

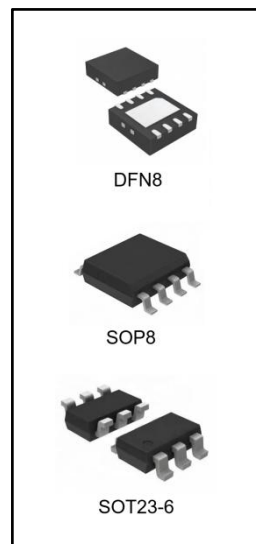
Low Voltage H-Bridge IC

SSP8810

General Description

SSP8810 is a low voltage DC motor driver chip specially designed for low voltage operating systems. 4 low resistance MOS and forward, reverse, brake and stop functions are integrated.

SSP8810 built-in temperature protection function, when the output short circuit occurs, the output current instantly increases, the circuit power consumption rises sharply, the chip temperature rises sharply, when the chip temperature exceeds the maximum temperature point set by the internal temperature protection circuit, the internal circuit turns off the built-in power switch tube, cut off the load current.



Features

- Operating Voltage Range: 2.0-6.8V
- Low operating current (typ. 38μA@3.6V)
- Low standby current (typ. 0.1μA)
- Continuous Operating Current 1.0A
- Thermal protection integrating hysteresis effect
- Package: DFN8 (2x2) , SOP8, SOT23-6

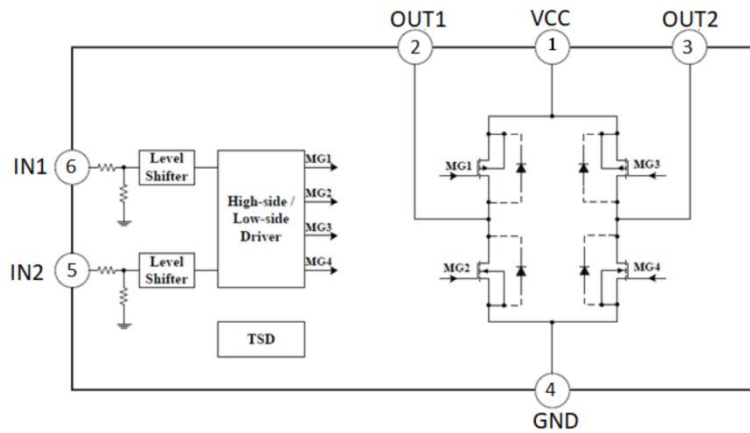
Applications

- Consumer products
- Water and gas meter products
- Toy
- electric toothbrush

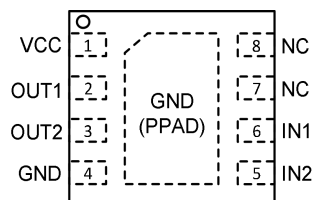
Order specification

Part No	Package	Manner of Packing	Devices per bag/reel
SSP8810DFR	DFN2×2-8	Reel	3000
SSP8810SR	SOP8	Reel	4000
SSP8810M6R	SOT23-6	Reel	3000

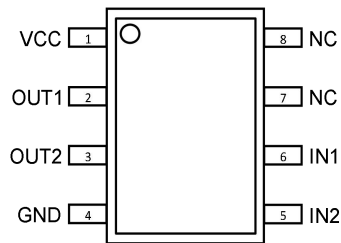
Block Diagram and Pin Arrangement Diagram



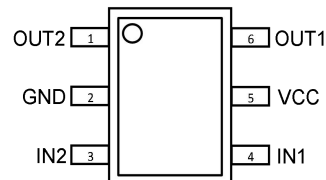
DFN2×2-8



SOP8



SOT23-6



Pin Assignment

Pin No.			Pin Name	Description	I/O
DFN2×2-8	SOP8	SOT23-6			
1	1	5	VCC	Supply input voltage, connect 1uF or greater capacitance between VCC and ground	VCC
2	2	6	OUT1	Output 1, connect 0.1uF or greater capacitance between OUT1 and OUT2	O
3	3	1	OUT2	Output 2, connect 0.1uF or greater capacitance between OUT1 and OUT2	O
4	4	2	GND	Ground.	P

5	5	3	IN2	Logic input 2	I
6	6	4	IN1	Logic input 1	I
7	7	-	NC	Floating	NC
8	8	-	NC	Floating	NC

Absolute Maximum Ratings

$T_{amb}=25^{\circ}\text{C}$, unless specified otherwise.

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	-0.3	7.0	V
Input Voltage	IN1,IN2	-0.3	7.0	V
ESD (Human-Body Model)	VCC,IN1,IN2, OUT1,OUT2		2	kV
Operating Temperature	T_o	-40	85	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-65	150	$^{\circ}\text{C}$
Thermal Resistance (Junction to Ambient)	DFN8 θ_{JA}		61	$^{\circ}\text{C}/\text{W}$
	SOP8 θ_{JA}		130	$^{\circ}\text{C}/\text{W}$

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Recommended operating conditions ($T_{amb}=25^{\circ}\text{C}$)

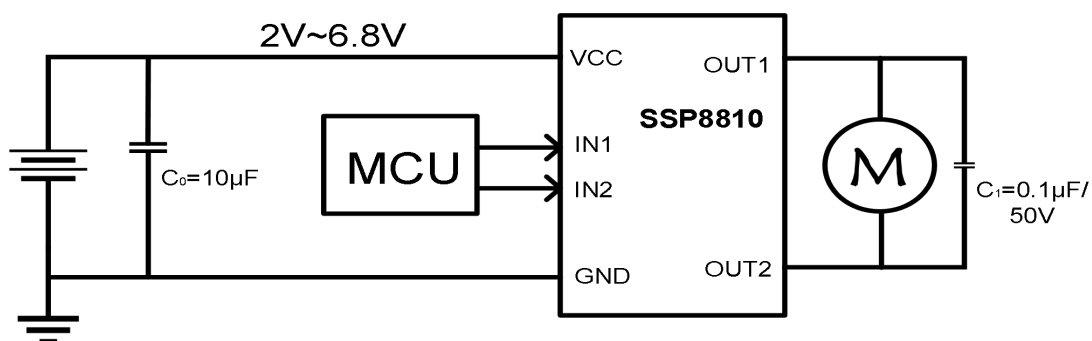
Parameter	Symbol	Min	Max	Unit
Input voltage range	V_{CC}	2.0	6.8	V
Input voltage	IN1,IN2	2.0	6.8	V
Output Current	IOUT1,IOUT2	0	1	A

Electrical Characteristics

VCC=3.6V, T_{amb}= 25°C, R_{LOAD}=20Ω, unless specified otherwise.

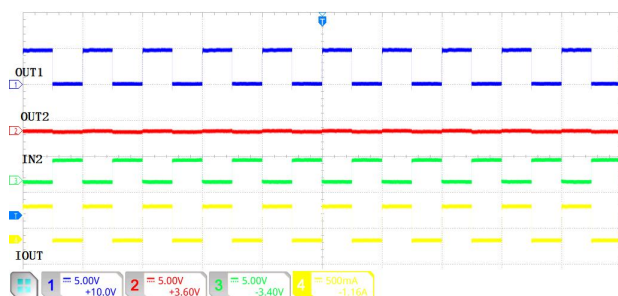
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Conduction Resistance						
High Side Conduction Resistance	R _{DS (ON)}	I _{OUT} =100mA		0.37	0.47	Ω
		I _{OUT} =400mA		0.39	0.49	Ω
Low Side Conduction Resistance		I _{OUT} =100mA		0.22	0.32	Ω
		I _{OUT} =400mA		0.24	0.34	Ω
IN1/IN2						
Input High Voltage	V _{INH}		1.4		V _{CC}	V
Input Low Voltage	V _{INL}		0		0.7	V
Input High Current	I _{INH}			2.1	5.0	μA
Input Low Current	I _{INL}			0	1	μA
Pulldown Resistance	R _{PD}			1.5	2.5	MΩ
Operating Current						
Circuit Shutdown Current	I _{CC_OFF}	IN1=IN2=0		0	1	μA
Circuit Operating Current	I _{CC_ON}	IN1=IN2=3.6V; IN1=3.6V,IN2=0; IN1=0,IN2=3.6V;		38	60	μA
Thermal Shutdown						
	T _{OTSD}			160		°C
	T _{HYS}			25		°C

Application Circuits

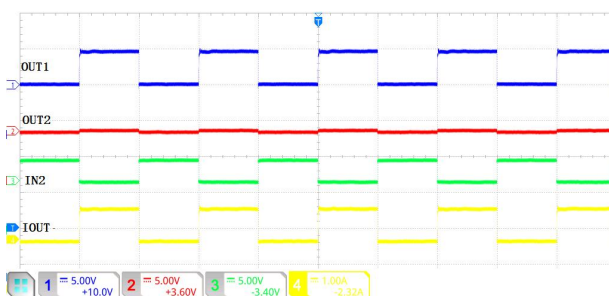


Typical Application Diagram

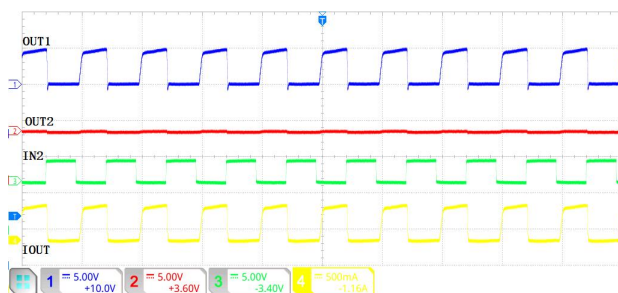
Typical Performance Characteristics



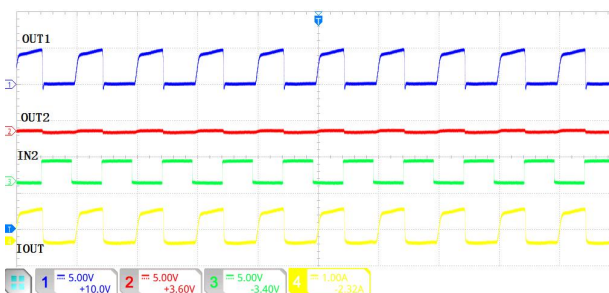
VCC=5V,Iout=0.5A,IN1=High,1KHz



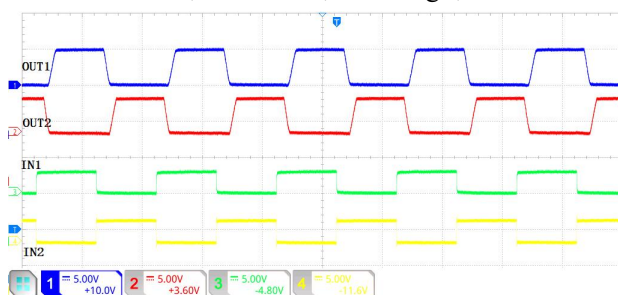
VCC=5V,Iout=1A,IN1=High,1KHz



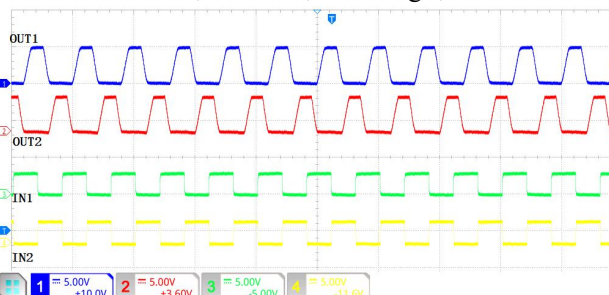
VCC=5V,Iout=0.5A,IN1=High,50KHz



VCC=5V,Iout=1A,IN1=High,50KHz



VCC=5V,IN1=-IN2,100KHz,no load

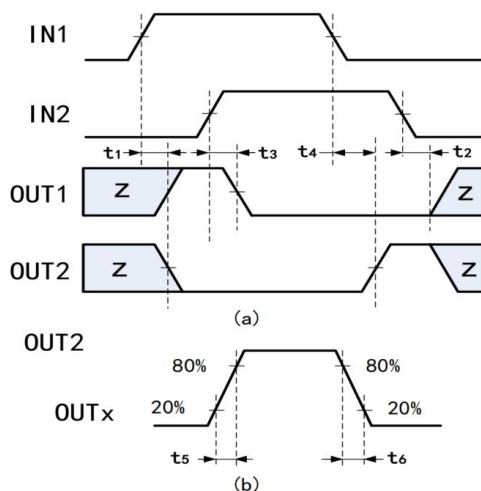


VCC=5V,IN1=-IN2,250KHz,no load

Timing Requirements

$V_{CC}=5V$, $T_a=25^{\circ}C$, $R_{LOAD}=20\Omega$

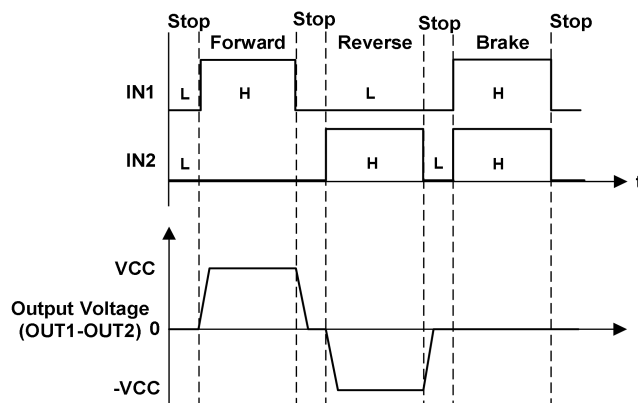
Time	Description	Max	Unit
t1	Standby→Forward	1.5	μs
t2	Reverse→Standby	0.4	μs
t3	Forward→Brake	0.6	μs
t4	Brake→Reverse	1.7	μs
t5	Output Rise Time	0.8	μs
t6	Output Fall Time	0.2	μs



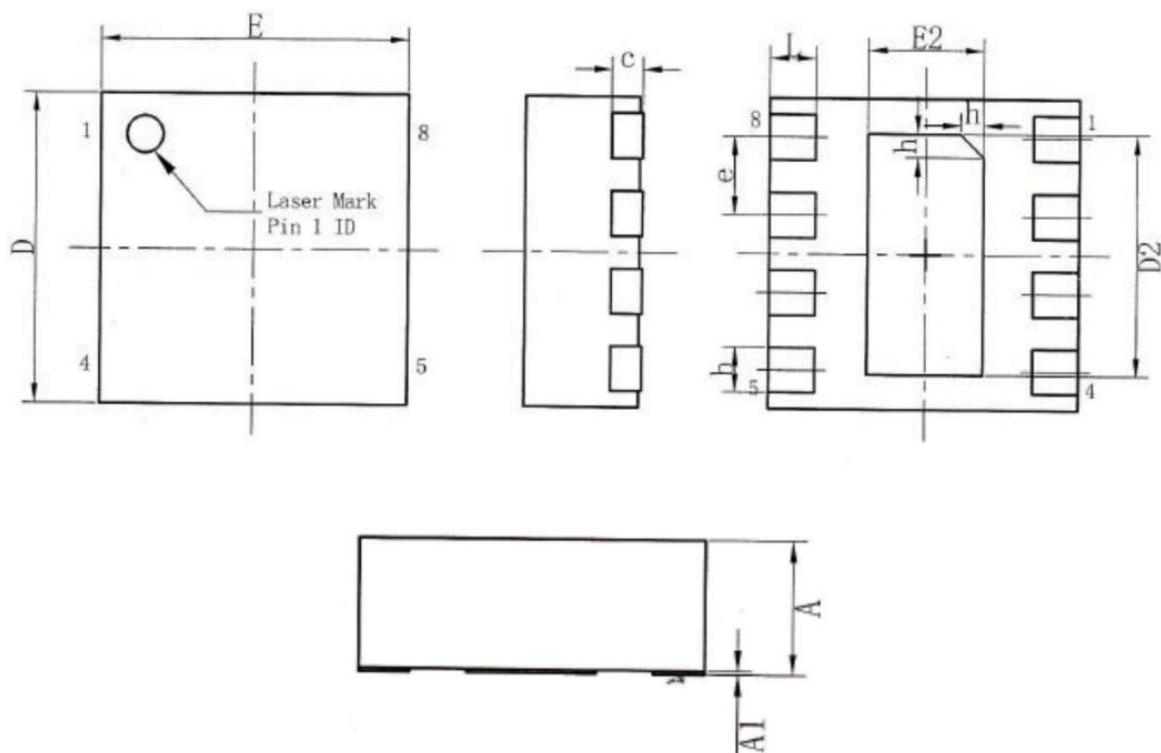
Input-Output Logical Table

IN1	IN2	OUT1	OUT2	Operating State	Operating Current
L	L	Hi-Z	Hi-Z	Standby Mode	I_{CC_OFF}
H	L	H	L	Forward	I_{CC_ON}
L	H	L	H	Reverse	I_{CC_ON}
H	H	L	L	Brake	I_{CC_ON}

Input-Output Waveform

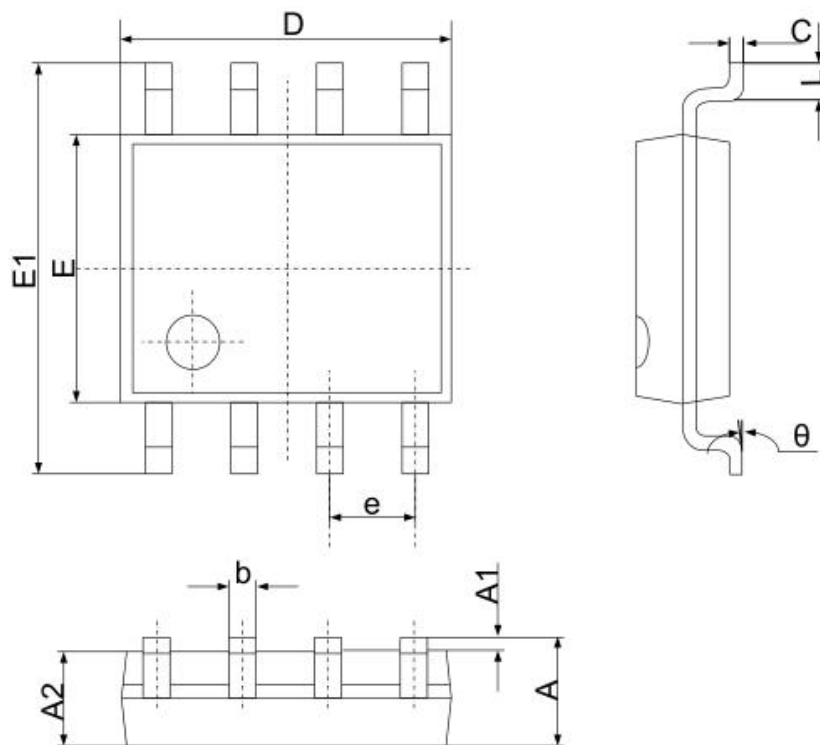


Package Information (DFN2×2)



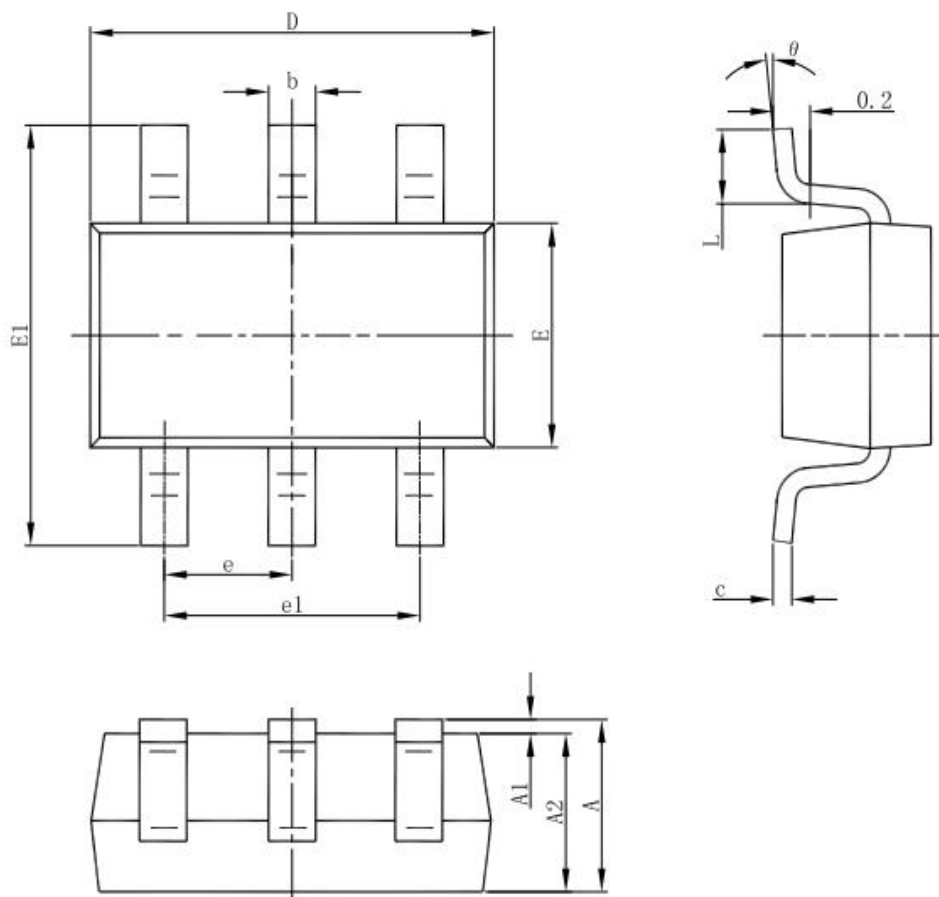
Symbol	Dimensions In Millimeters		
	Min.	Nom	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.18	0.29	0.30
c	0.20REF		
D	1.95	2.00	2.05
D2	1.50	1.55	1.60
e	0.50BSC		
E	1.95	2.00	2.05
E2	0.70	0.75	0.80
L	0.25	0.30	0.35
h	0.10	0.15	0.20
L/F Carrier size (mm) : 1.00*1.80			

Package Information (SOP8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Package Information (SOT23-6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Special Instructions

The company reserves the right of final interpretation of this specification.

Version Change Description

Version: V1.0	Author: Yang	Time: 2024.3.20
Modify the record:		
1. Editio princeps		
Version: V1.1	Author: Yang	Time: 2024.5.31
Modify the record:		
1. Updating and modifying Electrical Characteristics IN1/IN2 Input High Voltage		
Version: V1.2	Author: Yang	Time: 2024.7.5
Modify the record:		
1. Updating and modifying Package Information (SOP8)		

Statement

The information in the usage specification is correct at the time of publication, Shanghai Siproin Microelectronics Co.,Ltd. has the right to change and interpret the specification, and reserves the right to modify the product without prior notice. Users can obtain the latest version information from our official website or other effective channels before confirmation, and verify whether the relevant information is complete and up to date.

With any semiconductor product, there is a certain possibility of failure or failure under certain conditions. The buyer is responsible for complying with safety standards and taking safety measures when using the product for system design and complete machine manufacturing. The product is not authorized to be used as a critical component in life-saving or life-sustaining products or systems, in order to avoid potential failure risks that may cause personal injury or property loss.