

Super Capacitor Protector IC

DQ Series

Data Sheet

DQ9027

DQ9028

DQ9030

2019.8

Revision History

Version	Contents	Date
0.0	- First Version	2018.07.24
0.1	- Application Circuit Modified	2019.06.14
0.2	- IDD Current Modified	2019.06.22
0.3	- IOUt current condition Modified	2019.08.06

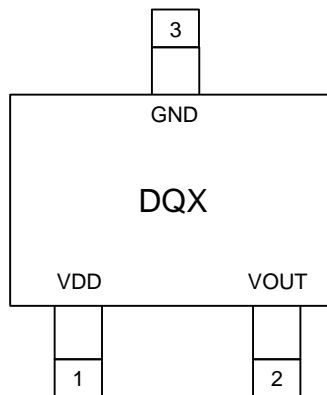
DESCRIPTION

The DQ series Super Capacitor IC consist of a comparator, UVLO and power protection function. when capacitor voltage exceeds specified value, The MOS switch inside the chip operates to bypass the voltage of the capacitor. When overvoltage is used, the capacitor will be seriously damaged . Therefore, the overvoltage of the protective capacitor must be considered in the design of the capacitor module. The protection voltage of DQ series Protect IC is 2.7V 2.85V 3.0V, The maximum protection current of a single chip is 200mA, If greater protection current is needed, the MOS can be extended externally.

Features

- Power Supply Detection Voltage : 2.7V, 2.85V, 3.0V
- Internal UVLO function
- Comparator for VDD voltage monitoring
- Package : SOT23-3L package
- ESD performance
 - 2000V human body model
 - 200V machine model
- -40°C to +85°C ambient temperature

Pin Assignment



Top View

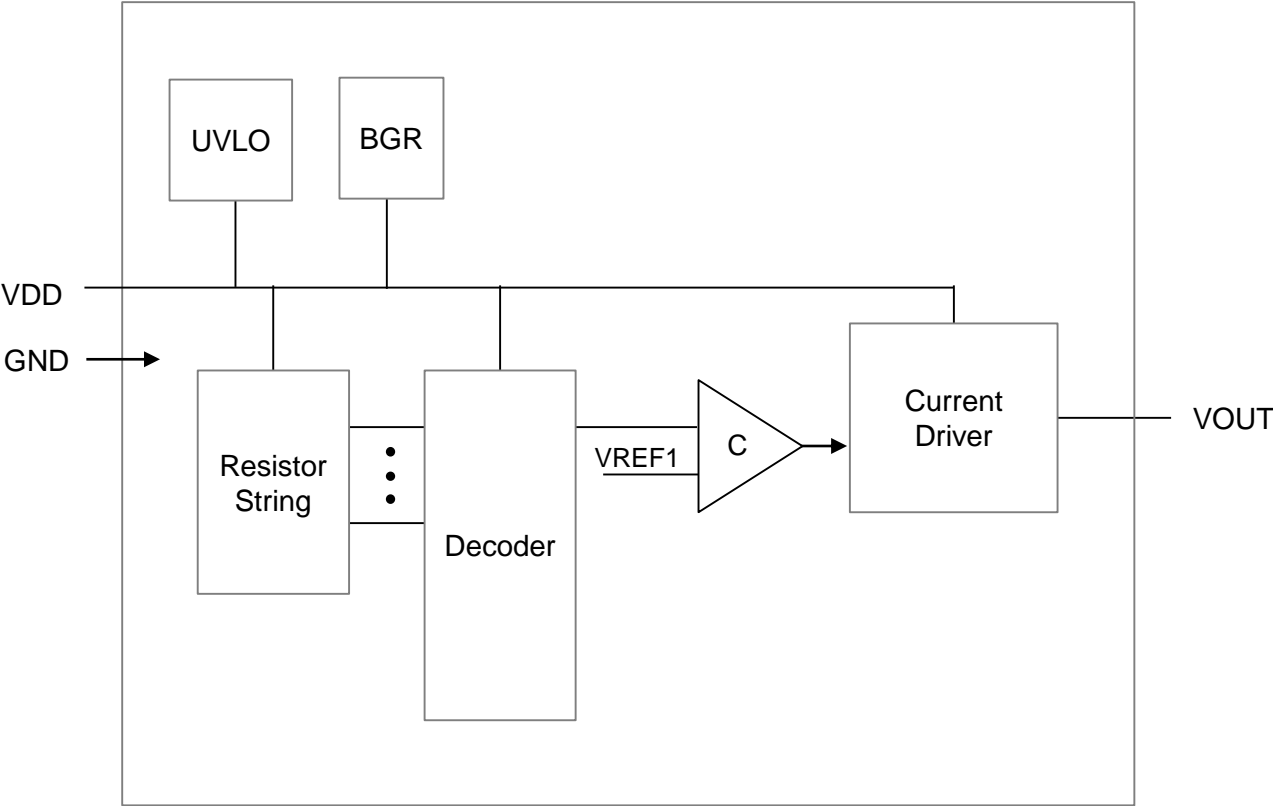
X = 1, 2, 3

1:2.7V

2:2.85V

3:3.0V

Block Diagram



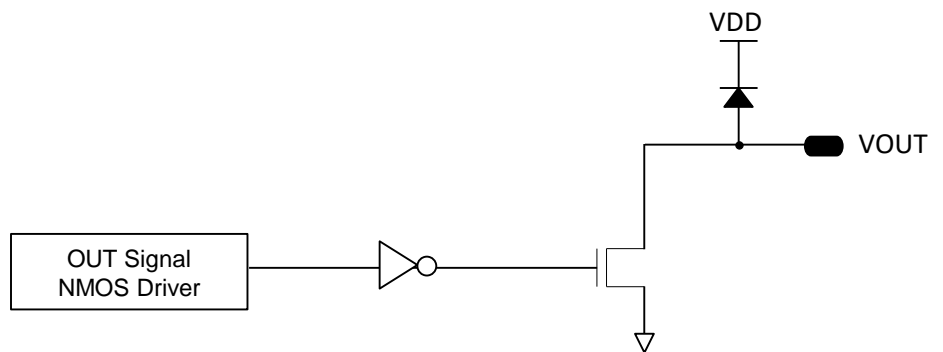
PIN DESCRIPTION

DQ Series

PIN NAME	PIN NO.	I/O	DESCRIPTION
VDD	1	I	Power Input Pin
VOUT	2	O	NMOS Open Drain
GND	3	Ground	Ground Pin

Port Configuration

VOUT



ELECTRICAL CHARACTERISTICS

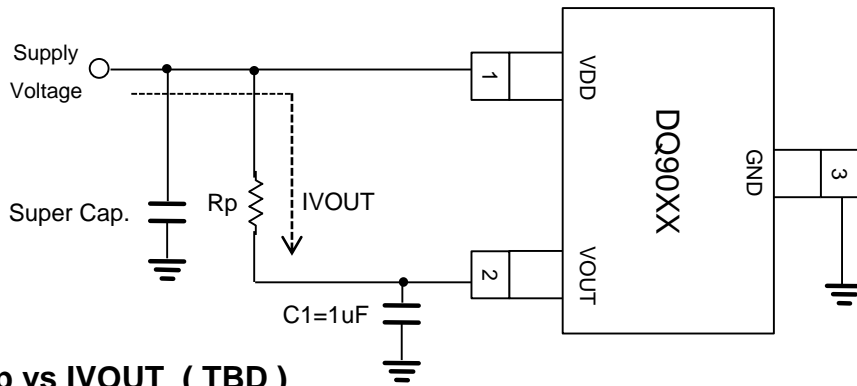
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	VDD	-0.5 to 6V	V
Input Pin Voltage	VI	-0.5 to 3.5V	V
GND Sinking Current	IGND	250	mA
Total Power Dissipation	PD	250	mW
Operating Temperature	Topr	-40 ~ 85	°C
Storage Temperature	Tstg	-55~150	°C

DC ELECTRICAL CHARACTERISTICS (Ta = -40°C ~ 85°C)

PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Detection Voltage	VDET	DQ9027	2.67	2.70	2.73	V
		DQ9028	2.82	2.85	2.88	
		DQ9030	2.97	3.0	3.03	
VDD Leakage Current	IDD	VDD=2.0V			30	uA
VOUT Sinking Current	IVOUT	DQ90xx VDD=3.0V, VOUT=1.6V	200			mA
Hysteresis Range	VHY		VDET X0.02	VDET X0.05	VDET X0.08	V

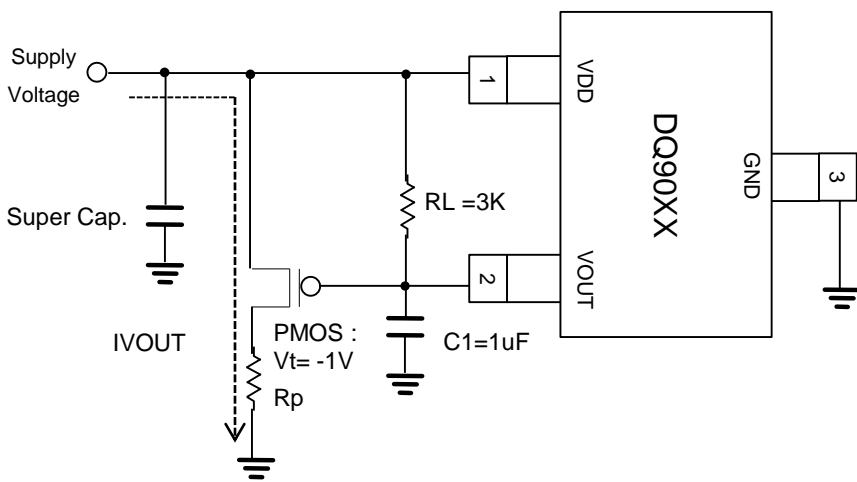
Application Circuit ($I_{VOUT} \leq 200\text{mA}$)



Rp vs IVOUT (TBD)

VDET	Rp	IVOUT	VDET	Rp	IVOUT	VDET	Rp	IVOUT
	3V	7Ω		200mA	2.85V		5Ω	200mA
	14Ω	100mA		10Ω	100mA		7Ω	100mA
	28Ω	50mA		20Ω	50mA		14Ω	50mA

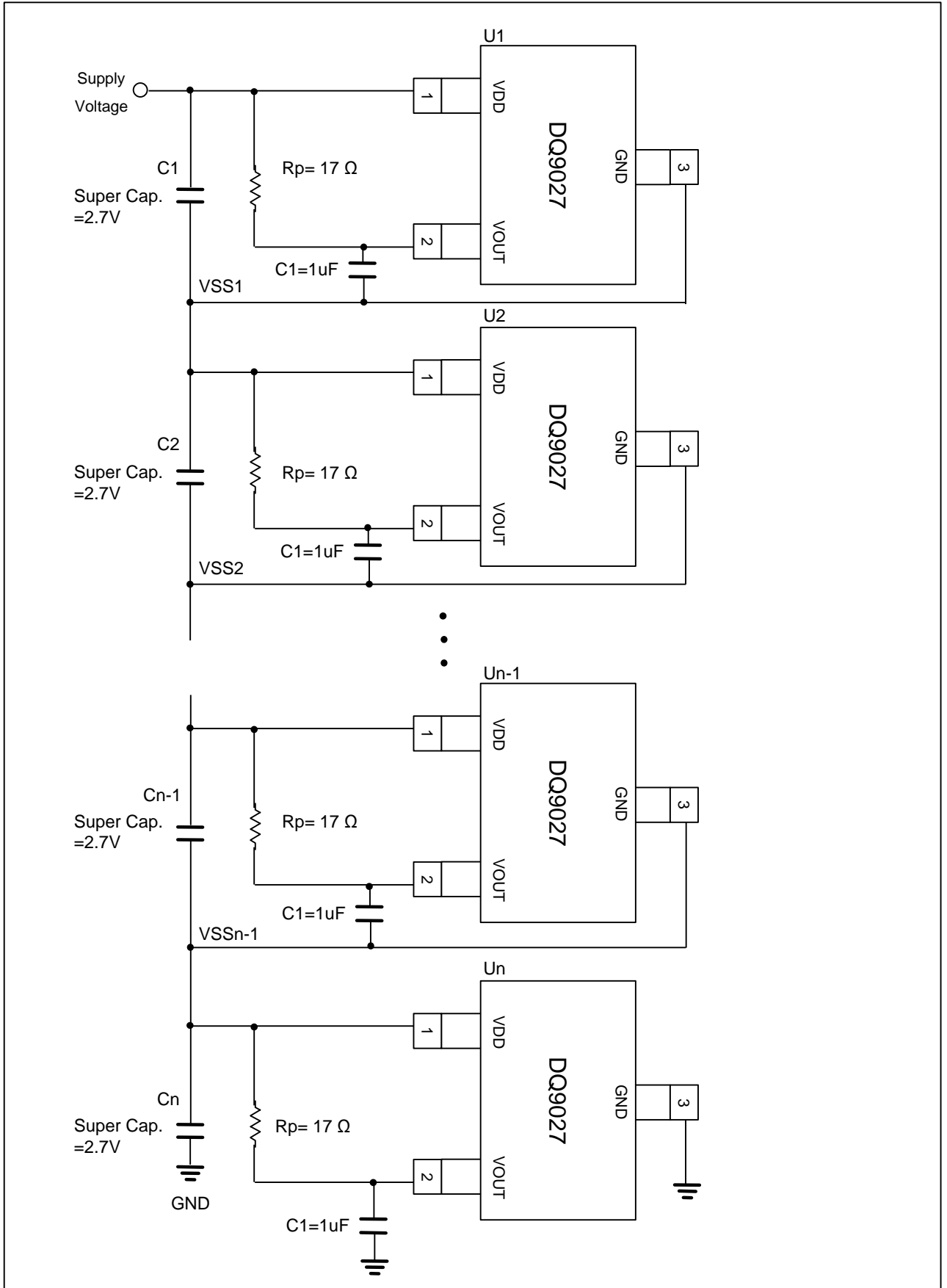
Application Circuit ($I_{VOUT} \geq 200\text{mA}$)



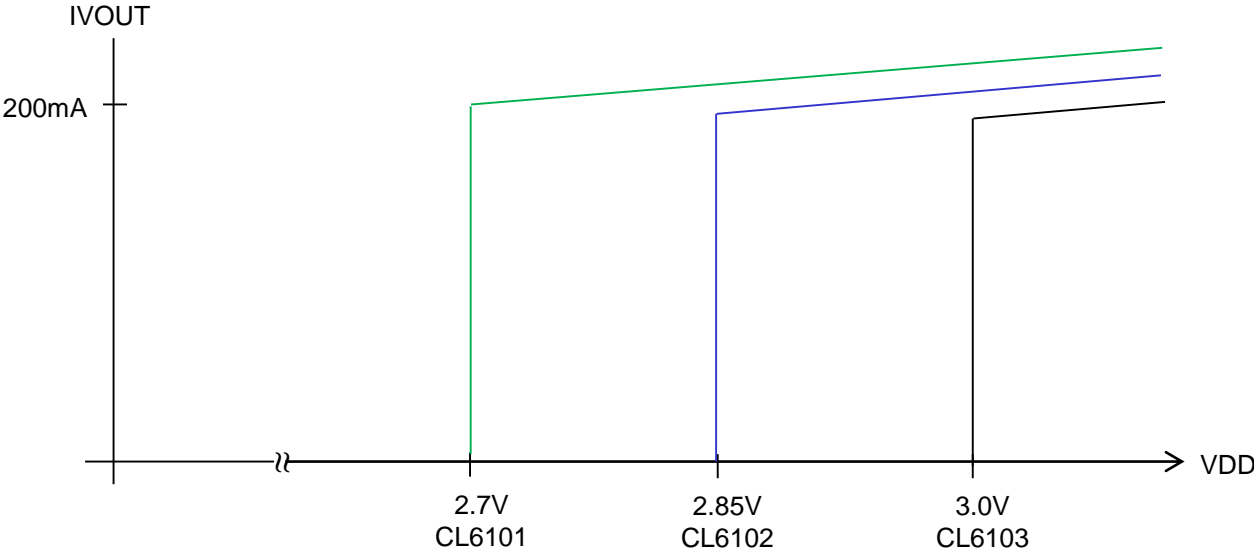
Rp vs IVOUT (TBD)

VDET	Rp	IVOUT	VDET	Rp	IVOUT	VDET	Rp	IVOUT
3V	5Ω	~1.2A	2.85V	5Ω	~1.2A	2.7V	5Ω	~1.2A

Application Circuit (Using Multi Chips : IOUT=100mA, VDET=2.7V)



VDD vs IVOUT (IVOUT = 200mA Setting)



PACKAGE DIMENSION

unit : mm

