Ideal Diode Controller with Reverse-Current Protection

FEATURES

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DESCRIPTION

APPLICATIONS

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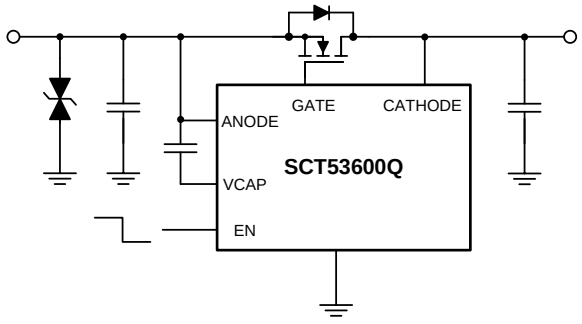
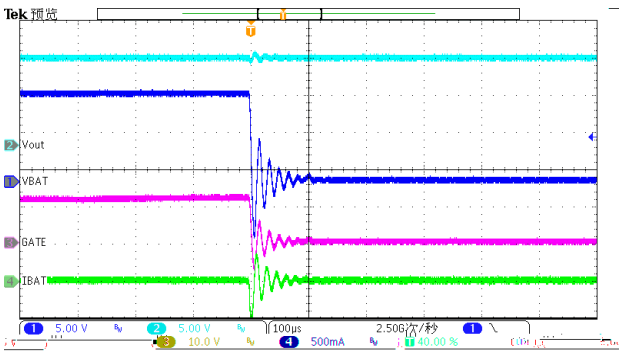
TYPICAL APPLICATION



Typical Application



Reverse Current Blocking

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REVISION HISTORY

: $I_{Q_Charge\ On}$ MAX and MIN.

: .

:

DEVICE ORDER INFORMATION

ORDERABLE DEVICE	PACKAGING TYPE	STANDARD PACK QTY	PACKAGE MARKING	PINS	PACKAGE DESCRIPTION

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	MIN	MAX	UNIT

(1)

(2)

PIN CONFIGURATION

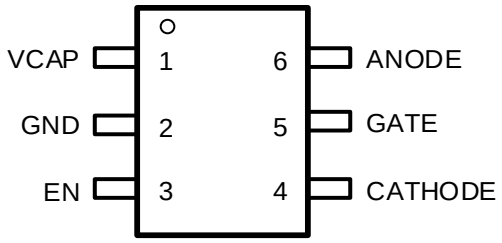

Figure 1. 6-Lead Plastic SOT23-6L

PIN FUNCTIONS

NAME	NO.	PIN FUNCTION

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RECOMMENDED OPERATING CONDITIONS

PARAMETER	DEFINITION	MIN	MAX	UNIT

ESD RATINGS

PARAMETER	DEFINITION	MIN	MAX	UNIT

(1)
(2)

THERMAL INFORMATION

PARAMETER	THERMAL METRIC	SOT23-6L	UNIT

ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
SUPPLY VOLTAGE						
$V_{(ANODE)}$						
$V_{(ANODE\ POR)}$	VANODE POR Rising threshold VANODE POR Falling threshold					
I_{SHDN}		V_{EN}= 0V				
$I_{Q_Charge\ Off}$						
$I_{Q_Charge\ On}$						
ENABLE						
V_{EN_H}	Enable input high threshold					
V_{EN_L}	Enable input low threshold					
V_{EN_HYS}	Enable Hysteresis					
I_{EN}	Enable sink current	V_{EN} = 12 V				

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V_{ANODE} to $V_{CATHODE}$				
V_{AC_REG}	Regulated Forward Threshold	℃		
		℃		
V_{AC}	threshold for full conduction mode			
V_{AC_REV}	threshold for reverse current blocking	℃		
Gm	Regulation Error AMP Transconductance*			
GATE DRIVE				
	Peak source current	V_{ANODE} $V_{CATHODE}$ = 100 mV, $V_{GATE)}$ V_{ANODE} = 5 V		
	Peak sink current*	V_{ANODE} $V_{CATHODE}$ = 20 mV, V_{GATE} V_{ANODE} = 5 V		
	Regulation max sink current	V_{ANODE} $V_{CATHODE}$ = 0 V, V_{GATE} V_{ANODE} = 5 V		
R_{DSON}	discharge switch R_{DSON}			

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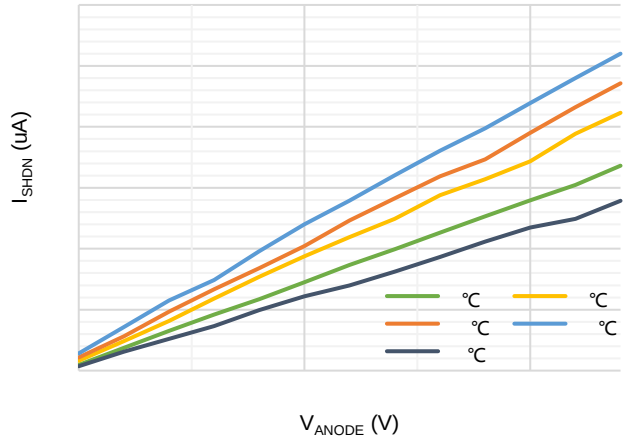
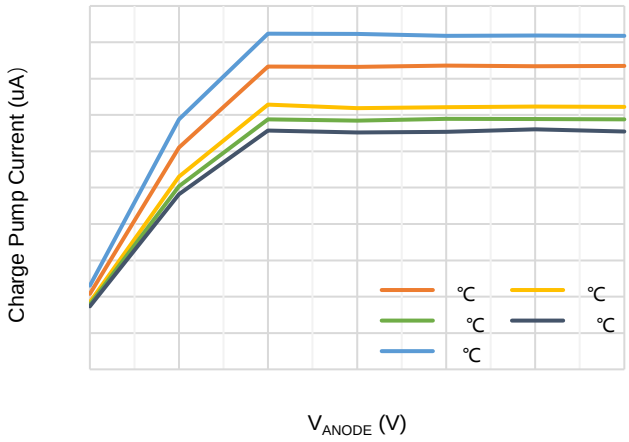
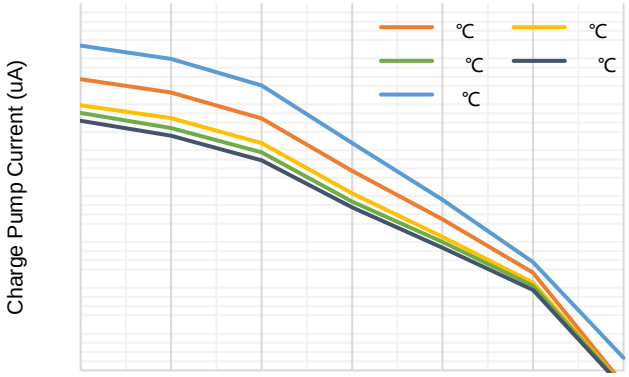
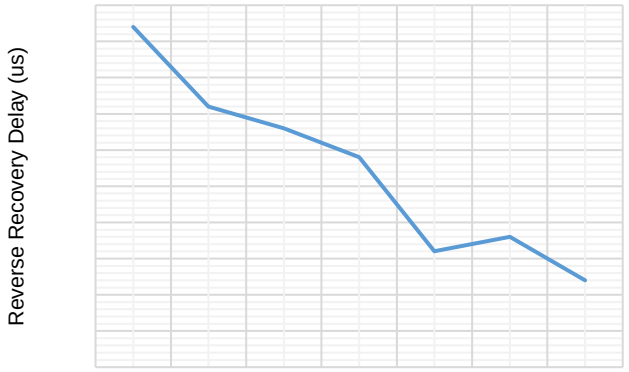
TYPICAL CHARACTERISTIC

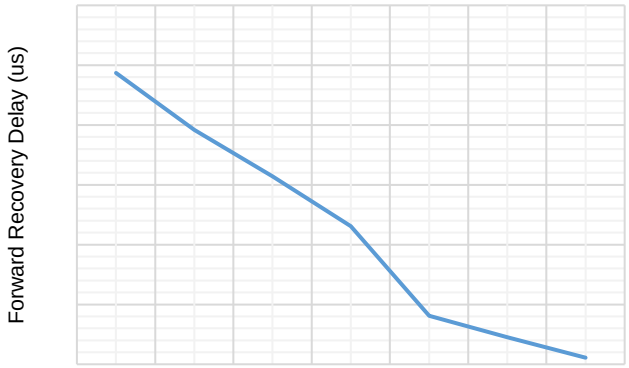


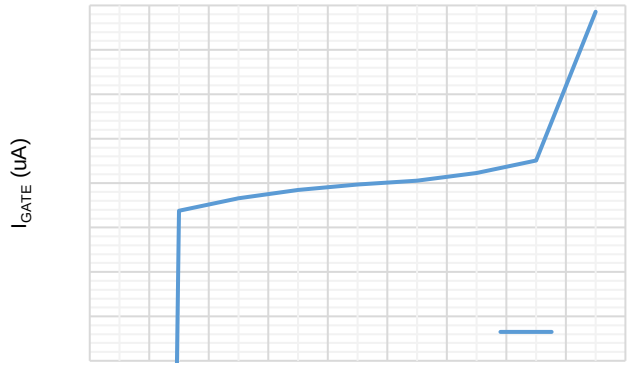






Reverse Current Blocking Delay vs Temperature





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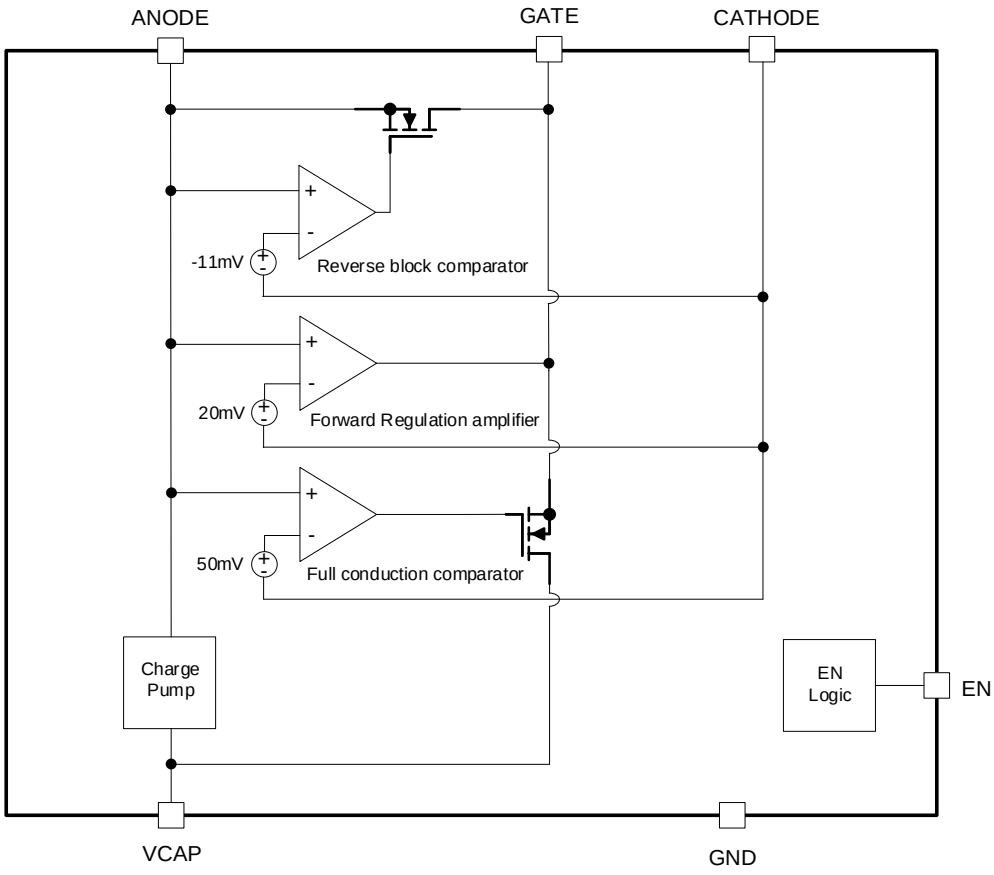
FUNCTIONAL BLOCK DIAGRAM



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OPERATION

Overview

polarity protection circuit or be used in a . This easy to use ideal diode controller operates in conjunction with an external N-channel MOSFET to replace other reverse polarity schemes such as a P-channel MOSFET or a Schottky diode.

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full conduction mode

reverse current protection mode

forward regulation mode

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APPLICATION INFORMATION

Typical Application- Reverse Polarity Protection

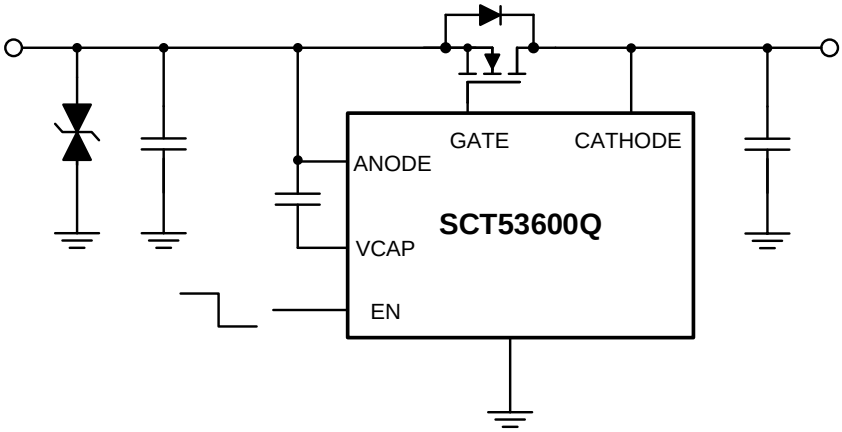

Figure 9. Typical 12V Battery Protection with single bi-directional TVS

Design Parameters

Design Parameters	Example Value

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MOSFET Selection

maximum continuous drain current I_D,
maximum source current through body diode,

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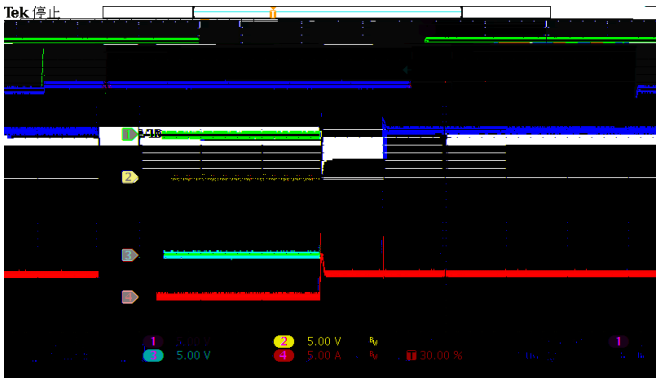
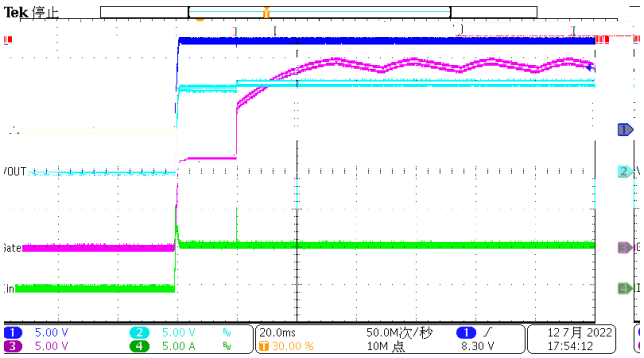
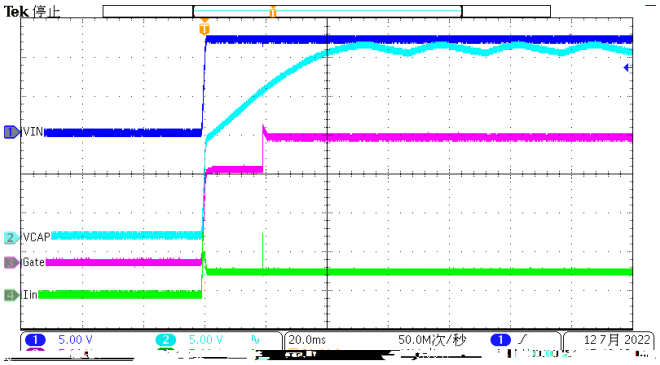
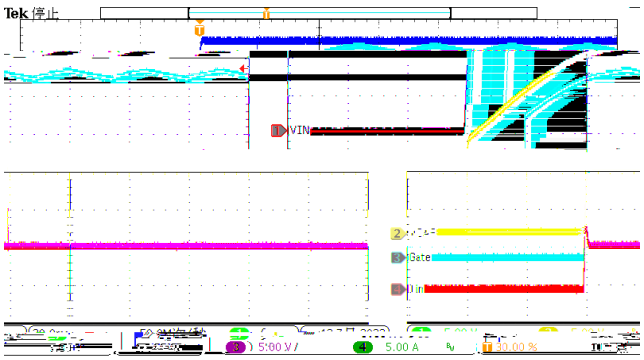
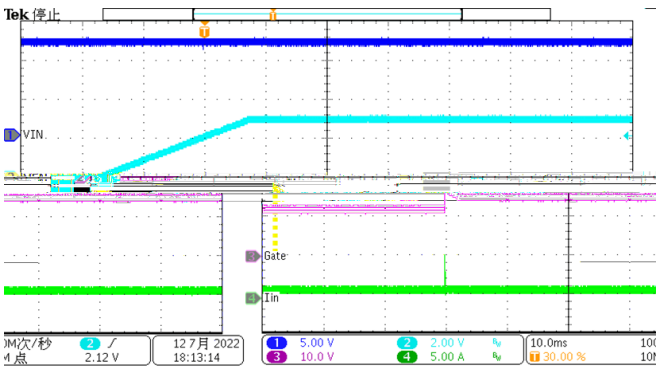
Application Waveforms

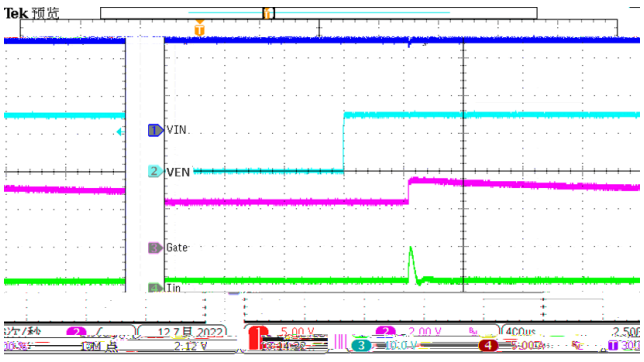












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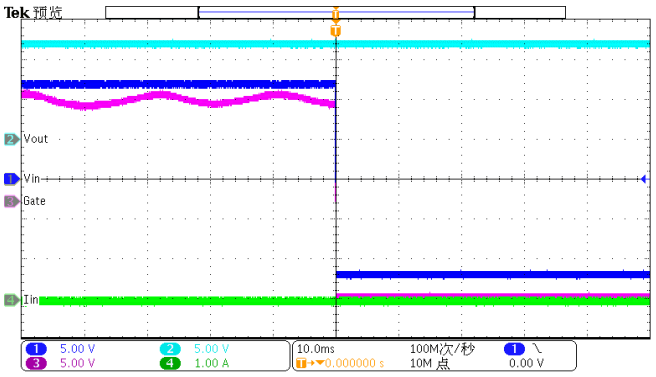
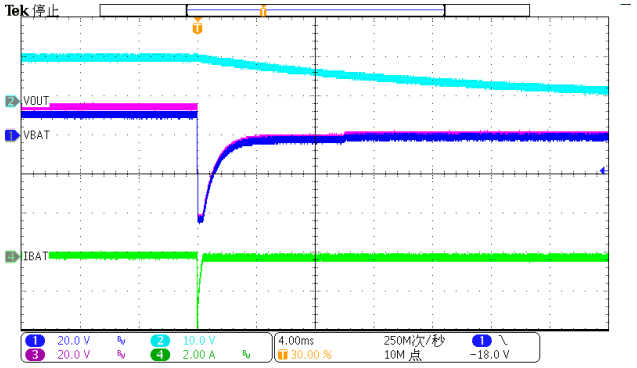
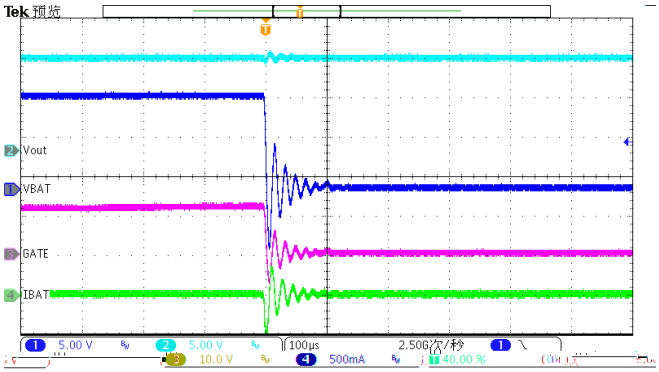
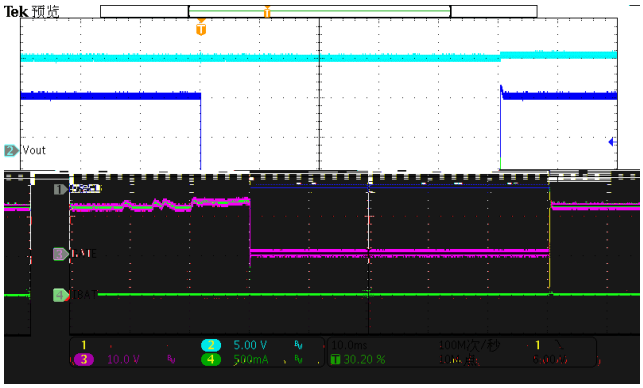
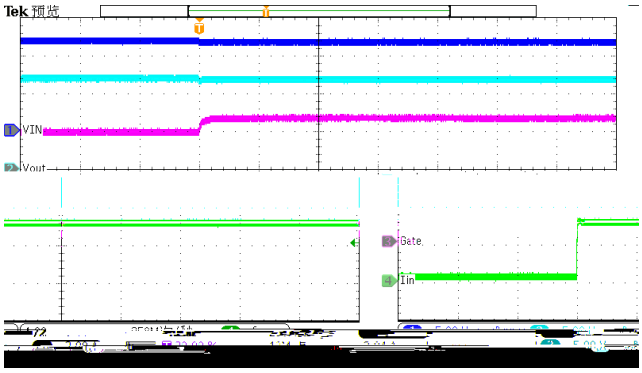
Application Waveforms(continued)

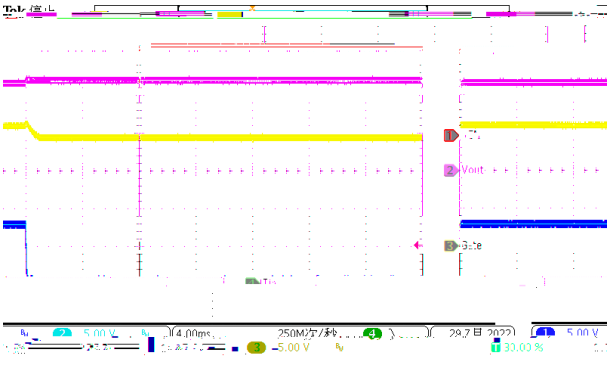












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APPLICATION INFORMATION

Typical Application- Redundant Power

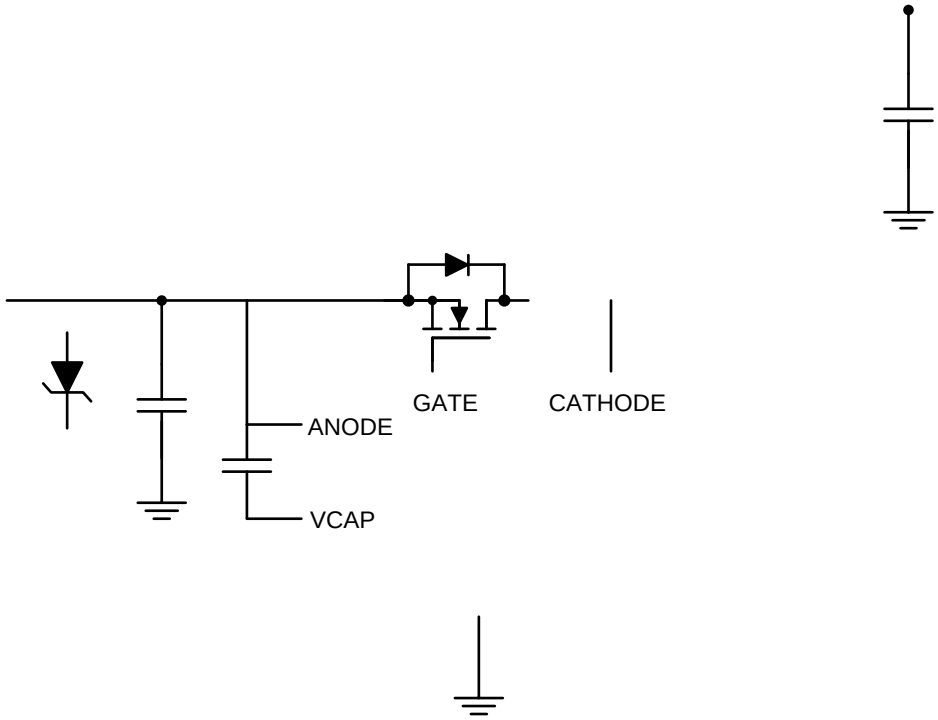

Figure 22. Redundant Power Supply Application

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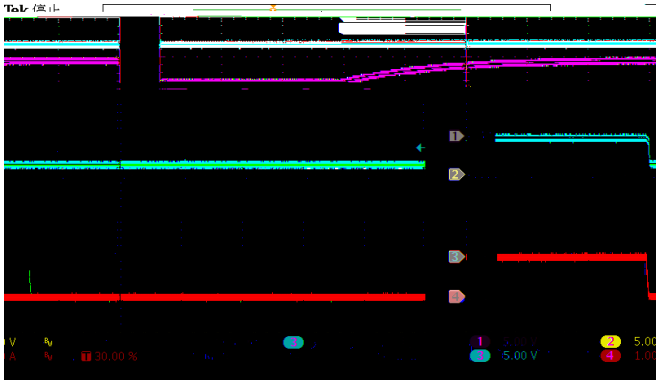
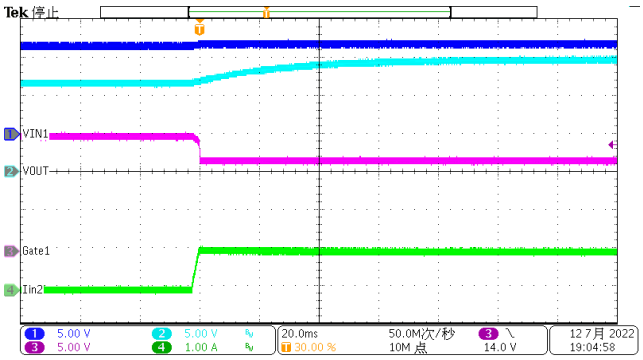
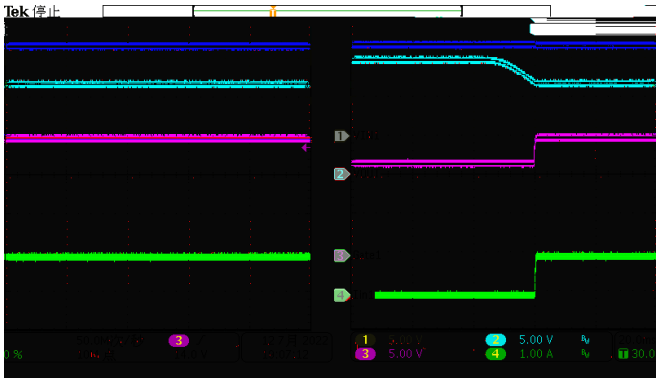
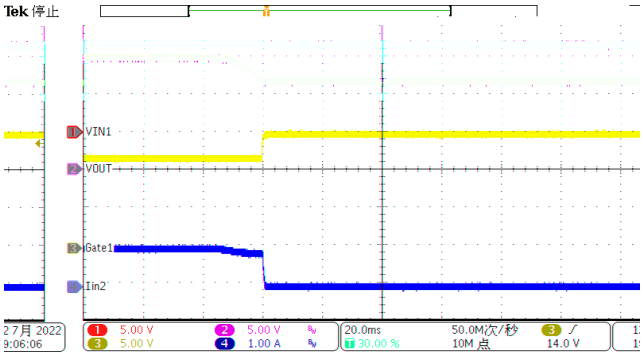
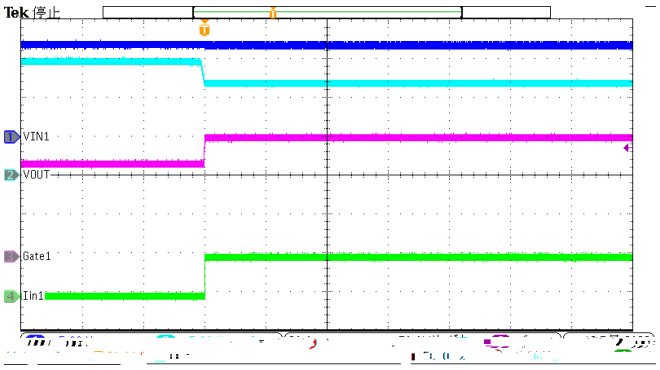
Application Waveforms

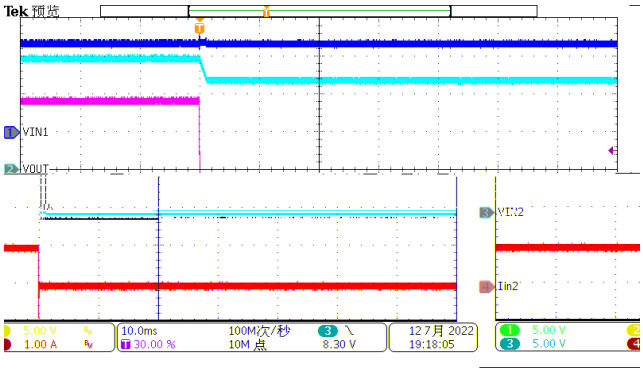












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Layout Guideline

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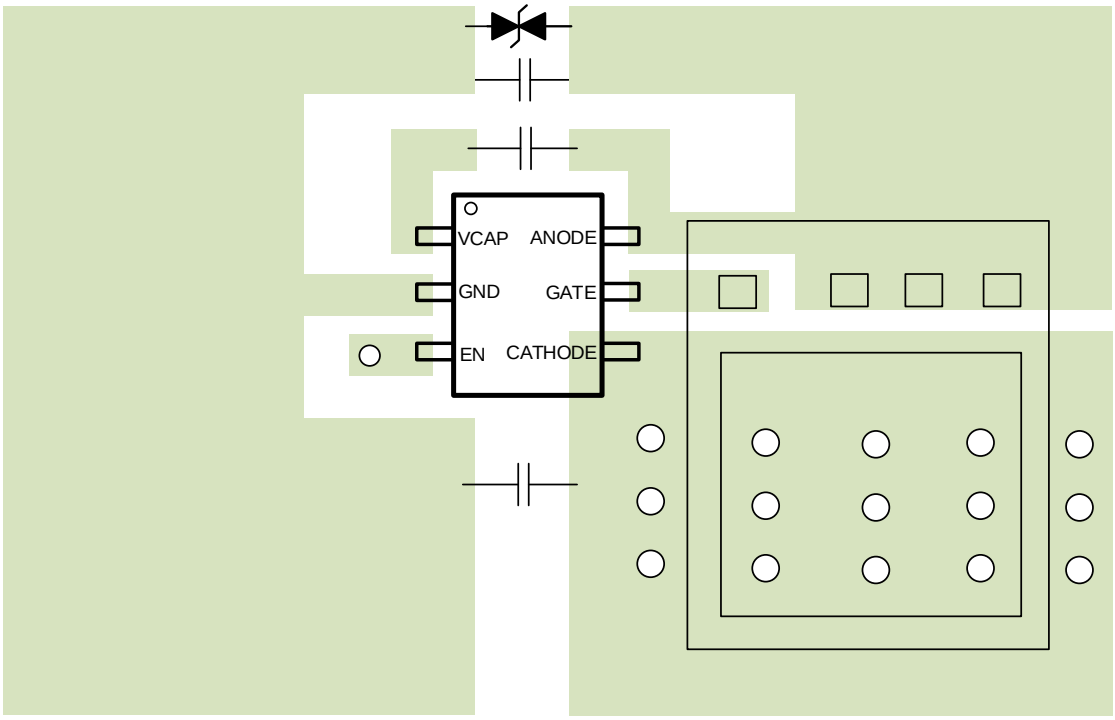

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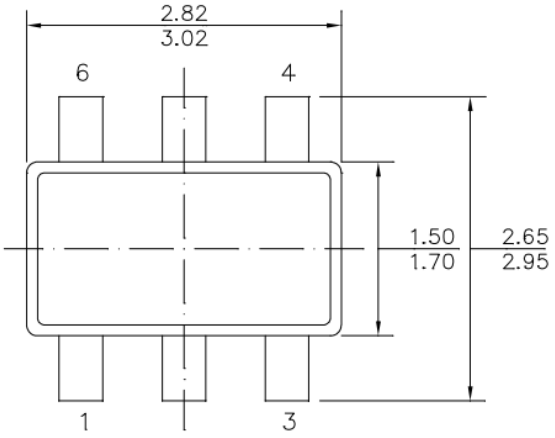
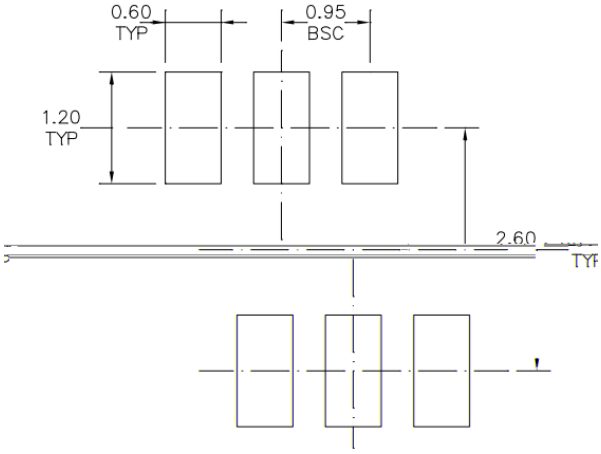
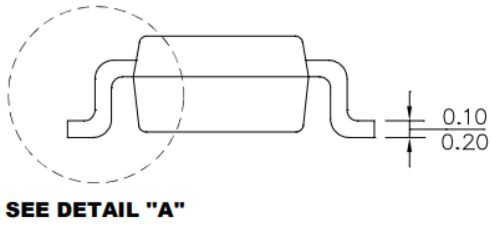
PACKAGE INFORMATION







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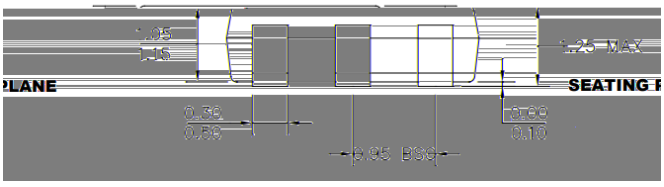

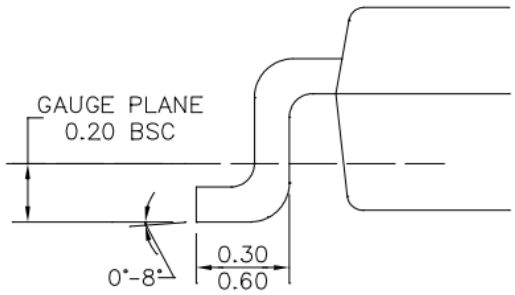

NOTE:

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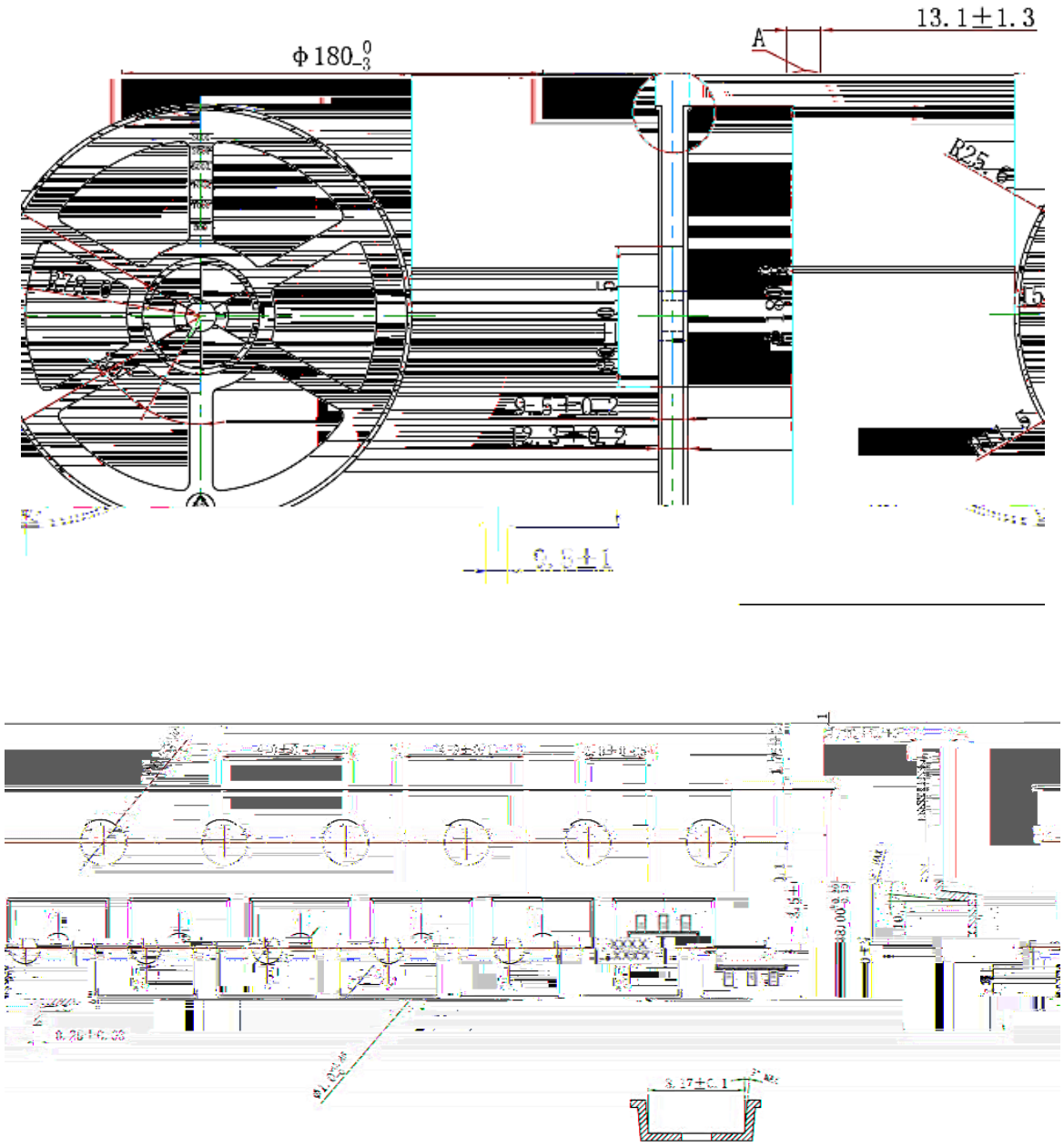
TAPE AND REEL INFORMATION