.

The FLG pin outputs Low level when the reverse current prevention function is operating. A resistance of 10kΩ to 100kΩ is recommended for the FLG pin pull-up resistance.

The pull-up voltage should be 5.5V or less.

Automatic Recovery type: XC8107xC, XC8107xE

CE pin		FUNCTION	FLG pin Low level output	Return to FLG pin High level output
XC8107 AC/XC/ AE/XE	XC8107 BC/YC/ BE/YE			
H	L	Current limiter	7.5ms(TYP.) after maintaining over-current detection state	7.5ms(TYP.) after over-current release
		Short Protection		
		Reverse current prevention	4.0ms(TYP.) after maintaining reverse voltage detection state	4.0ms(TYP.) after reverse voltage release
		Thermal shutdown	Same time as overheat state is detected	Same time as overheat state is released

Latch off type: XC8107xD, XC8107xF

CE pin		FUNCTION	FLG pin Low level output	Return to FLG pin High level output
XC8107 AD/XD/ AF/XF	XC8107 BD/YD/ BF/YF			
H	L	Current limiter	7.5ms(TYP.) after maintaining over-current release state	When latch operation is released
		Short Protection		
		Reverse current prevention	4.0ms(TYP.) after maintaining reverse voltage release state	When latch operation is released
		Thermal shutdown	Same time as overheat state is detected	Same time as overheat state is released

<C_L discharge function>

The XC8107xE and XC8107xF series feature a C_L discharge function to prevent application malfunction caused by residual charge on the output capacitor during standby (XC8107A/X: CE="L", XC8107B/Y: CE="H").

This function discharges the output capacitor by activating an N-channel FET between the V_{OUT} and V_{SS} pins. The discharge resistance is R_{DCHG}=150Ω(TYP.).

Additionally, the C_L discharge function remains active for a duration of t_{OFF}=0.08ms (TYP.) until the P-channel FET switch between V_{IN} and V_{OUT} is completely turned off. During this period, the input current increases by the amount of the discharge current, as power supply from the input via the P-channel FET and discharge via the N-channel FET occur simultaneously.

■NOTES ON USE

1. For the phenomenon of temporal and transitional voltage decrease or voltage increase, the IC may be damaged or deteriorated if IC is used beyond the absolute MAX. specifications.

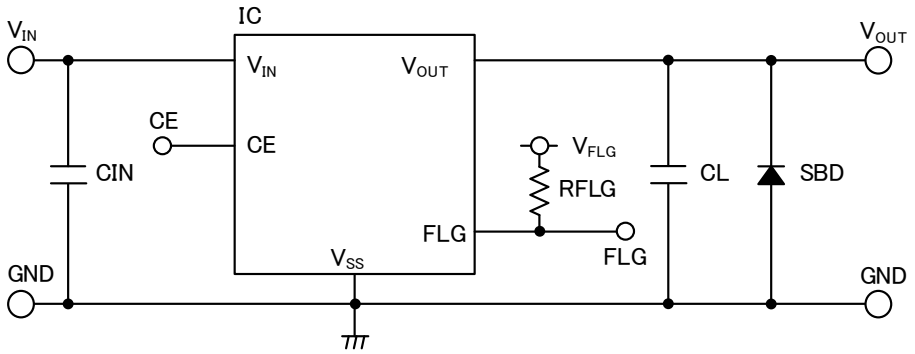
2. Where wiring impedance is high, operations may become unstable due to noise depending on output current. Please keep the resistance low between V_{IN} and V_{SS} wiring in particular.

3. Please place the input capacitor (C_{IN}) and the output capacitor (C_L) as close to the IC as possible. For the input or output capacitor, a capacitance of 1.0 μF or higher is recommended.

4. The IC can be broken if the V_{OUT} pin voltage suddenly undershoots to a negative voltage due to an output short circuit between the V_{OUT} pin and GND, or if the VIN pin voltage overshoots after the current limiting operation and exceeds the rated voltage.

We recommend the following counter measures so that the rated voltage is not exceeded.

(a) To suppress the amount of the undershoot by increasing the output capacitance and slowing down the rate of decreasing V_{OUT} at the time of short circuit.
(b) To add a SBD between V_{OUT} pin and GND to suppress the undershoot of V_{OUT} pin voltage.
(c) To increase the input capacitor to suppress the overshoot of the V_{IN} pin voltage after the current limiter is activated.



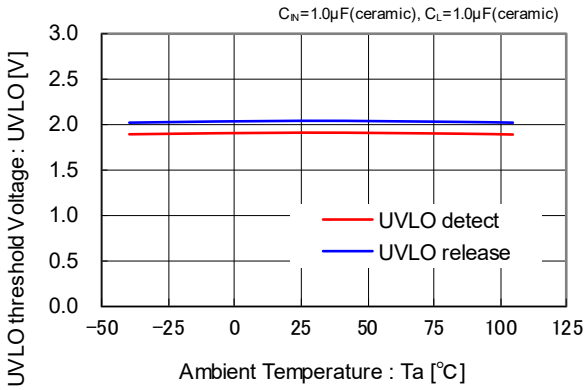
Recommended countermeasure circuit diagram

5. It is recommended to use the output current at 80% or less of the current limit set value (I_{LIMIT}).

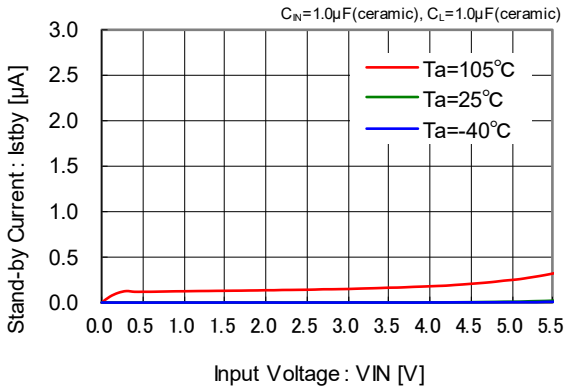
6. Torex places an importance on improving our products and its reliability. However, by any possibility, we would request user fail-safe design and post-aging treatment on system or equipment.

■TYPICAL PERFORMANCE CHARACTERISTICS

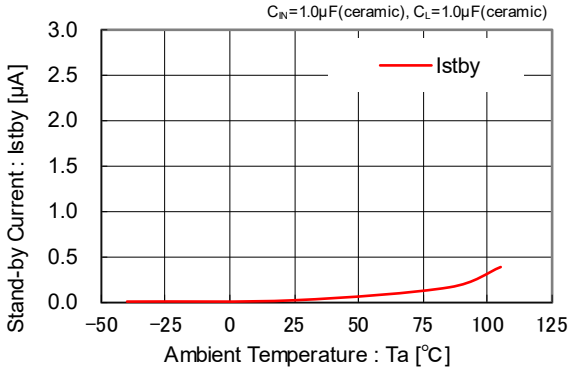
(1) UVLO threshold Voltage vs. Ambient Temperature



(2) Stand-by Current vs. Input Voltage

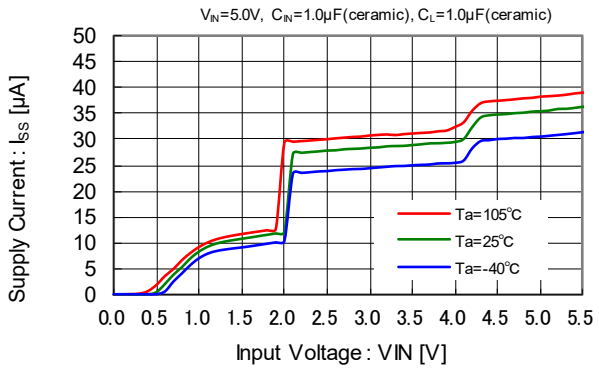


(3) Stand-by Current vs. Ambient Temperature

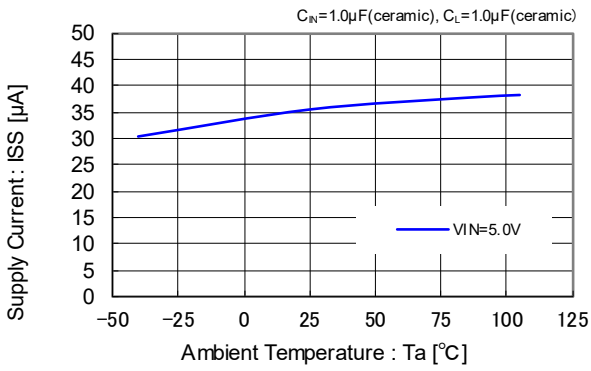


■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

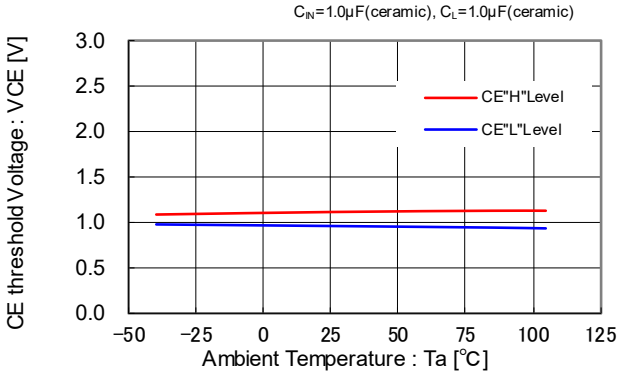
(4) Supply Current vs. Input Voltage(sweep up)



(5) Supply Current vs. Ambient Temperature



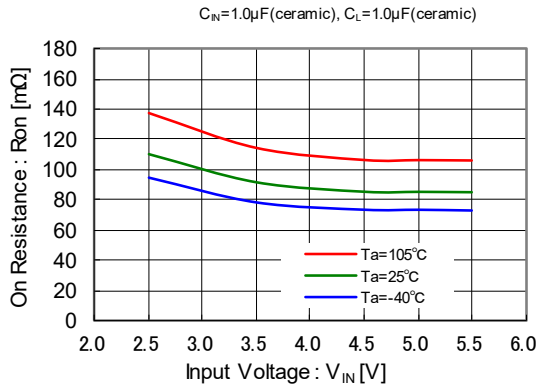
(6) CE threshold Voltage vs. Ambient Temperature



■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

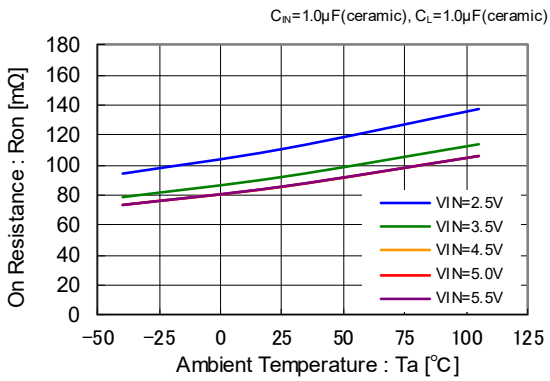
(7) On Resistance vs. Input Voltage (USP-6C)

XC8107xxxxER



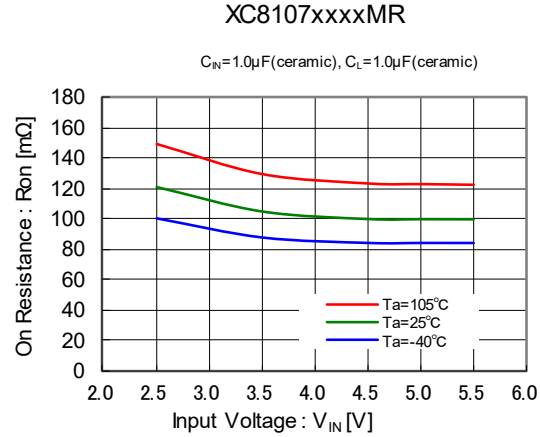
(8) On Resistance vs. Ambient Temperature (USP-6C)

XC8107xxxxER



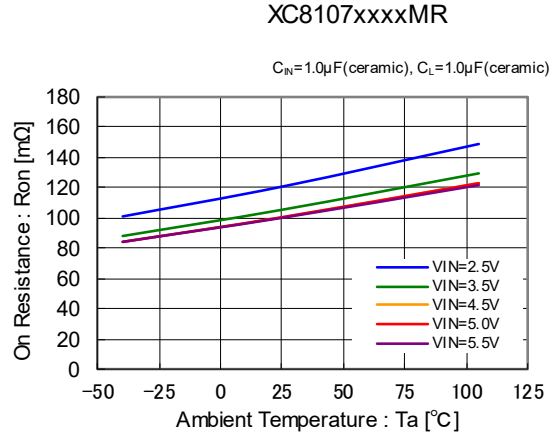
(9) On Resistance vs. Input Voltage (SOT-25:XC8107A,B)

XC8107xxxxMR



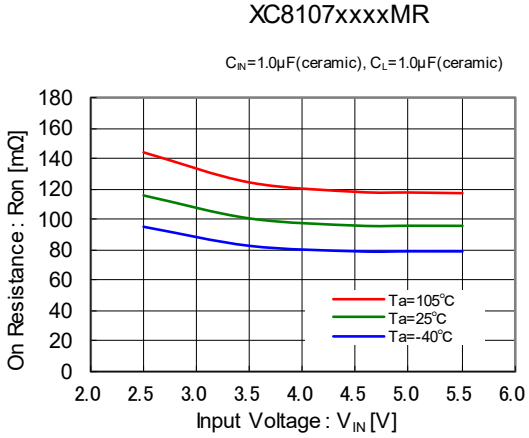
(10) On Resistance vs. Ambient Temperature (SOT-25:XC8107A,B)

XC8107xxxxMR



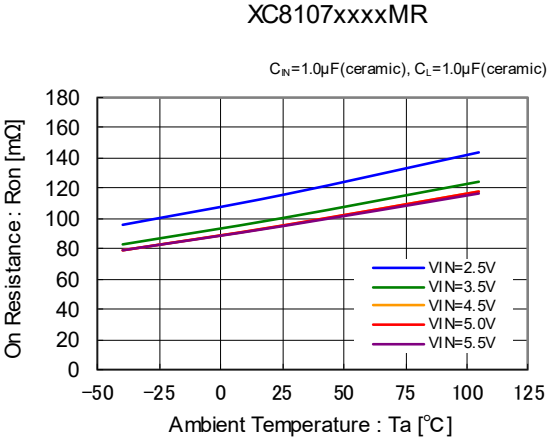
(11) On Resistance vs. Input Voltage (SOT-25:XC8107X,Y)

XC8107xxxxMR



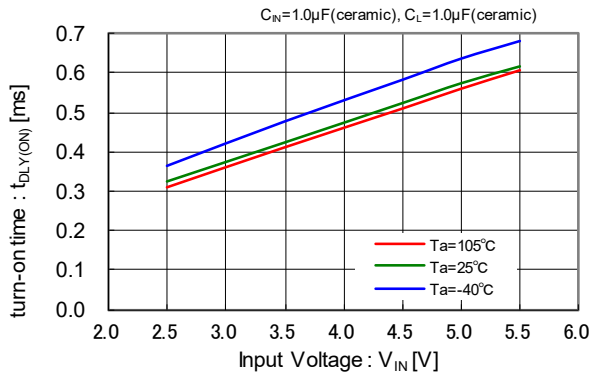
(12) On Resistance vs. Ambient Temperature (SOT-25:XC8107X,Y)

XC8107xxxxMR

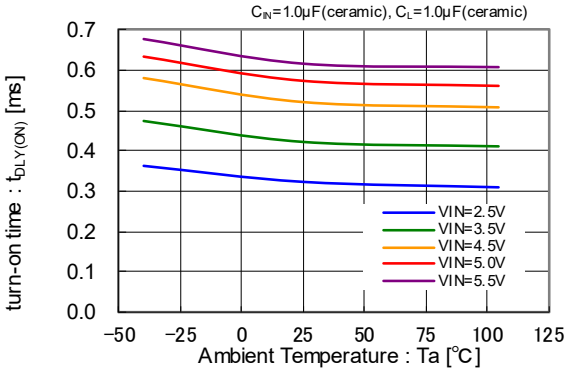


■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

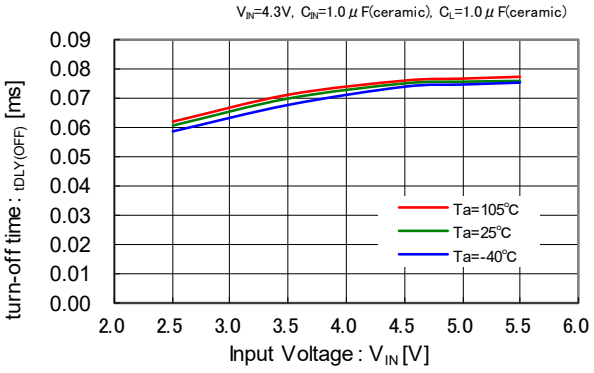
(13) turn-on time vs. Input Voltage



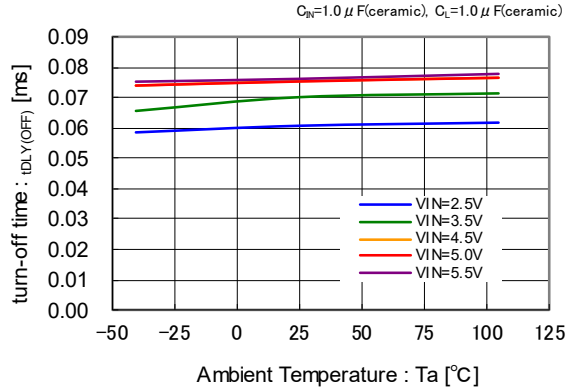
(14) turn-on time vs. Ambient Temperature



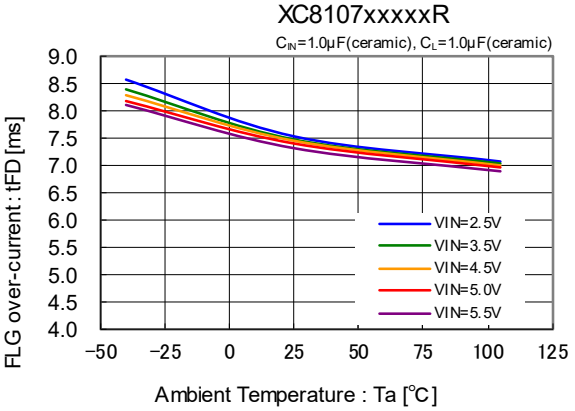
(15) turn-off time vs. Input Voltage



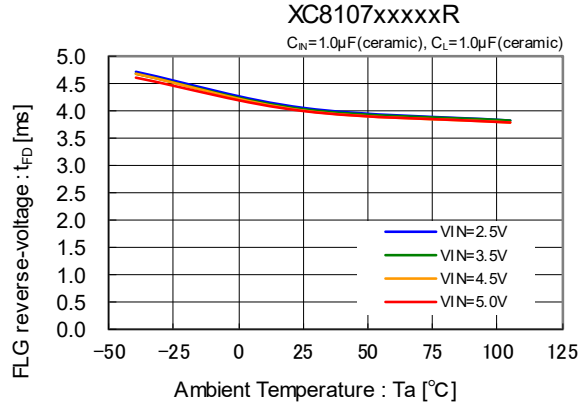
(16) turn-off time vs. Ambient Temperature



(17) FLG delay time over-current vs. Ambient Temperature

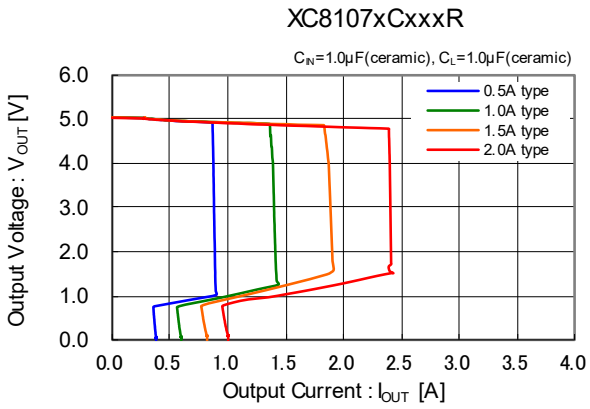


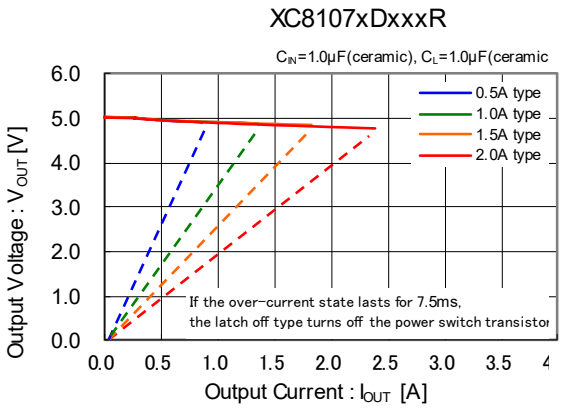
(18) FLG delay time reverse-voltage vs. Ambient Temperature



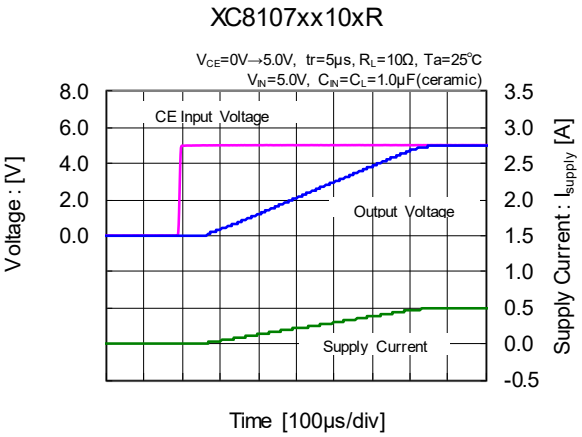
■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

(19) Output Voltage vs. Output Current

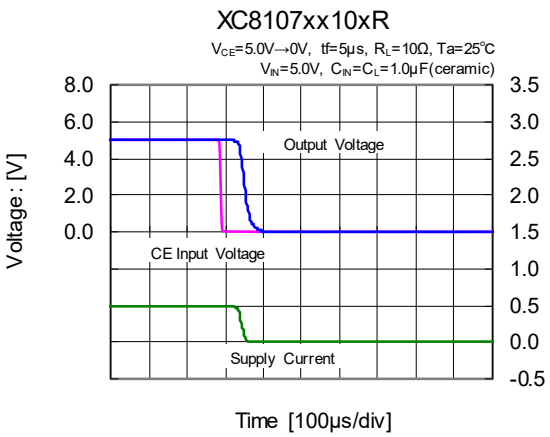




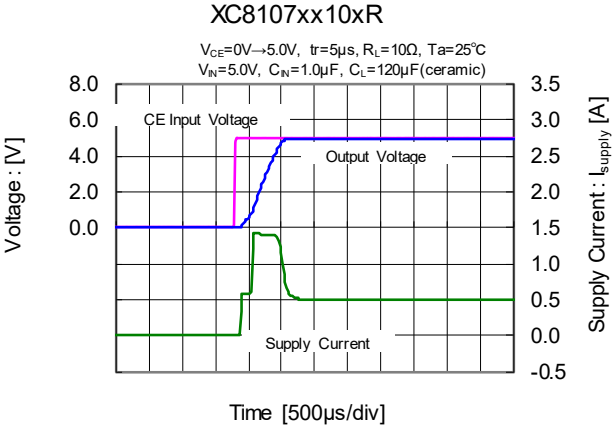
(20) turn-on Delay vs. Rise Time (CL=1.0μF)



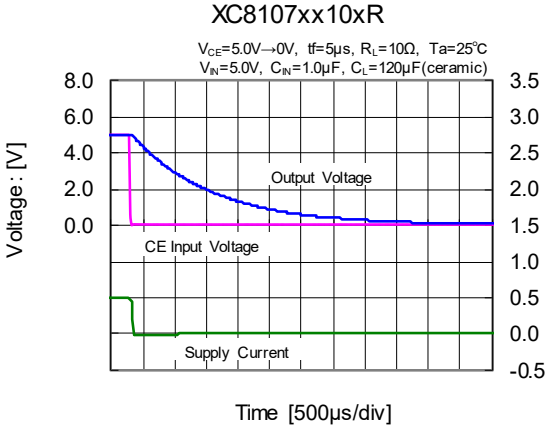
(21) turn-off Delay vs. Fall Time (CL=1.0μF)



(22) turn-on Delay vs. Rise Time (CL=120μF)

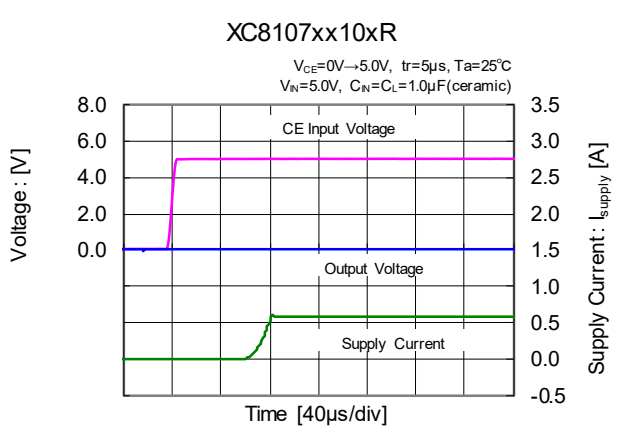


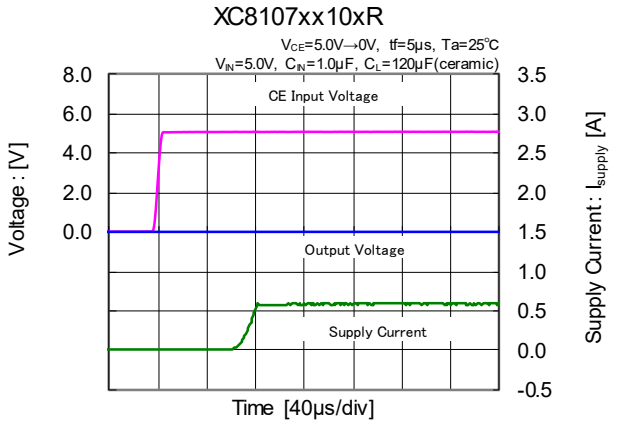
(23) turn-off Delay vs. Fall Time (CL=120μF)



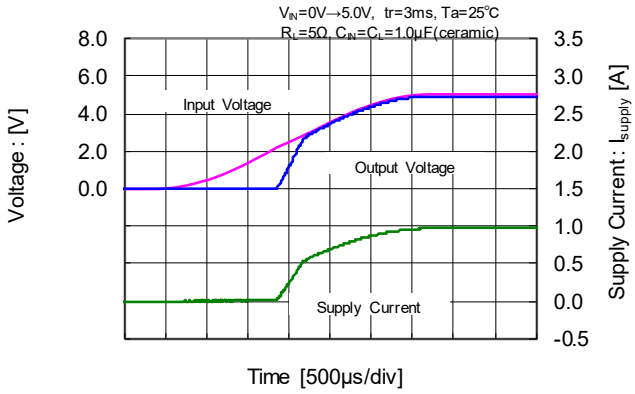
■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

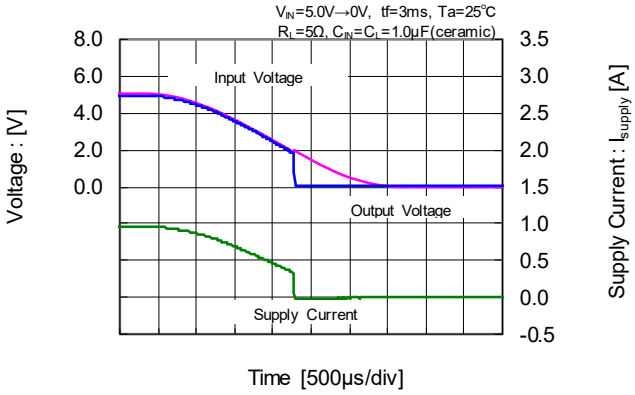
(24) Short Circuit Current, Device Enabled Into Short



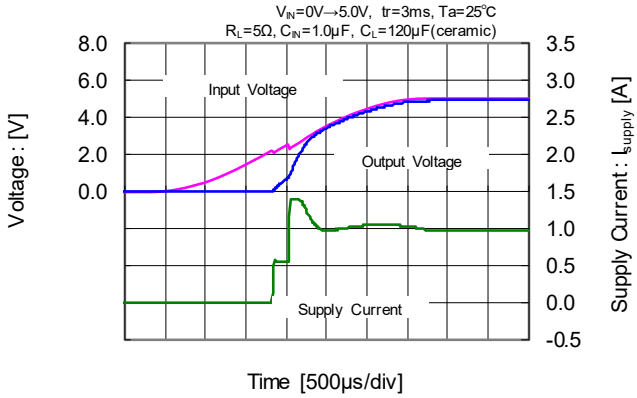


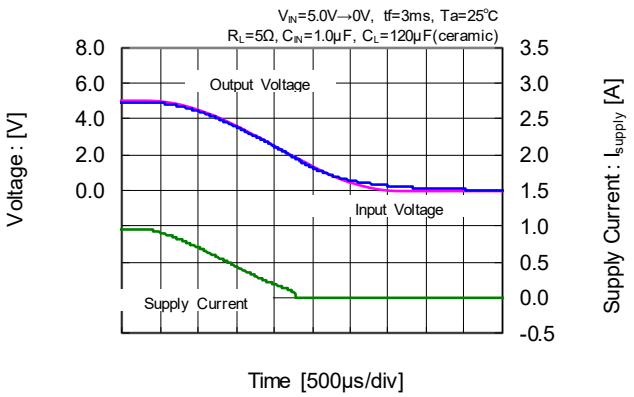
(25) UVLO Transient Response (CL=1.0μF)





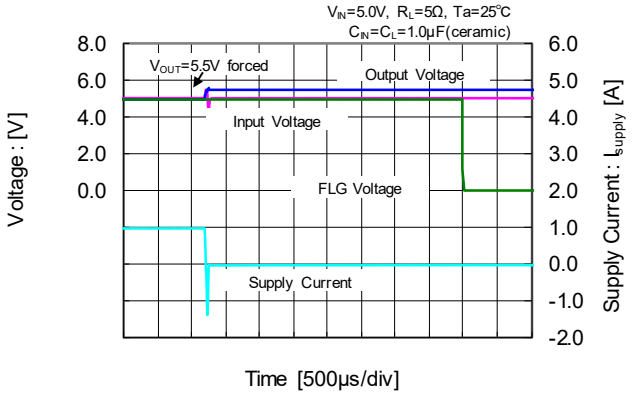
(26) UVLO Transient Response (CL=120μF)



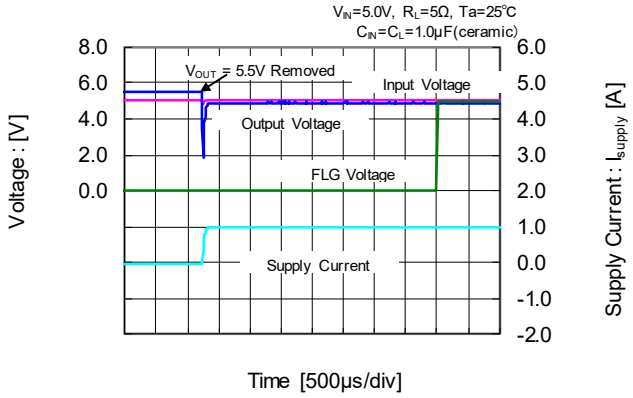


■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

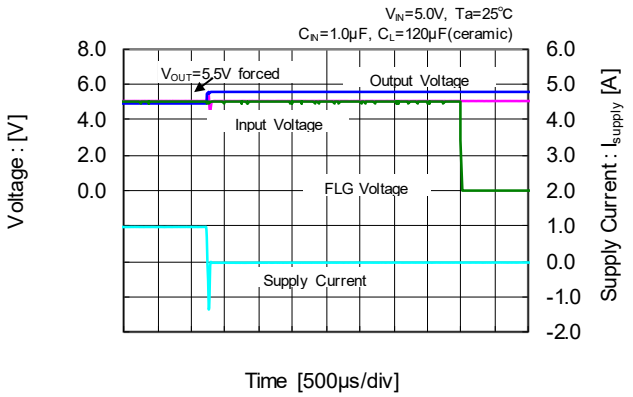
(27) Reverse Voltage Detected Voltage (CL=1.0μF)



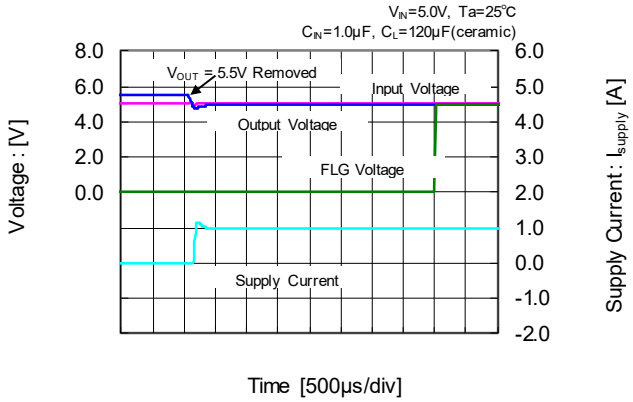
(28) Reverse Voltage Released Voltage (CL=1.0μF)



(29) Reverse Voltage Detected Voltage (CL=120μF)

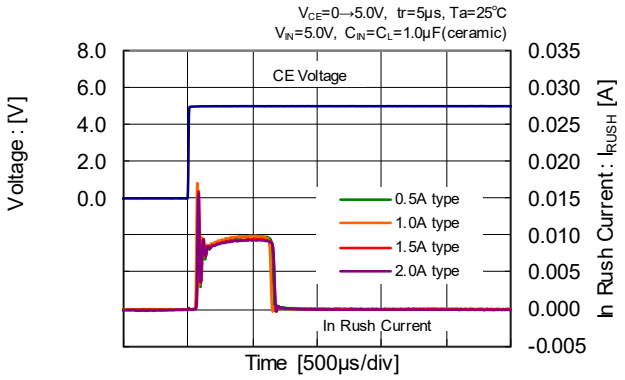


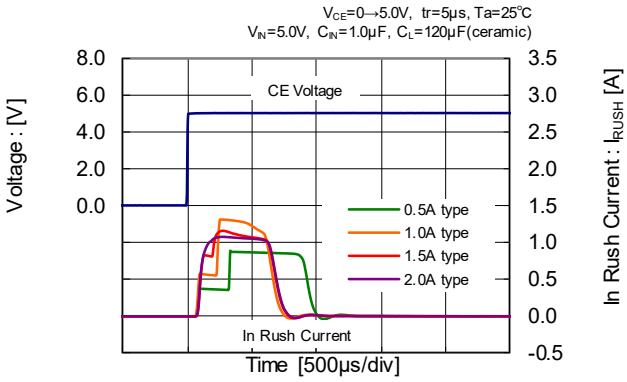
(30) Reverse Voltage Released Voltage (CL=120μF)



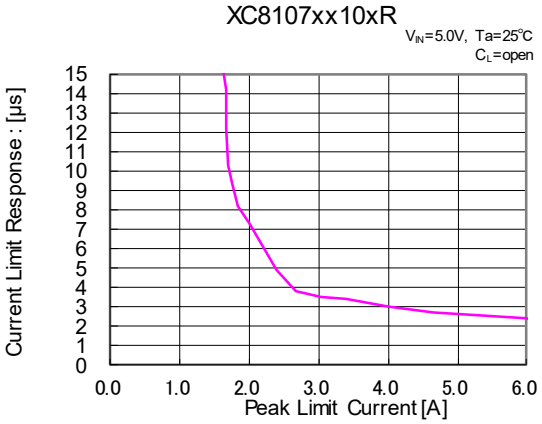
■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

(31) CE Transient Response

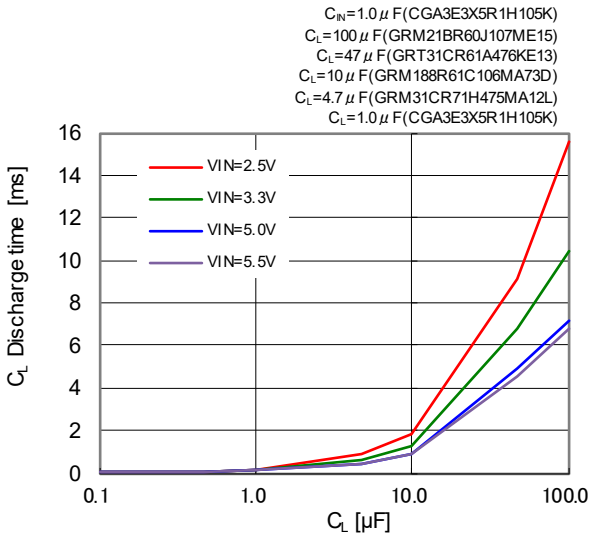


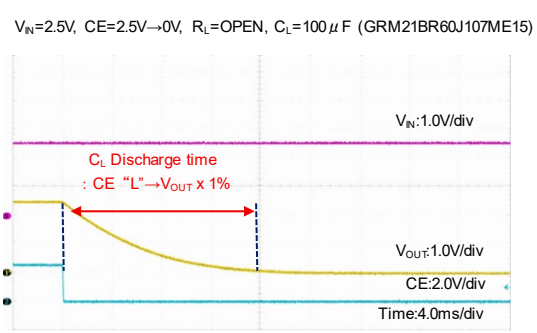


(32) Current Limit adapted time



(33) C_L Discharge time





■PACKAGING INFORMATION

For the latest package information go to, www.torexsemi.com/technical-support/packages

PACKAGE	OUTLINE / LAND PATTERN	THERMAL CHARACTERISTICS
SOT-25	SOT-25 PKG	SOT-25 Power Dissipation
USP-6C	USP-6C PKG	USP-6C Power Dissipation

■MARKING RULE

■SOT-25(Au Wire)/USP-6C(Au Wire)

① represents products series

MARK	PRODUCT SERIES
Z	XC8107******-G

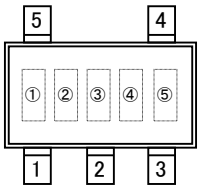
② represents type

MARK	CE LOGIC	Protection Circuits Type	PRODUCT SERIES
1	Active High	Auto-recovery	XC8107AC****-G
8	Active High	Auto-recovery , CL Discharge available	XC8107AE****-G
2	Active High	Latch-off	XC8107AD****-G
9	Active High	Latch-off , CL Discharge available	XC8107AF****-G
3	Active Low	Auto-recovery	XC8107BC****-G
V	Active Low	Auto-recovery , CL Discharge available	XC8107BE****-G
4	Active Low	Latch-off	XC8107BD****-G
X	Active Low	Latch-off , CL Discharge available	XC8107BF****-G

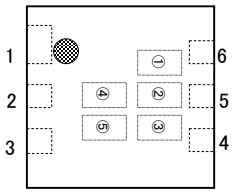
③ represents Iout

MARK	Iout(A)	PRODUCT SERIES
1	0.5	XC8107**05**-G
2	1.0	XC8107**10**-G
3	1.5	XC8107**15**-G
4	2.0	XC8107**20**-G

SOT-25



USP-6C



④⑤ represents production lot number

01～09, 0A～0Z, 11～9Z, A1～A9, AA～AZ, B1～ZZ in order. (G, I, J, O, Q, W excluded)

* No character inversion used.

■MARKING RULE

■SOT-25 (Cu Wire)

① represents products series

MARK	PRODUCT SERIES
Z	XC8107******-G

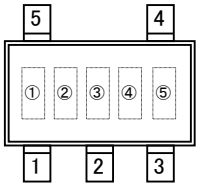
② represents type

MARK	CE LOGIC	Protection Circuits Type	PRODUCT SERIES
R	Active High	Auto-recovery	XC8107XC****-G
7	Active High	Auto-recovery , CL Discharge available	XC8107XE****-G
T	Active High	Latch-off	XC8107XD****-G
A	Active High	Latch-off , CL Discharge available	XC8107XF****-G
S	Active Low	Auto-recovery	XC8107YC****-G
B	Active Low	Auto-recovery , CL Discharge available	XC8107YE****-G
U	Active Low	Latch-off	XC8107YD****-G
C	Active Low	Latch-off , CL Discharge available	XC8107YF****-G

③ represents Iout

MARK	Iout(A)	PRODUCT SERIES
1	0.5	XC8107**05**-G
2	1.0	XC8107**10**-G
3	1.5	XC8107**15**-G
4	2.0	XC8107**20**-G

SOT-25



1. The product and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this datasheet is up to date.

2. The information in this datasheet is intended to illustrate the operation and characteristics of our products. We neither make warranties or representations with respect to the accuracy or completeness of the information contained in this datasheet nor grant any license to any intellectual property rights of ours or any third party concerning with the information in this datasheet.

3. Applicable export control laws and regulations should be complied and the procedures required by such laws and regulations should also be followed, when the product or any information contained in this datasheet is exported.

4. The product is neither intended nor warranted for use in equipment of systems which require extremely high levels of quality and/or reliability and/or a malfunction or failure which may cause loss of human life, bodily injury, serious property damage including but not limited to devices or equipment used in 1) nuclear facilities, 2) aerospace industry, 3) medical facilities, 4) automobile industry and other transportation industry and 5) safety devices and safety equipment to control combustions and explosions. Do not use the product for the above use unless agreed by us in writing in advance.

5. Although we make continuous efforts to improve the quality and reliability of our products; nevertheless Semiconductors are likely to fail with a certain probability. So in order to prevent personal injury and/or property damage resulting from such failure, customers are required to incorporate adequate safety measures in their designs, such as system fail safes, redundancy and fire prevention features.

6. Our products are not designed to be Radiation-resistant.

7. Please use the product listed in this datasheet within the specified ranges.

8. We assume no responsibility for damage or loss due to abnormal use.

9.

TOREX SEMICONDUCTOR LTD.