

CMOS IC Application Note

S-8255A Series Usage Guidelines

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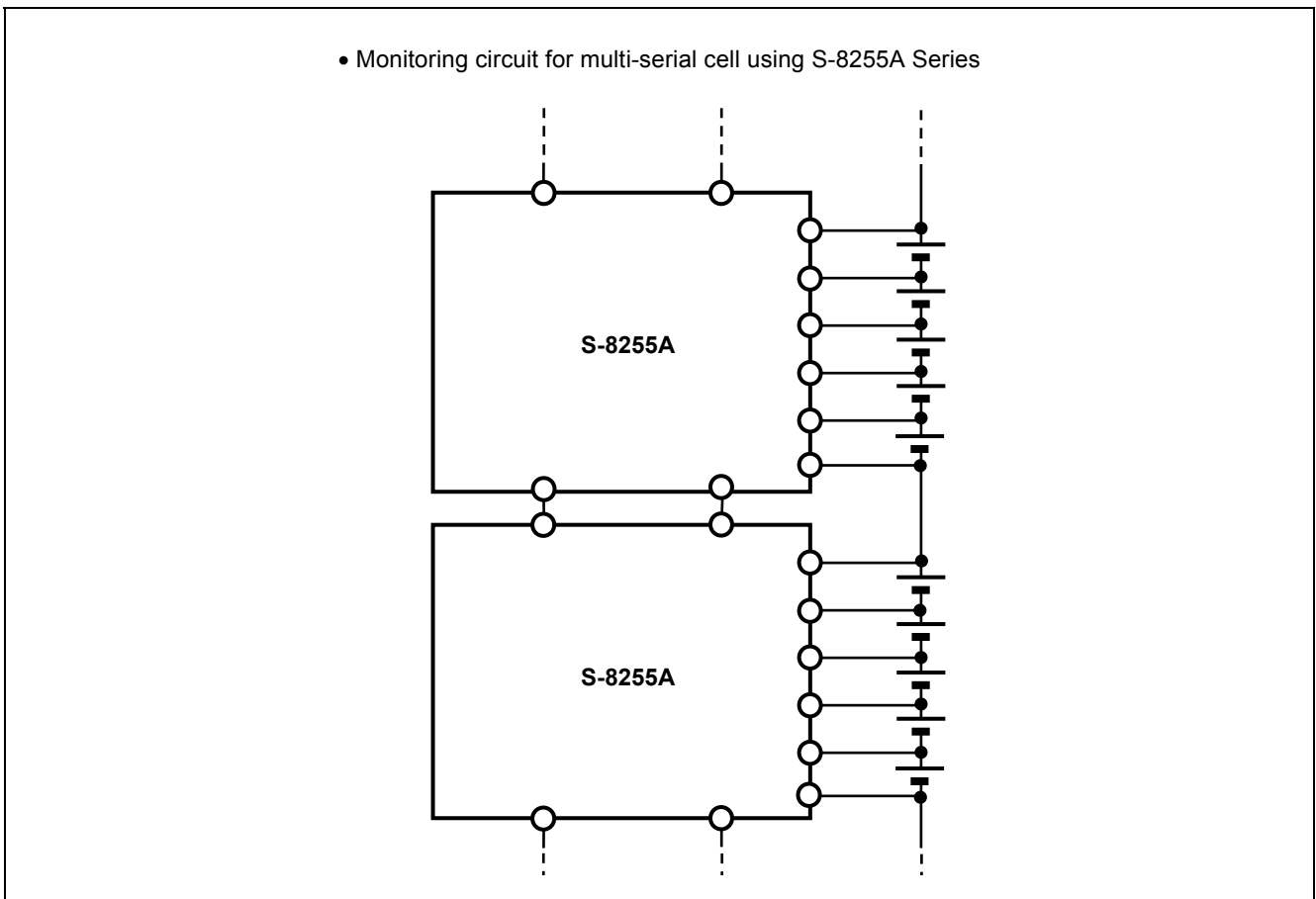
The S-8255A Series is a monitoring IC for 3-serial to 5-serial cell lithium-ion rechargeable batteries, which includes high-accuracy voltage detection circuits and delay circuits.

This application note is a guideline of the typical connection examples for applications using the S-8255A Series, and contains the components list.

Refer to the datasheet for details and specs of this IC.

It is possible to configure the following application by using the S-8255A Series.

- Monitoring circuit for multi-serial cell of 6 cells or more



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1. Connection examples: Monitoring circuits for 6-serial to 10-serial cell with S-8255A Series (Cascade connection)

1.1 Monitoring circuit for 6-serial cell

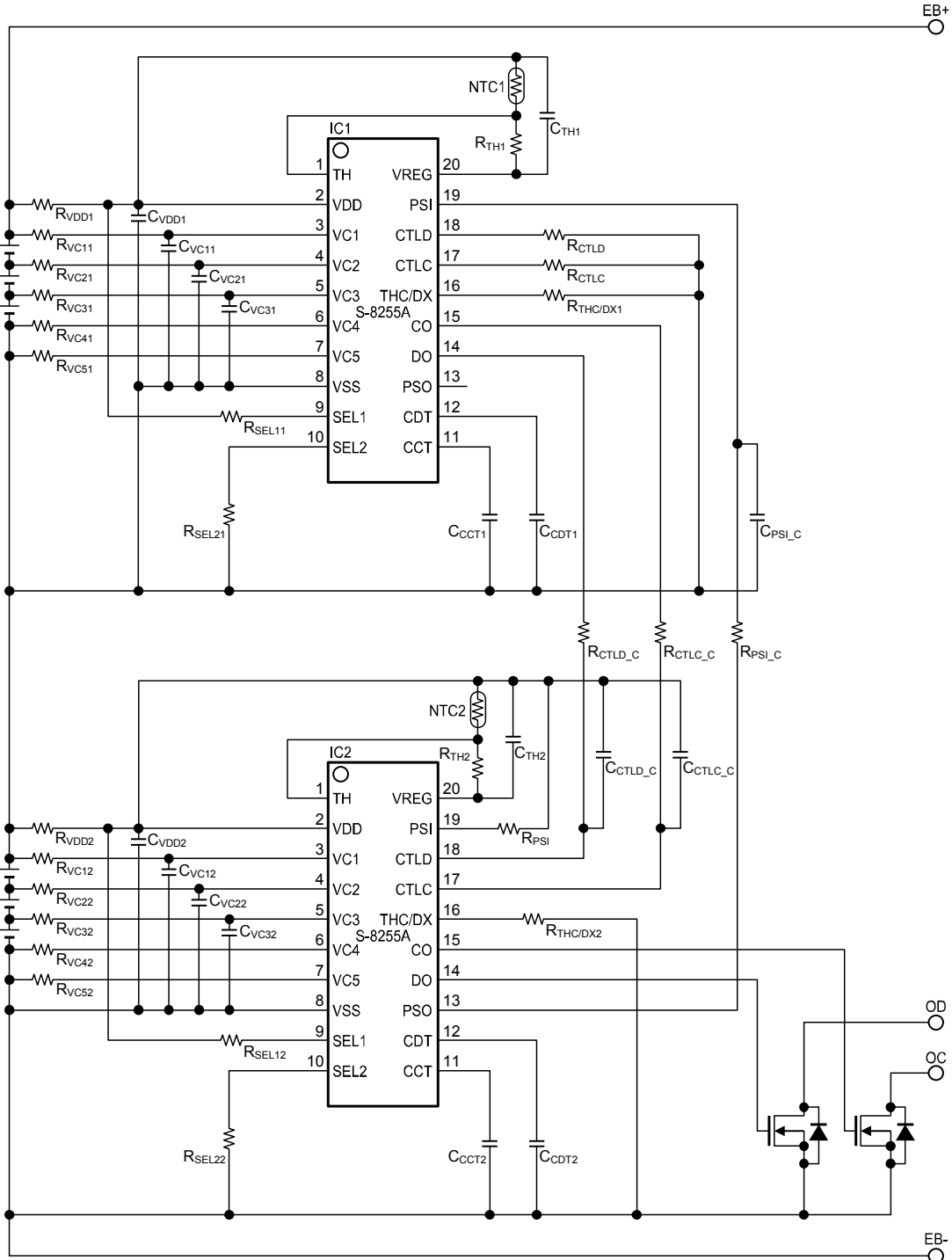


Figure 1

Caution 1. The above connection example may be changed without notice.

2. It has not been confirmed whether the operation is normal or not in circuits other than the above connection example. The connection example shown above will not guarantee successful operation.

1.2 Monitoring circuit for 7-serial cell

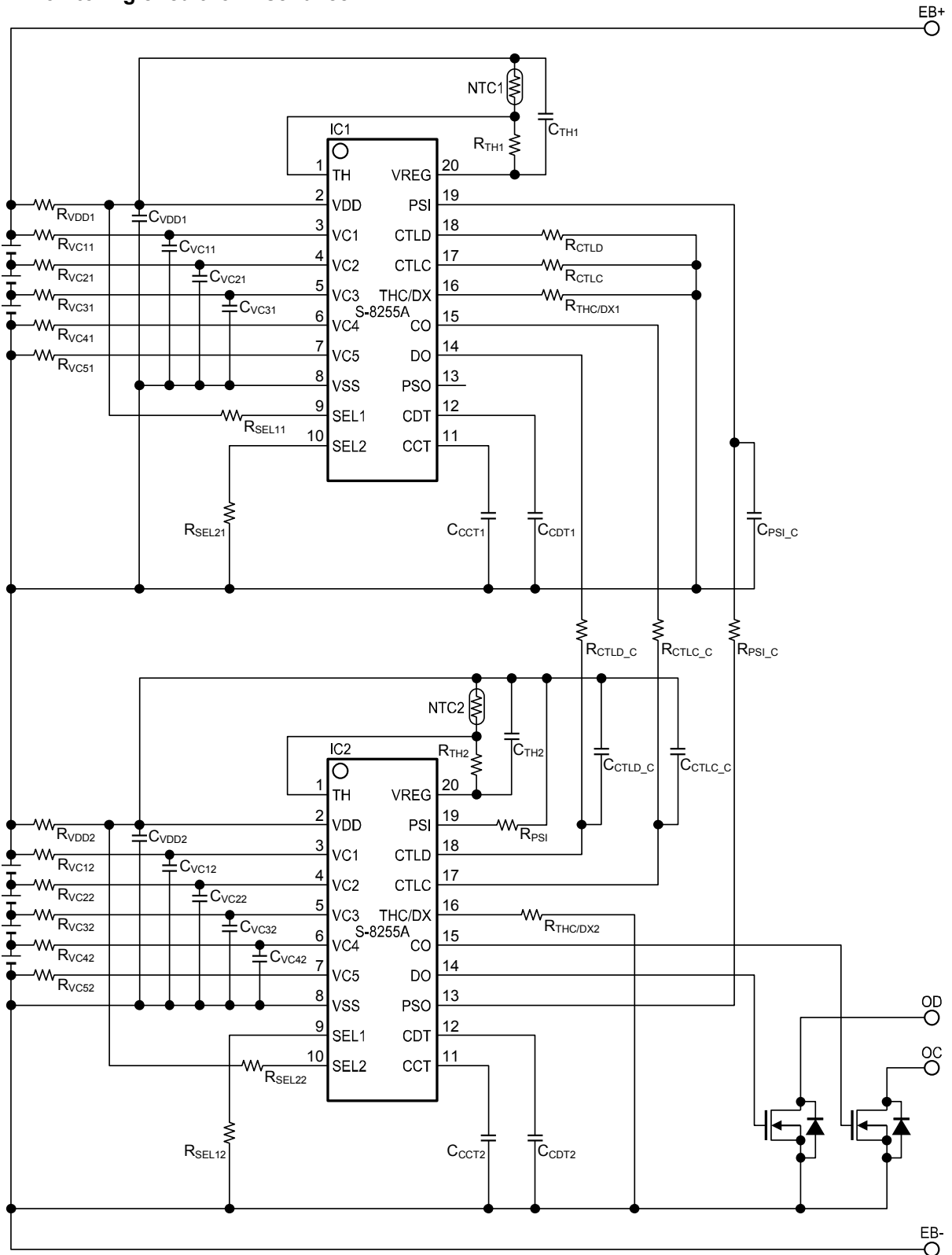


Figure 2

Caution 1. The above connection example may be changed without notice.

2. It has not been confirmed whether the operation is normal or not in circuits other than the above connection example. The connection example shown above will not guarantee successful operation.

1.3 Monitoring circuit for 8-serial cell

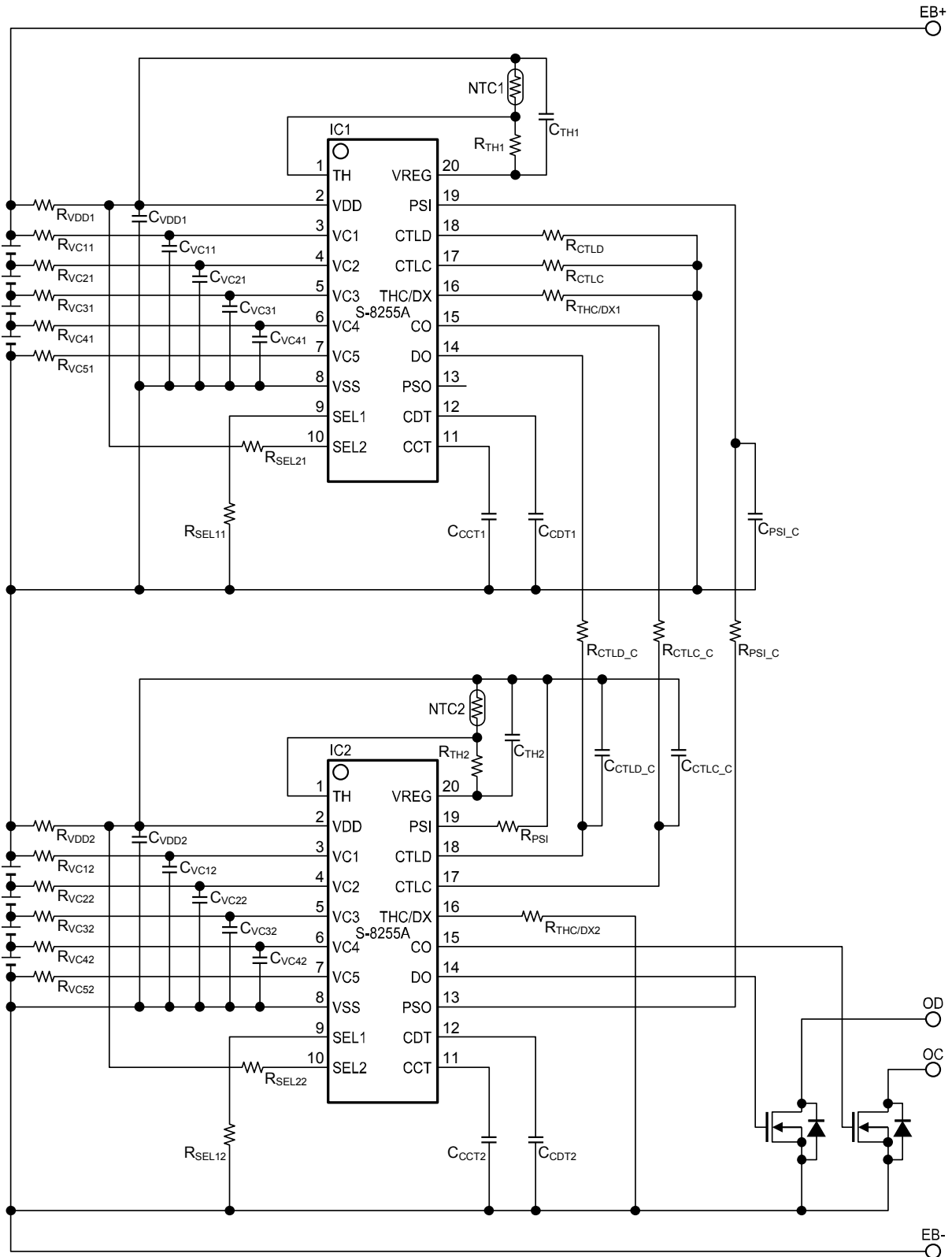


Figure 3

Caution 1. The above connection example may be changed without notice.

2. It has not been confirmed whether the operation is normal or not in circuits other than the above connection example. The connection example shown above will not guarantee successful operation.

1.4 Monitoring circuit for 9-serial cell

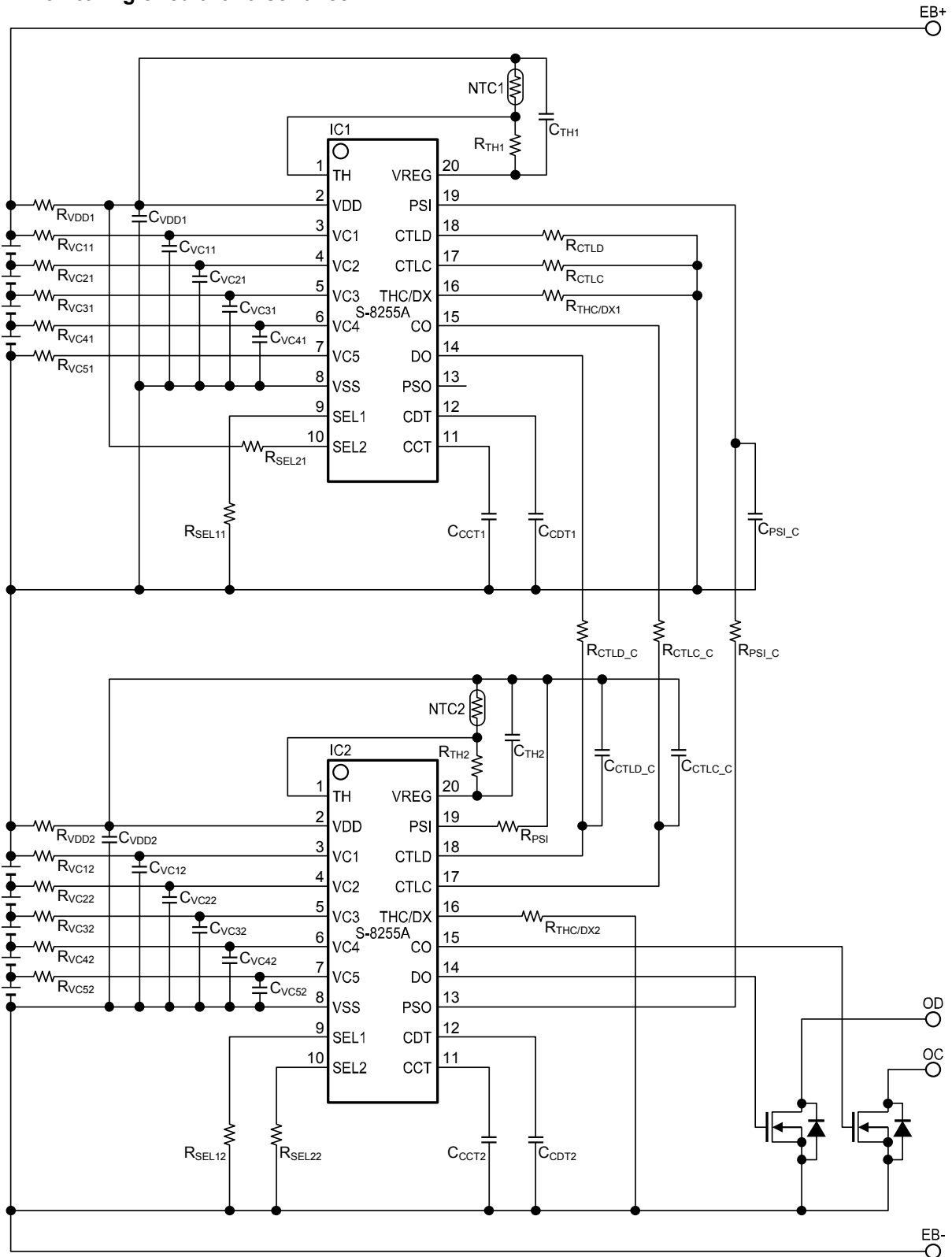


Figure 4

- Caution 1. The above connection example may be changed without notice.
2. It has not been confirmed whether the operation is normal or not in circuits other than the above connection example. The connection example shown above will not guarantee successful operation.

1.5 Monitoring circuit for 10-serial cell

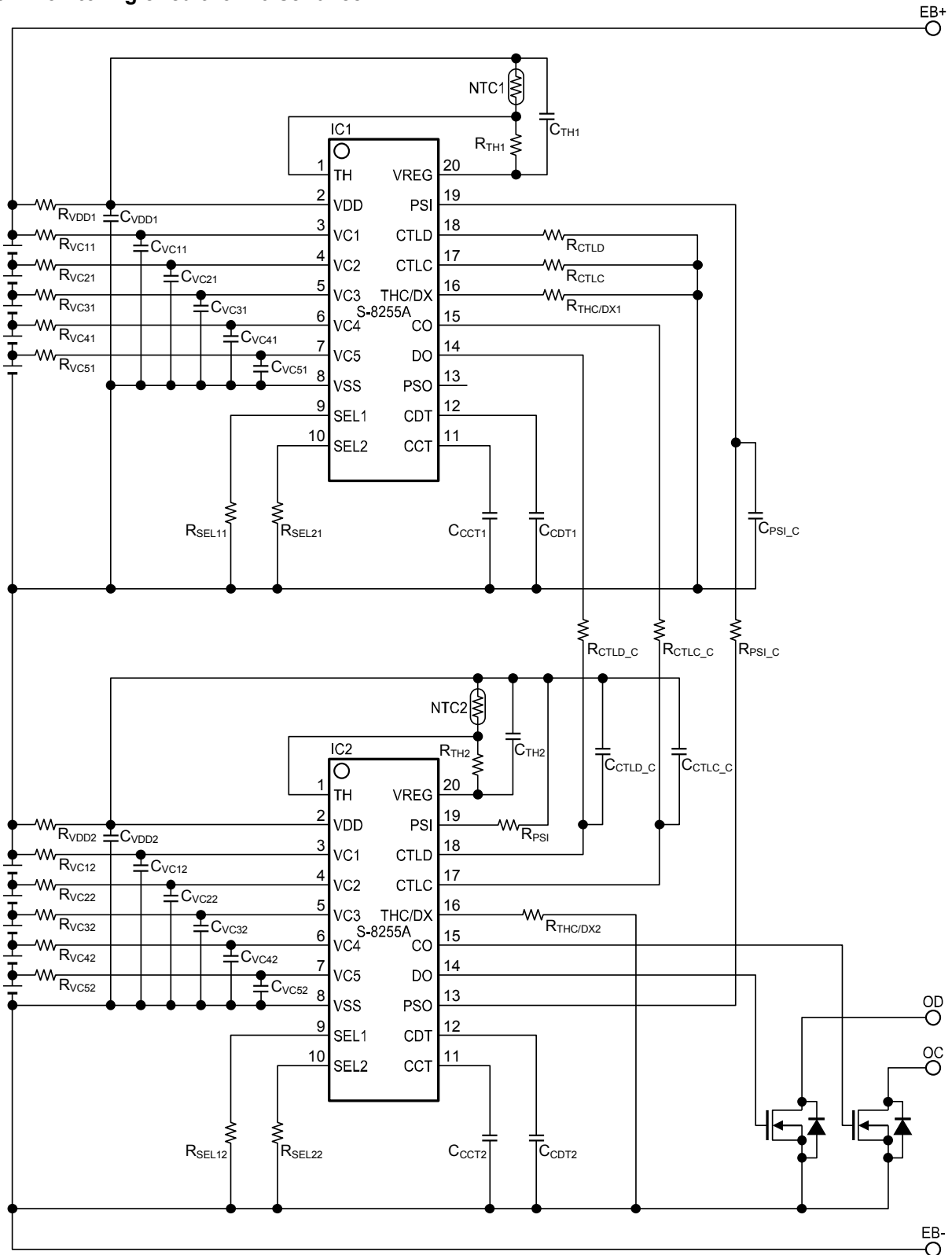


Figure 5

- Caution 1.** The above connection example may be changed without notice.
- 2.** It has not been confirmed whether the operation is normal or not in circuits other than the above connection example. The connection example shown above will not guarantee successful operation.

1.6 External components list

Table 1 shows external components used in the connection examples: Figure 1 to Figure 5.

Table 1 (1 / 2)

Symbol	Typical	Unit	Components Name	Maker	Note
IC1	–	–	S-8255A	ABLIC Inc.	Necessary
IC2	–	–	S-8255A	ABLIC Inc.	Necessary
R _{VDD1}	100	Ω	MCR03	ROHM CO., LTD.	Recommend
R _{VDD2}	100	Ω	MCR03	ROHM CO., LTD.	Recommend
R _{Vc11}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc21}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc31}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc41}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc51}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc12}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc22}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc32}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc42}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{Vc52}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{SEL11}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{SEL12}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{SEL21}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{SEL22}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{CTLC}	2	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{CTLD}	2	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{PSI}	2	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{THC/DX1}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{THC/DX2}	1	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{CTLC_C}	5.1	MΩ	MCR03	ROHM CO., LTD.	Recommend
R _{CTLD_C}	5.1	MΩ	MCR03	ROHM CO., LTD.	Recommend
R _{PSI_C}	5.1	MΩ	MCR03	ROHM CO., LTD.	Recommend
R _{TH1}	10	kΩ	MCR03	ROHM CO., LTD.	Recommend
R _{TH2}	10	kΩ	MCR03	ROHM CO., LTD.	Recommend
C _{VDD1}	1	μF	GRM21	Murata Manufacturing Co., Ltd.	Recommend
C _{VDD2}	1	μF	GRM21	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc11}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc21}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc31}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc41}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc51}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc12}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc22}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc32}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc42}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{Vc52}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{CTLC_C}	470	pF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{CTLD_C}	470	pF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{PSI_C}	470	pF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{CCT1}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{CCT2}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{CDT1}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{CDT2}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend

Table 1 (2 / 2)

Symbol	Typical	Unit	Components Name	Maker	Note
C _{TH1}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
C _{TH2}	0.1	μF	GRM188	Murata Manufacturing Co., Ltd.	Recommend
NTC1	10	kΩ	NCP18XH103F03RB	Murata Manufacturing Co., Ltd.	Recommend
NTC2	10	kΩ	NCP18XH103F03RB	Murata Manufacturing Co., Ltd.	Recommend

- Caution**
1. The above constants are subject to change without prior notice.
 2. These constants will not guarantee successful operation. Perform thorough evaluation using the actual application to set the constants.

2. Precautions when cascade-connecting S-8255A Series

Cascade-connecting the S-8255A Series, it allows for configuration of a battery monitoring circuit for multi-serial cell. However, when each cell is not connected simultaneously, voltage exceeding the absolute maximum ratings for the S-8255A Series may be applied to the S-8255A Series from the external circuit. Note that this may damage the S-8255A Series.

It is thus recommended to add a Zener diode of 25 V to 28 V between the VDD pin and the VSS pin of the S-8255A Series as a countermeasure.

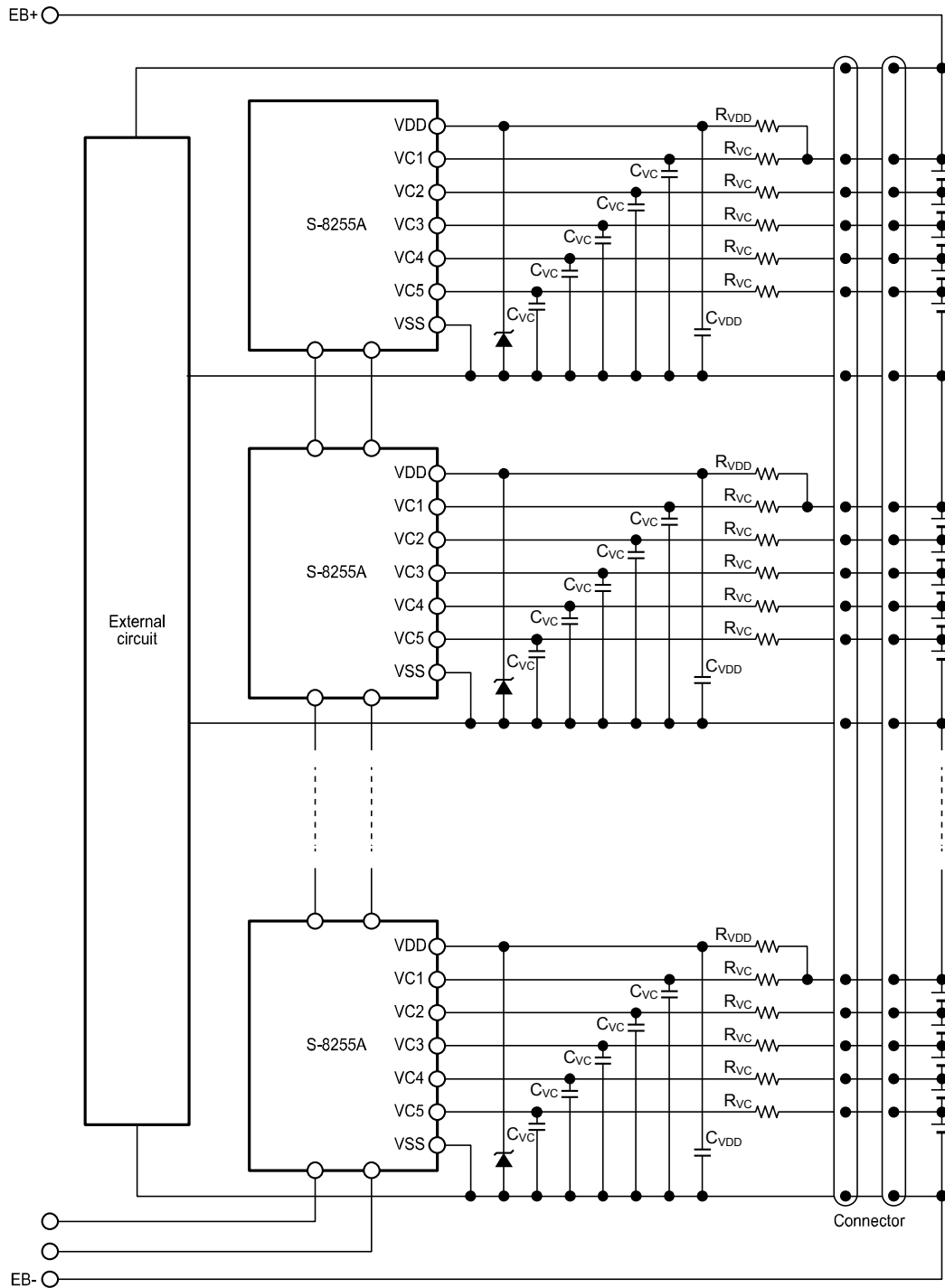


Figure 6

- Caution 1. The above connection example may be changed without notice.
- 2. It has not been confirmed whether the operation is normal or not in circuits other than the above example of connection. The example of connection shown above will not guarantee successful operation.

3. Precautions

- The usage described in this application note is typical examples using ICs of ABLIC Inc. Perform thorough evaluation before use.
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4. Related source

Refer to the following datasheet for details of the S-8255A Series.

S-8255A Series Datasheet

The information described in this application note and the datasheet is subject to change without notice.

Contact our sales office for details.

Regarding the newest version of the datasheet, select product category and product name on our website, and download the PDF file.

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