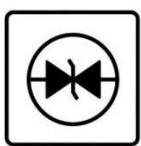




ESD



TVS



TSS



MOV



GDT



PLED

MSISH101DN-T1-GE3

Product specification

Description

The MSISH101DN-T1-GE3 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

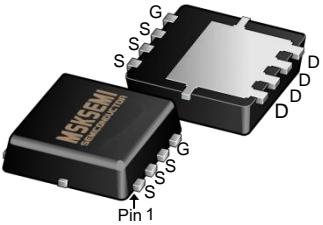
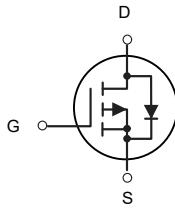
Features

- $V_{DS} = -30V$ $I_D = -70A$
- $R_{DS(ON)} < 9.3m\Omega$ @ $V_{GS} = -10V$

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Reference News

DFN3X3-8L	P-Channel MOSFET	Marking
		

Absolute Maximum Ratings ($T_c = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	-70	A
$I_D @ T_c = 75^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	-35	A
I_{DM}	Pulsed Drain Current ²	-175	A
E_{AS}	Single Pulse Avalanche Energy ³	31	mJ
$P_D @ T_c = 25^\circ C$	Total Power Dissipation ⁴	31.2	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
R_{eJC}	Thermal Resistance Junction-Case ¹	4	$^\circ C/W$

Electrical Characteristics (T_J=25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250µA	-30	-	-	V	
Gate-body Leakage current	I _{GS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA	
Zero Gate Voltage Drain Current	T _J =25°C	I _{DSS}	V _{DS} = -24V, V _{GS} = 0V	-	-	-1	µA
	T _J =55°C			-	-	-5	
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250µA	-1.0	-1.6	-2.5	V	
Drain-Source On-Resistance ²	R _{DSS(on)}	V _{GS} = -10V, I _D = -12A	-	6.5	9.3	mΩ	
		V _{GS} = -4.5V, I _D = -8A	-	9.5	14.5		
Forward Transconductance	g _{fs}	V _{DS} = -5V, I _D = -20A	-	28	-	S	
Dynamic Characteristics							
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	-	4320	-	pF	
Output Capacitance	C _{oss}		-	529	-		
Reverse Transfer Capacitance	C _{rss}		-	487	-		
Switching Characteristics							
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz	-	4.0	-	Ω	
Total Gate Charge	Q _g	V _{GS} = -10V, V _{DS} = -15V, I _D = -15A	-	45	-	nC	
Gate-Source Charge	Q _{gs}		-	8.5	-		
Gate-Drain Charge	Q _{gd}		-	12.8	-		
Turn-On Delay Time	t _{d(on)}		-	18.9	-	nS	
Rise Time	t _r	V _{GS} = -10V, V _{DD} = -15V, R _G = 2.5Ω, I _D = -15A	-	15.7	-		
Turn-Off Delay Time	t _{d(off)}		-	64.8	-		
Fall Time	t _f		-	36.5	-		
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ²	V _{SD}	I _S = -1A, V _{GS} = 0V	-	-	-1	V	
Continuous Source Current ^{1,5}	I _S	V _G =V _D =0V, Force Current	-	-	-65	A	

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed, pulse width ≤ 300µs, duty cycle ≤ 2%
- 3.The EAS data shows Max. rating. The test condition is V_{DD}= -25V, V_{GS}= -10V, L= 0.1mH, I_{AS}= -25A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Characteristics

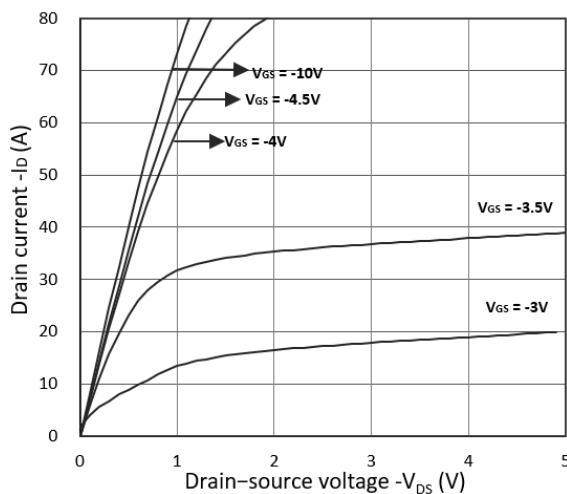


Figure 1. Output Characteristics

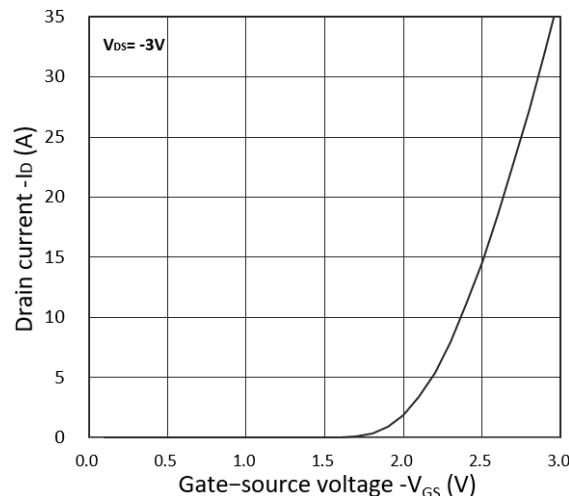


Figure 2. Transfer Characteristics

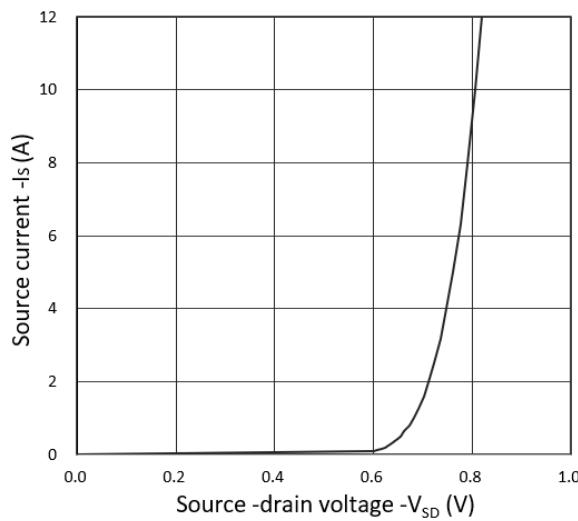


Figure 3. Forward Characteristics of Reverse

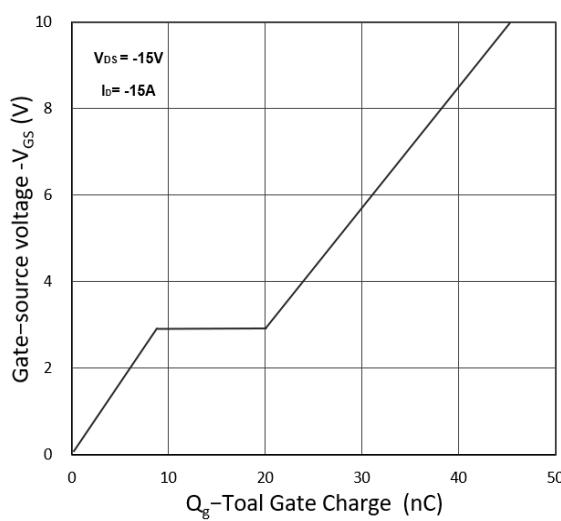


Figure 4. Gate Charge Characteristics

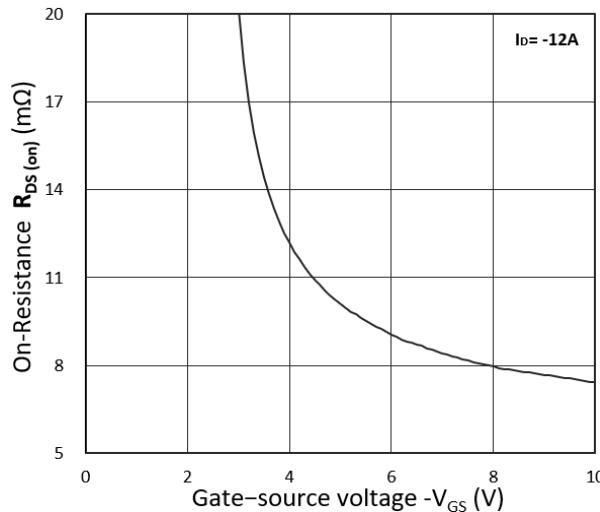


Figure 5. $R_{DS(on)}$ vs. V_{GS}

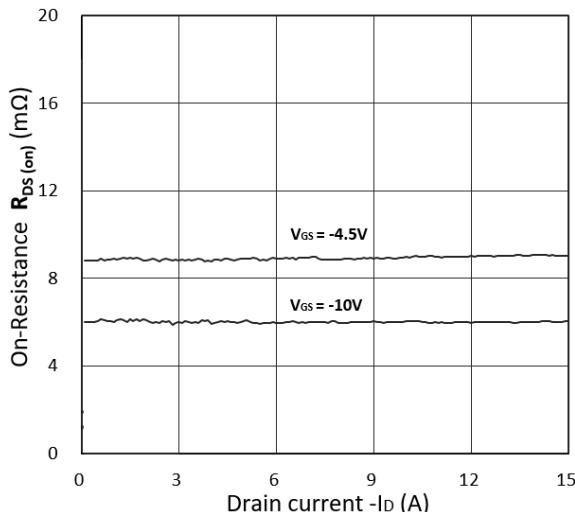


Figure 6. $R_{DS(on)}$ vs. I_D

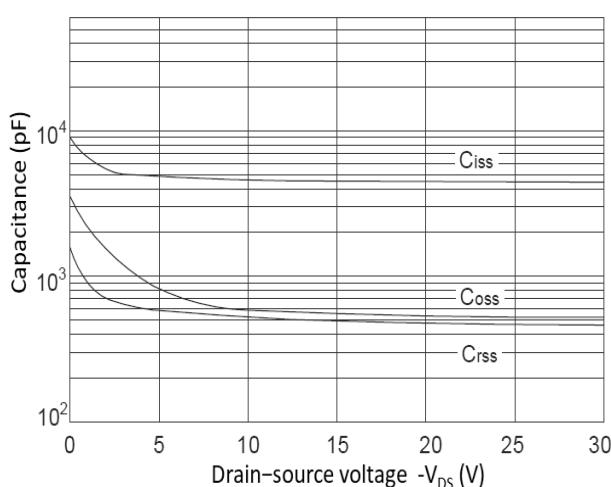


Figure 7. Capacitance Characteristics

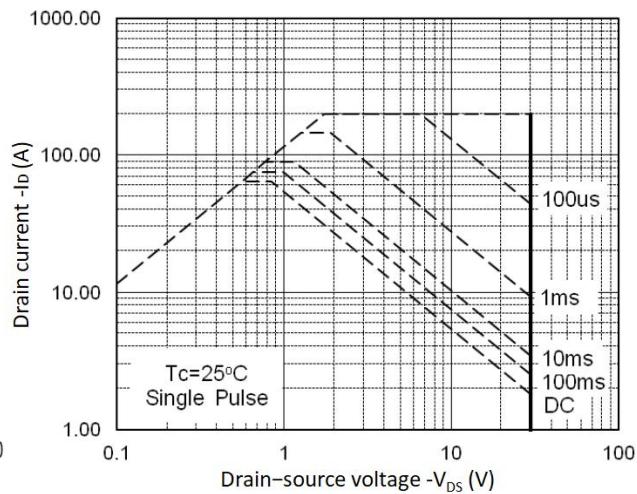


Figure 8. Safe Operating Area

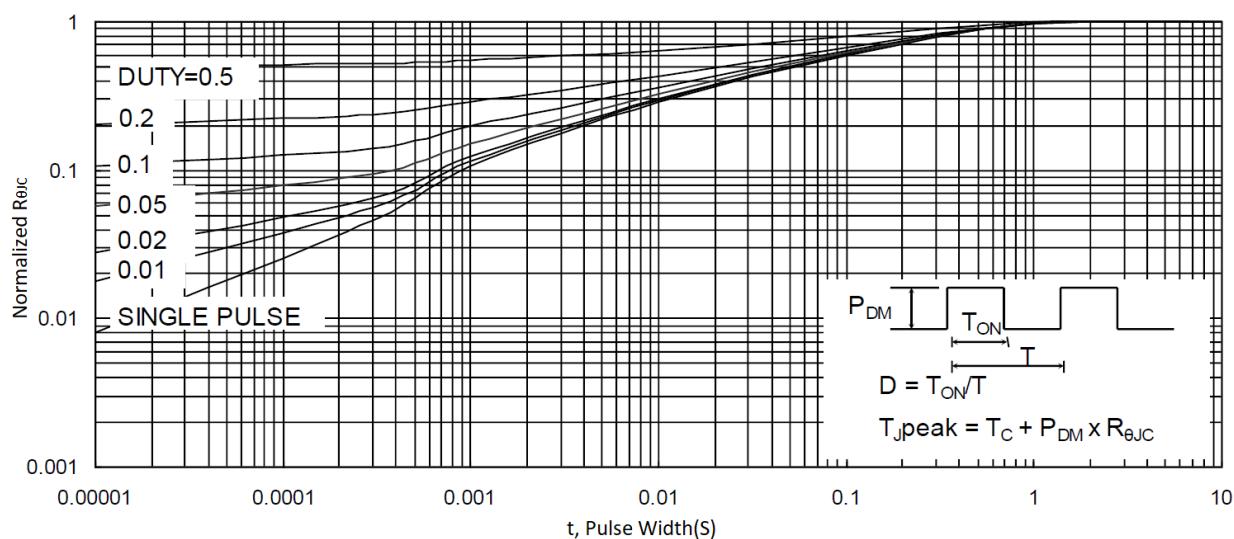


Figure 9. Normalized Maximum Transient Thermal Impedance

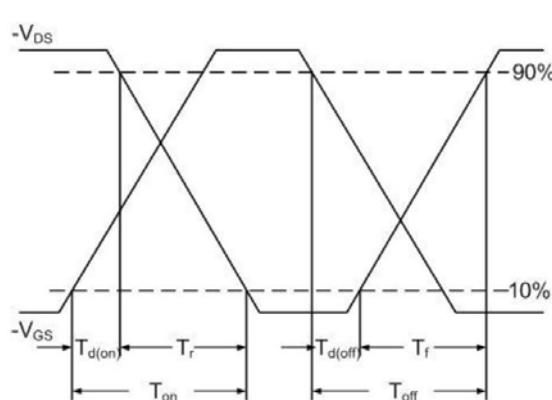


Figure 10. Switching Time Waveform

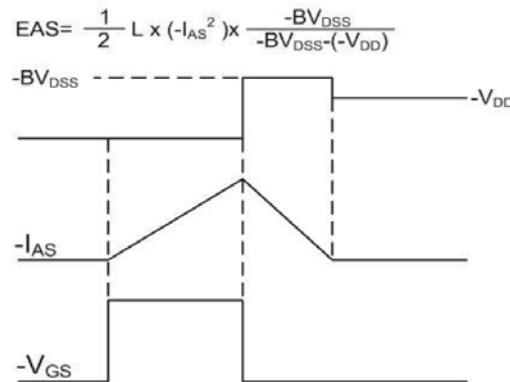
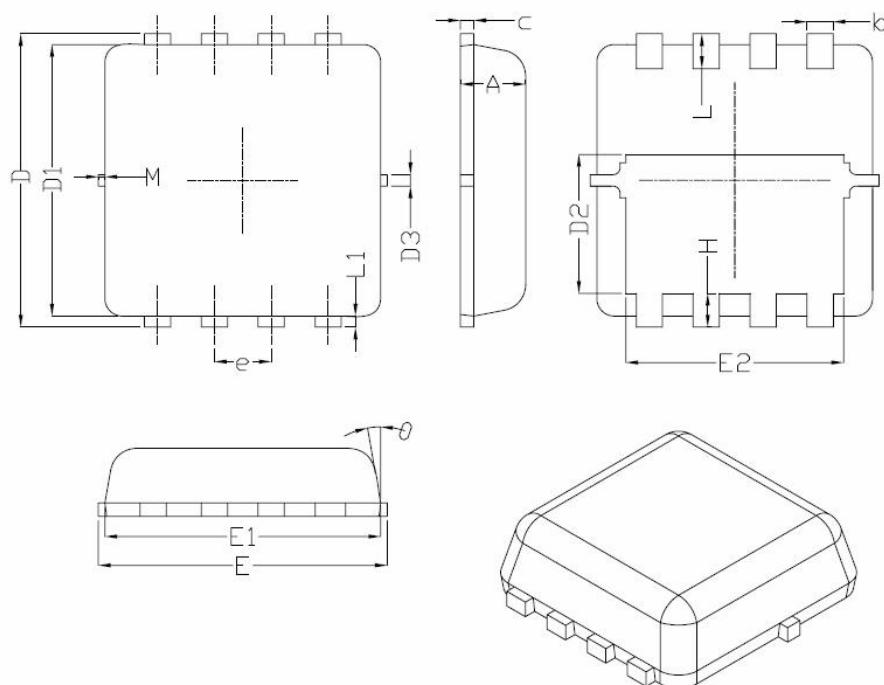


Figure 11. Unclamped Inductive Switching
Waveform

DFN3X3-8L Package Information


Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
Ab	0.70	0.75	0.80
	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.20	3.30	3.40
E1E	3.00	3.15	3.20
2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ			10°
			12°

REEL SPECIFICATION

P/N	PKG	QTY
MSISH101DN-T1-GE3	DFN3X3-8L	5000

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