

## 2ch VOLTAGE DETECTOR

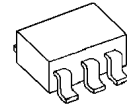
### ■ GENERAL DESCRIPTION

The NJU7710/11 is a 2ch low quiescent current voltage detector featuring high precision detection voltage.

The detection voltage is internally fixed with an accuracy of 1.0%.

NJU7710 is Nch. Open Drain and NJU7711 is a C-MOS output type.

### ■ PACKAGE OUTLINE



NJU7710/11F

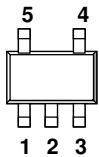


NJU7710/11F3

### ■ FEATURES

- High Precision detection Voltage  $\pm 1.0\%$
- Low Quiescent Current 0.8 $\mu$ A typ. (per 1CH)
- Detection Voltage Range 1.3–6.0V(0.1V step)
- Output Configuration  
 NJU7710: Nch. Open Drain Type  
 NJU7711: C-MOS Output Type
- Package Outline SOT-23-5 / SC88A

### ■ PIN CONFIGURATION



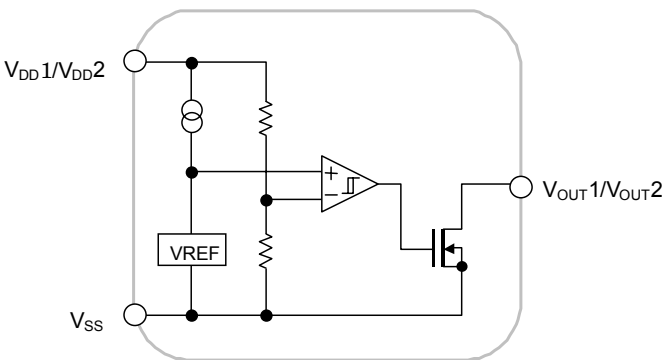
#### PIN FUNCTION

1.  $V_{OUT1}$
2.  $V_{SS}$
3.  $V_{DD1}$
4.  $V_{DD2}$
5.  $V_{OUT2}$

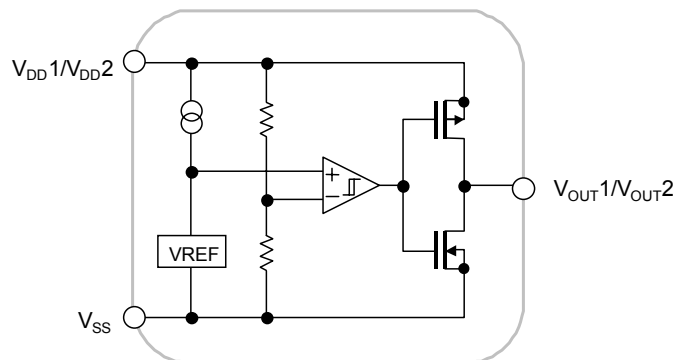
NJU7710F/F3, NJU7711F/F3

### ■ EQUIVALENT CIRCUIT

NJU7710



NJU7711



# NJU7710/11

## ■ DETECTION VOLTAGERANK LIST

### NJU7710

Device Name	Package	V <sub>DET</sub>	
		CH1	CH2
NJU7710F1524	SOT-23-5	1.5V	2.4V
NJU7710F2318		2.3V	1.8V
NJU7710F0435		4.0V	3.5V
NJU7710F4227		4.2V	2.7V
NJU7710F0613		6.0V	1.3V
NJU7710F3-1524	SC88A	1.5V	2.4V
NJU7710F3-2318		2.3V	1.8V
NJU7710F3-0435		4.0V	3.5V
NJU7710F3-4227		4.2V	2.7V
NJU7710F3-0613		6.0V	1.3V

### NJU7711

Device Name	Package	V <sub>DET</sub>	
		CH1	CH2
NJU7711F4219	SOT-23-5	4.2V	1.9V
NJU7711F4227		4.2V	2.7V
NJU7711F0613		6.0V	1.3V
NJU7711F3-4219	SC88A	4.2V	1.9V
NJU7711F3-4227		4.2V	2.7V
NJU7711F3-0613		6.0V	1.3V

■ NJU7710

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT	
Input Voltage	V <sub>DD</sub>	+10	V	
Output Voltage	V <sub>OUT</sub>	V <sub>SS</sub> -0.3 ~ +10	V	
Output Current	I <sub>OUT</sub>	50	mA	
Power Dissipation	P <sub>D</sub>	SOT-23-5	350(*1)	mW
			200(*2)	
		SC88A	250(*1)	
Operating Temperature	Topr	-40 ~ +85	°C	
Storage Temperature	Tstg	-40 ~ +125	°C	

(\*1) : Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers)

(\*2) : Device itself

■ ELECTRICAL CHARACTERISTICS

(CH1/2 common characteristics, Ta=25°C)

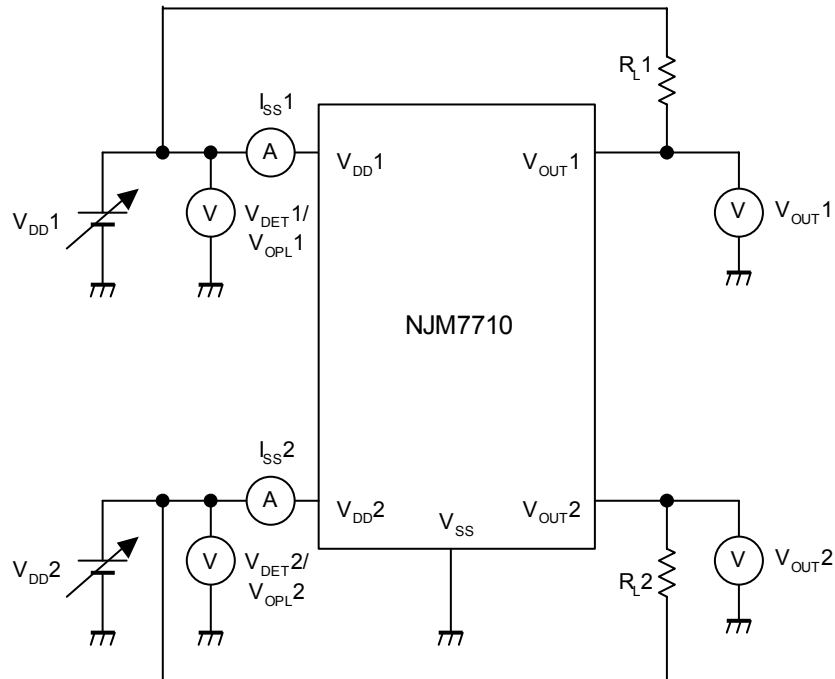
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Detection Voltage	V <sub>DET</sub>		-1.0%	-	+1.0%	V	
Hysteresis Voltage	V <sub>HYS</sub>		V <sub>DET</sub> ×0.03	V <sub>DET</sub> ×0.05	V <sub>DET</sub> ×0.08	V	
Quiescent Current	I <sub>SS</sub>	V <sub>DD</sub> =V <sub>DET</sub> +1V	V <sub>DET</sub> =1.3V~1.7V Version	-	0.5	1.0	μA
			V <sub>DET</sub> =1.8V~6.0V Version	-	0.8	1.6	μA
Output Current	I <sub>OUT</sub>	Nch, V <sub>DS</sub> =0.5V	V <sub>DD</sub> =1.2V	0.75	2.0	-	mA
			V <sub>DD</sub> =2.4V (≥2.7V Version)	4.5	7.0	-	mA
Output Leak Current	I <sub>LEAK</sub>	V <sub>DD</sub> =V <sub>OUT</sub> =9V	-	-	0.1	μA	
Detection Voltage Temperature Coefficient	ΔV <sub>DET</sub> /ΔTa	Ta=0 ~ +85°C	-	±100	-	ppm/°C	
Operating Voltage (*3)	V <sub>DD</sub>	R <sub>L</sub> =100kΩ	0.8	-	9	V	

(\*3): The minimum Operating Voltage(V<sub>OPL</sub>) indicates the same value of the input voltage(V<sub>DD</sub>) on condition that V<sub>OUT</sub> becomes 10% or less of the input voltage(V<sub>DD</sub>).

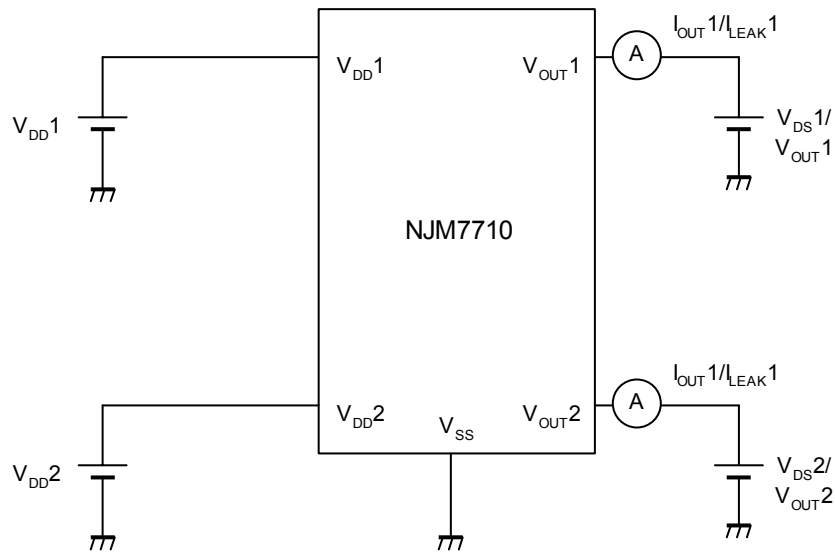
# NJU7710/11

## ■ TEST CIRCUIT

### ① COMMON TEST CIRCUIT

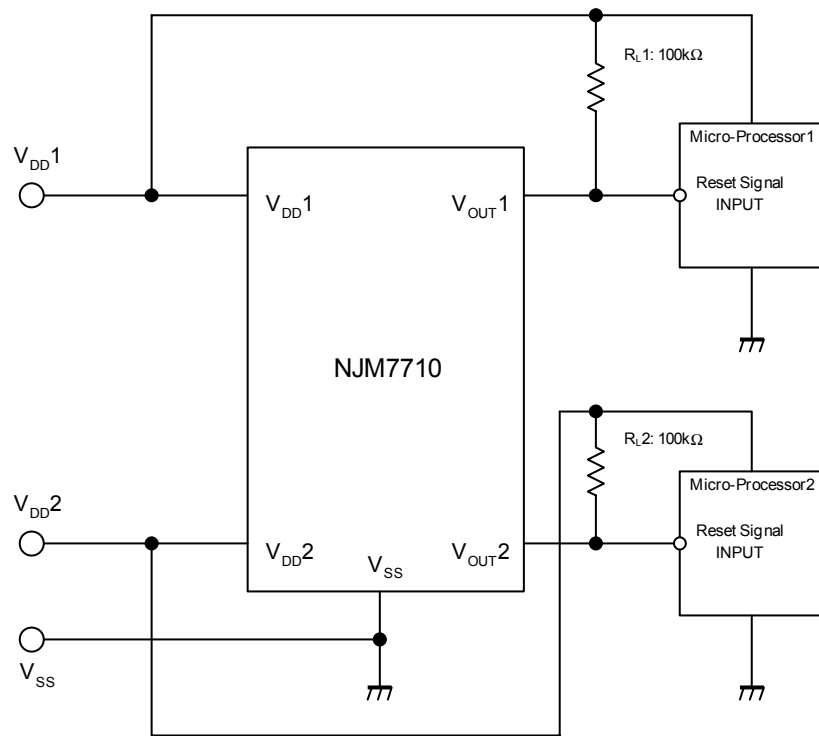


### ② Output Current/Output Leak Current TEST CIRCUIT



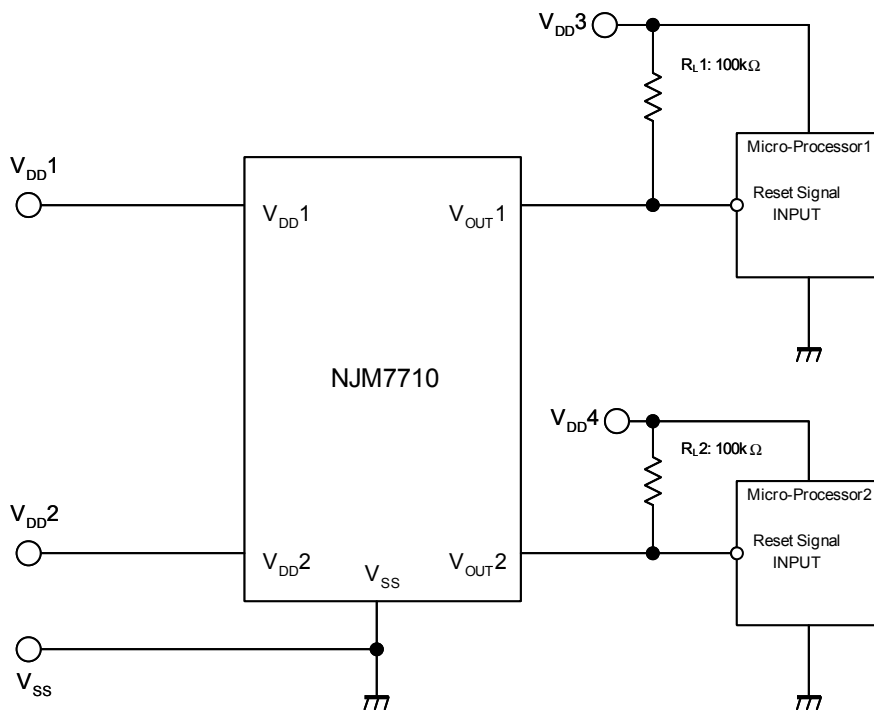
## ■ TYPICAL APPLICATION

### ① Power supply voltage supervision of two systems



### ② Power supply voltage supervision of two systems

(At the time of power source supply classified by micro-processor)



# NJU7710/11

## ■ NJU7711

### ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT	
Input Voltage	V <sub>DD</sub>	+10	V	
Output Voltage	V <sub>OUT</sub>	V <sub>SS</sub> -0.3 ~ V <sub>DD</sub> +0.3	V	
Output Current	I <sub>OUT</sub>	50	mA	
Power Dissipation	P <sub>D</sub>	SOT-23-5	350(*4)	mW
			200(*5)	
		SC88A	250(*4)	
Operating Temperature	Topr	-40 ~ +85	°C	
Storage Temperature	Tstg	-40 ~ +125	°C	

(\*4) : Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers)

(\*5) : Device itself

### ■ ELECTRICAL CHARACTERISTICS

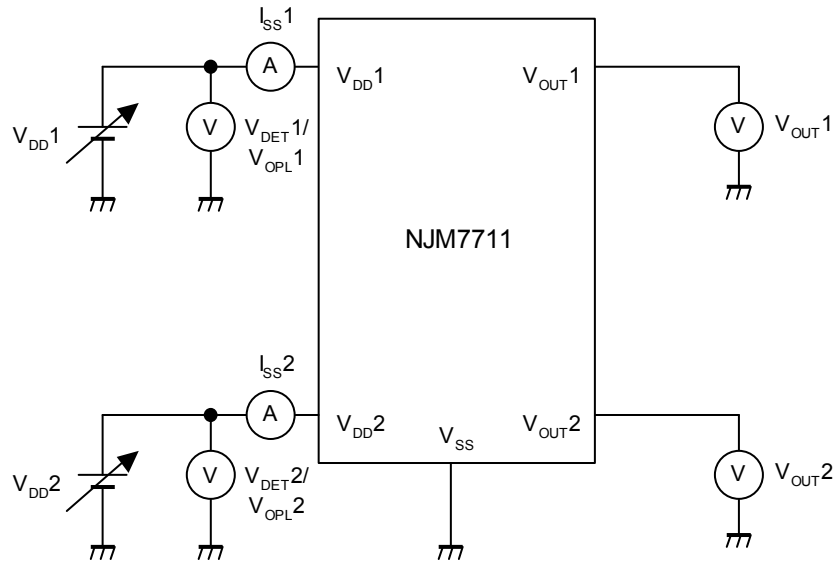
(CH1/2 common characteristics. Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Detection Voltage	V <sub>DET</sub>		-1.0%	-	+1.0%	V	
Hysteresis Voltage	V <sub>HYS</sub>		V <sub>DET</sub> x0.03	V <sub>DET</sub> x0.05	V <sub>DET</sub> x0.08	V	
Quiescent Current	I <sub>SS</sub>	V <sub>DD</sub> =V <sub>DET</sub> +1V	V <sub>DET</sub> =1.3V~1.7V Version	-	0.5	1.0	μA
			V <sub>DET</sub> =1.8V~6V Version	-	0.8	1.6	μA
Output Current	I <sub>OUT</sub>	Nch, V <sub>DS</sub> =0.5V	V <sub>DD</sub> =1.2V	0.75	2.0	-	mA
			V <sub>DD</sub> =2.4V (≥2.7V Version)	4.5	7.0	-	mA
			V <sub>DD</sub> =4.8V (≤3.9V Version)	2.0	3.5	-	mA
		Pch, V <sub>DS</sub> =0.5V	V <sub>DD</sub> =6.0V (4V~5.6V Version)	2.5	4.0	-	mA
			V <sub>DD</sub> =8.4V (≥5.7V Version)	3.0	5.0	-	mA
Detection Voltage Temperature Coefficient	ΔV <sub>DET</sub> /ΔTa	Ta=0 ~ +85°C	-	±100	-	ppm/°C	
Operating Voltage (*6)	V <sub>DD</sub>	R <sub>L</sub> =100kΩ	0.8	-	9	V	

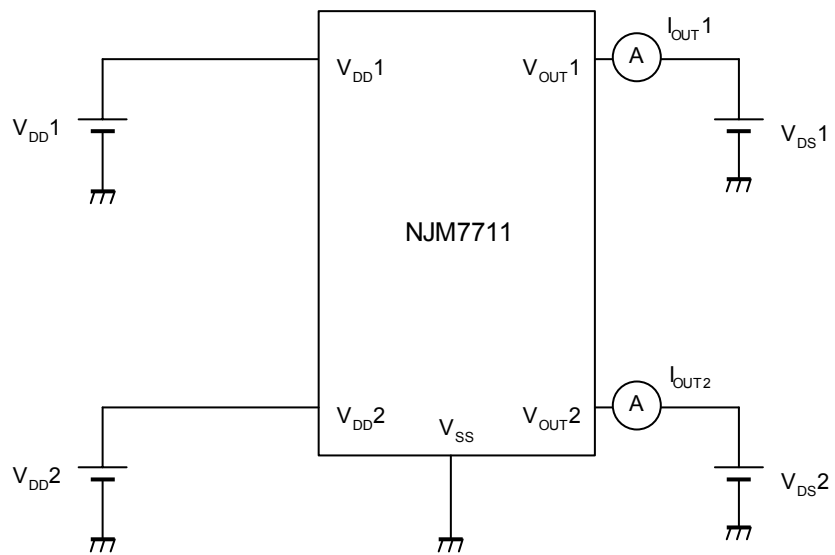
(\*6): The minimum Operating Voltage(V<sub>OPL</sub>) indicates the same value of the output voltage(V<sub>OUT</sub>) on condition that V<sub>OUT</sub> becomes 10% or less of the input voltage(V<sub>DD</sub>).

## ■ TEST CIRCUIT

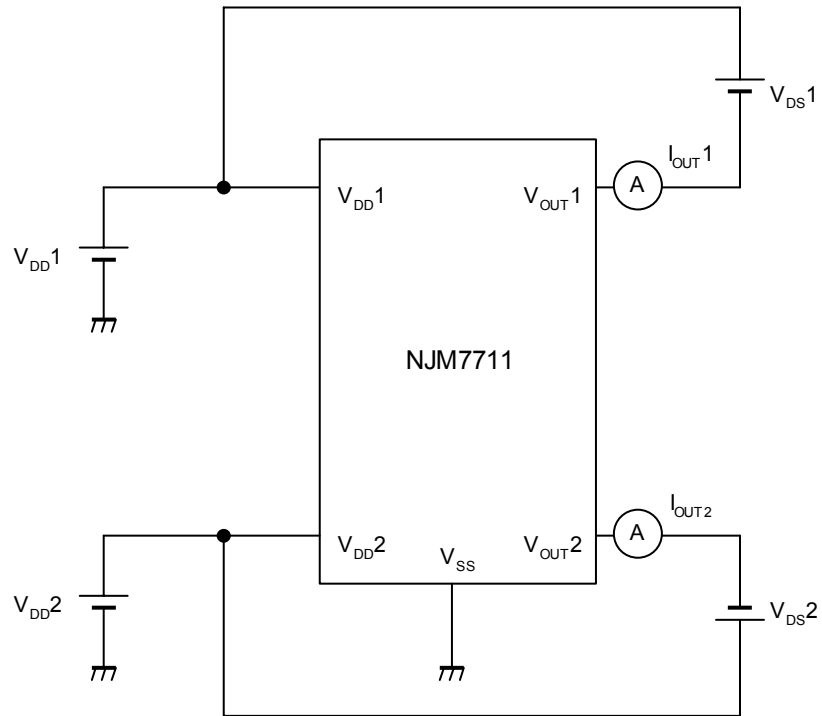
### ① COMMON TEST CIRCUIT



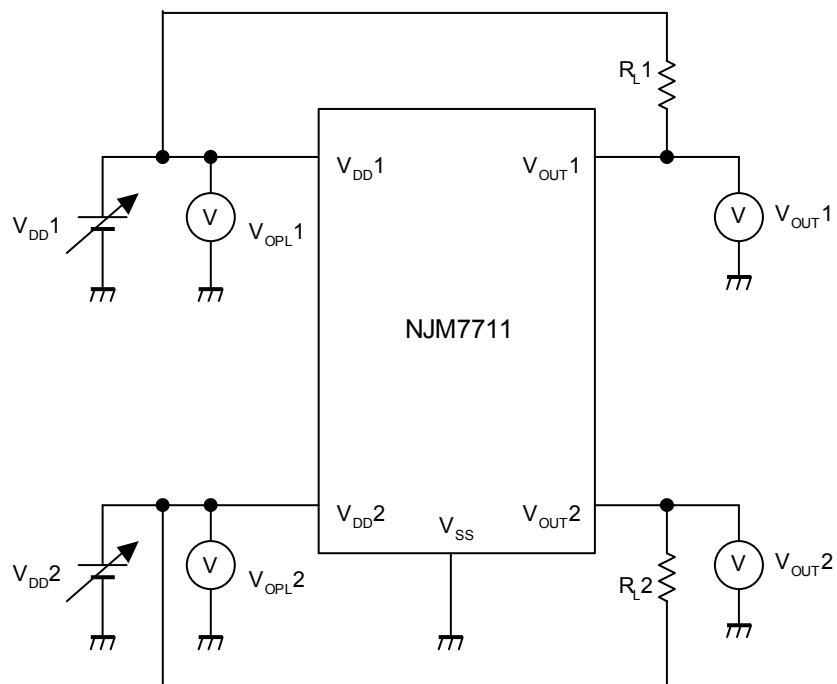
### ② Nch Output Current TEST CIRCUIT



## ③ Pch Output Current TEST CIRCUIT

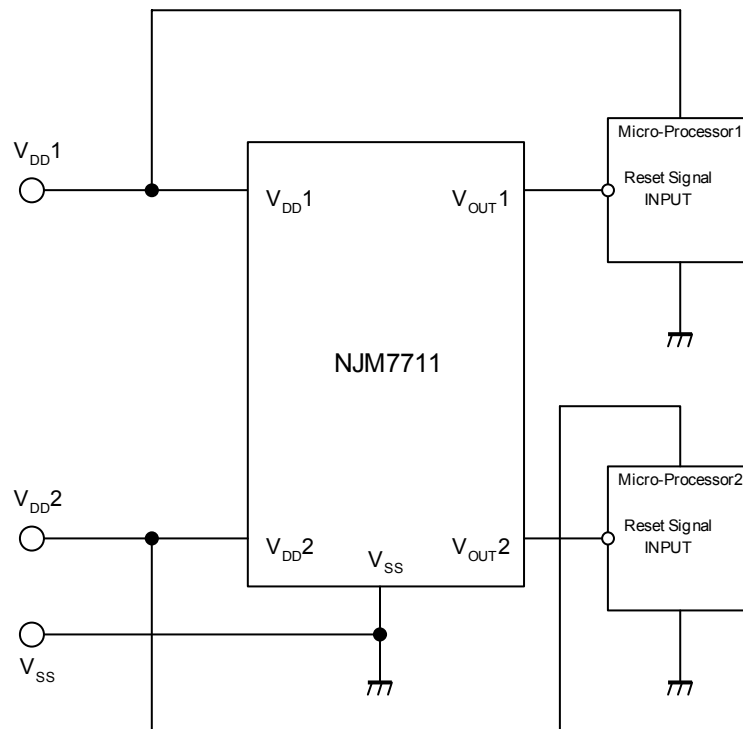


## ④ Minimum Operating Voltage TEST CIRCUIT



## ■ TYPICAL APPLICATION

Power supply voltage supervision of two systems



[CAUTION]

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