



ZHEJIANG UNIU-NE Technology CO., LTD

浙江宇力微新能源科技有限公司

U21276 Data Sheet

V 1.0

版权归浙江宇力微新能源科技有限公司

CURRENT SENSING SINGLE CHANNEL DRIVER

General Description

The U21276 is a high voltage, high speed power MOSFET and IGBT driver. Proprietary HVIC and latch immune CMOS technologies enable ruggedized monolithic construction. The logic input is compatible with standard CMOS or LSTTL outputs, down to 3.3V. The protection circuitry detects over-current in the driven power transistor and terminates the gate drive voltage. An open drain $\overline{\text{FAULT}}$ signal is provided to indicate that an over-current shutdown has occurred. The output driver features a high pulse current buffer stage designed for minimum cross-conduction. The floating channel can be used to drive an N-channel power MOSFET or IGBT in the high side or low side configuration which operates up to 600 volts.

Product Summar

VOFFSET	600V max.
IO+/-	4A/6A
VOUT	9-20V
VCSt _h	1.2V
ton/off (typ.)	220&220ns

Key Features

- Floating channel designed for bootstrap operation Fully operational to +600V Tolerant to negative transient voltage dV/dt immune .
- Application- specific gate drive range: 9 to 20V
- Undervoltage lockout
- 3.3V, 5V and 15V input logic compatible
- $\overline{\text{FAULT}}$ lead indicates shutdown occurred
- Output in phase with input
- Available in Lead-Free

Applications

- Home appliances
- Industrial applications and drives
- Motor drivers
- Robot applications and drivers
- Induction heating
- Power drive of automotive electronics

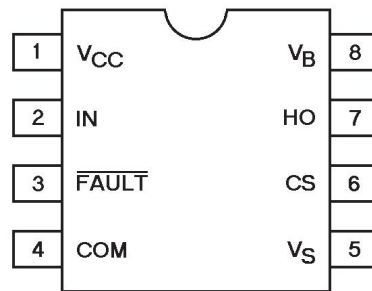
Pakeages



Product information

Base Part Number	Package Type	Standard OUT		VOFFSET	Logic Control
		IO+	IO-		
U21276	SOP8	4A	6A	600V	IN&CS

Pin Assignments

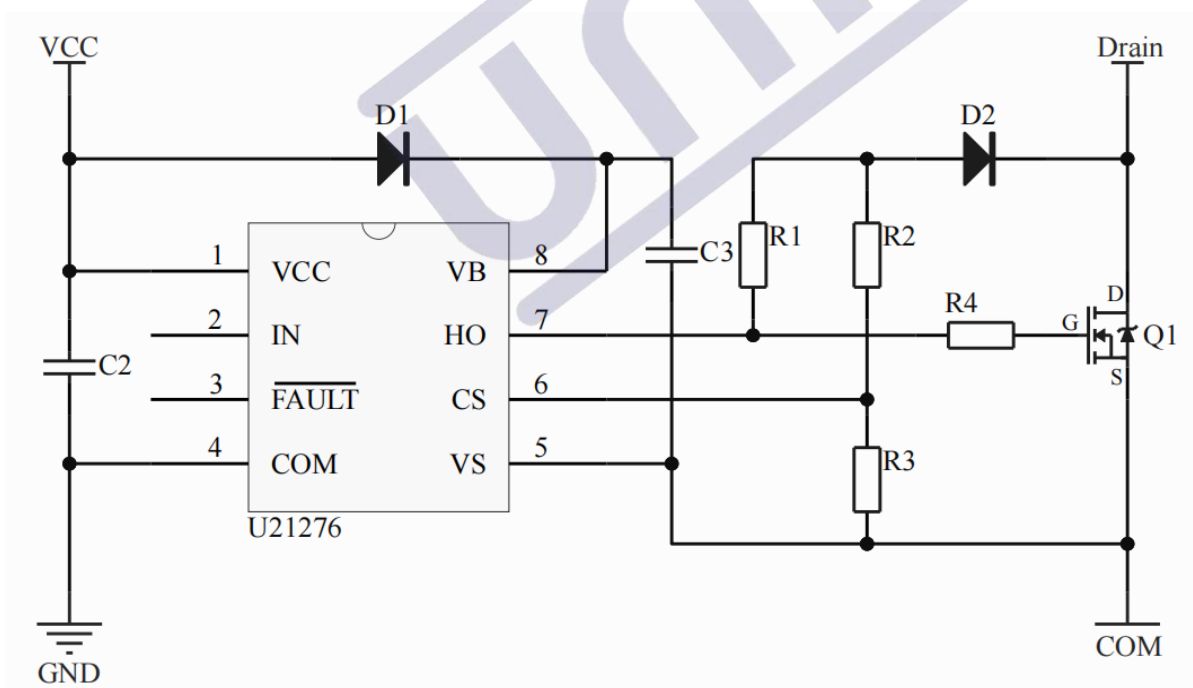


U21276

Pin Function

Number	Symbol	Description
1	VCC	Logic and gate drive supply
2	IN	Logic input for gate driver output(HO), in phase with HO
3	FAULT	Indicates over-current shutdown has occurred, negative logic
4	COM	Logic ground
5	VS	High side floating supply return
6	CS	Current sense input to current sense comparator
7	HO	High side gate drive output
8	VB	High side floating supply

Typical Connection



Absolute Maximum Ratings

Absolute Maximum Ratings indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to COM. The Thermal Resistance and Power Dissipation ratings are measured under board mounted and still air conditions.

Symbol	Definition	Min.	Max.	Units
VB	High Side Floating Supply Voltage	-0.3	625	V
VS	High Side Floating Offset Voltage	VB-25	VB+0.3	
VHO	High Side Floating Output Voltage	VS-0.3	VB+0.3	
VCC	Logic Supply Voltage	-0.3	25	
VIN	Logic Input Voltage	-0.3	VCC+0.3	
VFLT	$\overline{\text{FAULT}}$ Output Voltage	-0.3	VCC+0.3	
VCS	Current Sense Voltage	VS-0.3	VB+0.3	
dVS/dt	Allowable Offset Supply Voltage Transient	—	50	V/ns
PD	Package Power Dissipation @ $T_A \leq +25^\circ\text{C}$	—	0.625	W
RthJA	Thermal Resistance, Junction to Ambient	—	200	C/W
TJ	Junction Temperature	—	150	$^\circ\text{C}$
TS	Storage Temperature	-55	150	
TL	Lead Temperature (Soldering, 10seconds)	—	300	

Recommended Operating Conditions

The Input/Output logic timing diagram is shown in Figure 1. For proper operation the device should be used within the recommended conditions. The VS offset rating is tested with all supplies biased at 15V differential.

Symbol	Definition	Min.	Max.	Units
VB	High Side Floating Supply Voltage	VS+9	VS+20	V
VS	High Side Floating Offset Voltage	-6(Note1)	600	
VHO	High Side Floating Output Voltage	VS	VB	
VCC	Logic Supply Voltage	10	20	
VIN	Logic Input Voltage	0	VCC	
VFLT	$\overline{\text{FAULT}}$ Output Voltage	0	VCC	
VCS	Current Sense Signal Voltage	VS	VS+5	
TA	Ambient Temperature	-40	125	$^\circ\text{C}$

Note1: Logic operational for VS of -6 to +600V. Logic state held for VS of -6V to -VBS.

Dynamic Electrical Characteristic

VBIAS (VCC, VBS) = 15V, CL = 1000 pF and TA = 25°C unless otherwise specified. The dynamic electrical characteristics are measured using the test circuit shown in Figure 3.

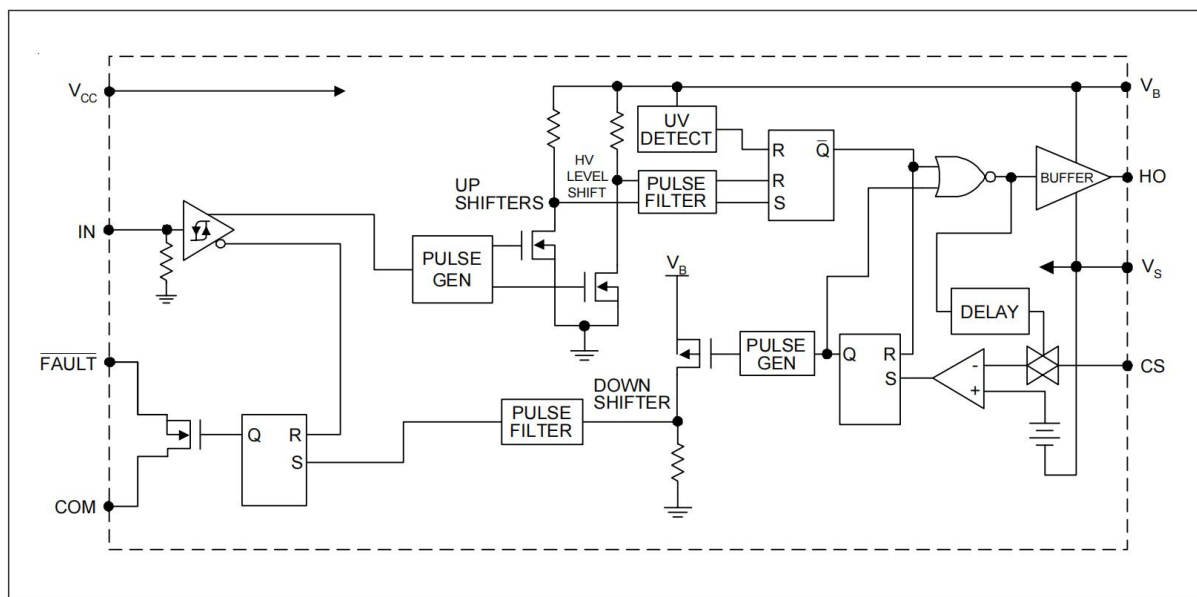
Symbol	Definition	Min.	Typ.	Max.	Units	Test Condition
ton	Turn-On Propagation Delay	—	220	270	ns	VS=0V
toff	Turn-Off Propagation Delay	—	220	270		VS=600V
tr	Turn-On Rise Time	—	14	50		
tf	Turn-Off Fall Time	—	12	45		
tbl	Start-Up Blanking Time	—	1200	—		
tcs	CS Shutdown Propagation Delay	—	520	650		
tfl	CS to FAULT Pull-Up Propagation Delay	—	680	850		

Static Electrical Characteristics

VBIAS(VCC, VBS) = 15V and TA = 25°C unless otherwise specified. The VIN, VTH and IIN parameters are referenced to COM. The VO and IO parameters are referenced to VS.

Symbol	Definition	Min.	Typ.	Max.	Units	Test Condition
VIH	Logic "1" Input Voltage	3.0	—	—	V	VCC=10V to 20V
VIL	Logic "0" Input Voltage	—	—	0.8		
VCSTH+	Going Threshold	—	1.2	—		
VOH	High Level Output Voltage, V BIAS - VO	—	—	100	mV	IO=0A
VOL	Low Level Output Voltage, VO	—	—	100		IO=0A
ILK	Offset Supply Leakage Current	—	—	50	μA	VB=VS=600V
IQBS	Quiescent VBS Supply Current	—	60	120		VIN=0V or 5V
IQCC	Quiescent VCC Supply Current	—	20	80		
IIN+	Logic "1" Input Bias Current	—	42	60		VIN=5V
IIN-	Logic "0" Input Bias Current	—	—	1.0		VIN=0V
ICS+	"High" CS Bias Current	—	—	1.0		VCS=3V
ICS-	"High" CS Bias Current	—	—	1.0		VCS=0V
VBSUV+	Positive Going Threshold	5.5	6.4	7.3	V	
VBSUV-	Negative Going Threshold	5.4	6.3	7.2		
IO+	Output High Short Circuit Pulsed Current	—	4	—	A	VO=0V, VIN=5V PW ≤ 10 μs
IO-	Output Low Short Circuit Pulsed Current	—	6	—		VO=15V, VIN=5V PW ≤ 10 μs
RON,FLT	FAULT - Low on Resistance	—	60	—	Ω	

Block Diagram



Time waveform

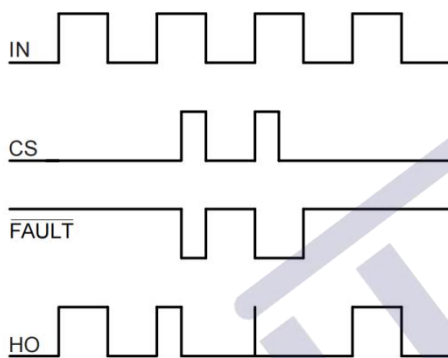


Figure 1. Input/Output Timing Diagram

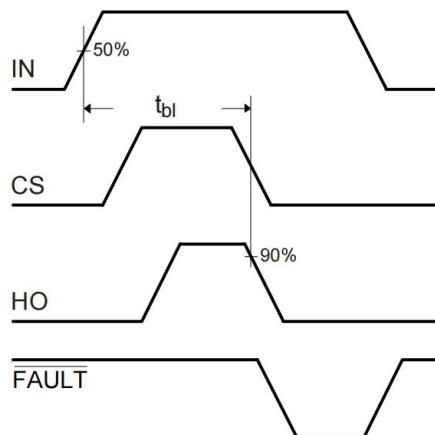


Figure 3. Start-up Blanking Time Waveform Definitions

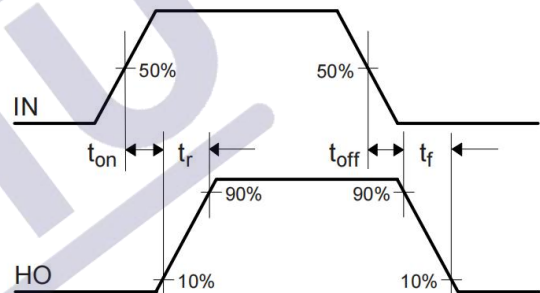


Figure 2. Switching Time Waveform Definition

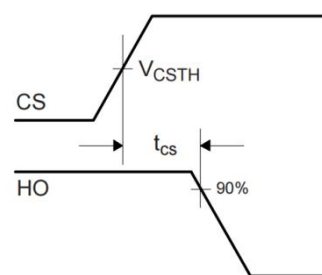


Figure 4. CS Shutdown Waveform Definitions

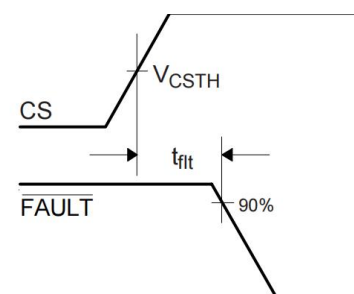
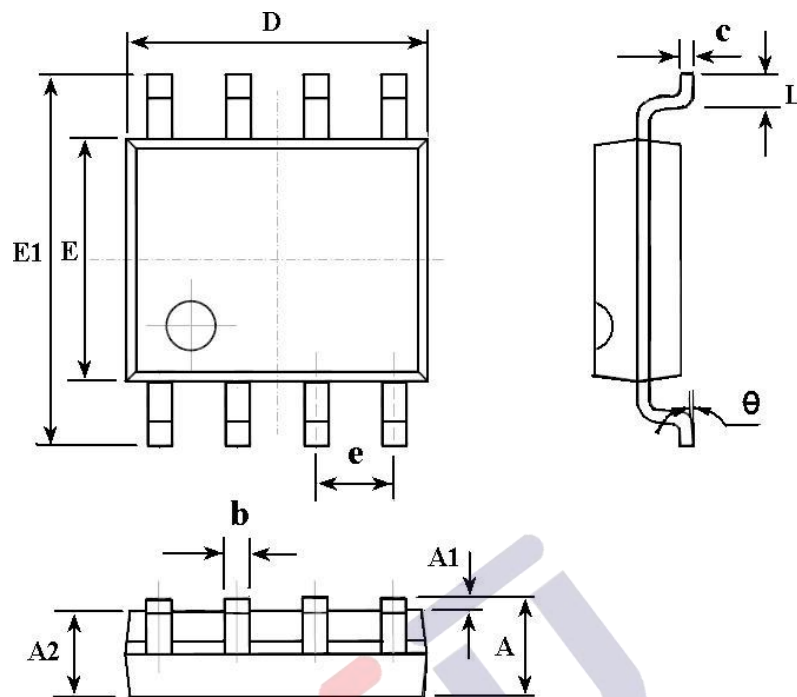


Figure 5. CS to FAULT Waveform Definitions

Packaging information

SOP8



Symbol	Dimensions In Millimeters	
	Min	M
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.70	5.10
E	3.80	4.00
E1	5.80	6.20
e	1.27(BSC)	
L	0.40	1.27
θ	0°	8°

1、版本记录

DATE	REV.	DESCRIPTION
2023/07/19	V1.0	优化电路

2、免责声明

浙江宇力微新能源科技有限公司保留对本文档的更改和解释权力，不另行通知!

客户在下单前应获取我司最新版本资料，并验证相关信息是否最新和完整。量产方案需使用方自行验证并自担所有批量风险责任。未经我司授权，该文件不得私自复制和修改。

产品不断提升，以追求高品质、稳定性强、可靠性高、环保、节能、高效为目标，我司将竭诚为客户提供性价比高的系统开发方案、技术支持等更优秀的服务。

版权所有 浙江宇力微新能源科技有限公司/绍兴宇力半导体有限公司

3、联系我们

浙江宇力微新能源科技有限公司

总部地址：绍兴市越城区斗门街道袍渎路25号中节能科创园45幢4/5楼

电话：0575-85087896（研发部）

传真：0575-88125157

E-mail:htw@uni-semic.com

无锡地址：无锡市锡山区先锋中路6号中国电子（无锡）数字芯城1#综合楼503室

电话:0510-85297939

E-mail:zh@uni-semic.com

深圳地址：深圳市宝安区西乡街道南昌社区宝源路泳辉国际商务大厦410

电话：0755-84510976

E-mail:htw@uni-semic.com