

JMSH1552PU

Features

- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS Tested
- 100% V_{DS} Tested
- Halogen-free; RoHS-compliant

Applications

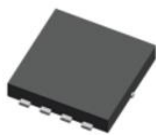
- Load Switch
- PWM Application
- Power Management

Product Summary

Parameters	Value	Unit
V_{DSS}	150	V
$V_{GS(th_Typ)}$	3.3	V
$I_D(@V_{GS}=10V)$	14	A
$R_{DS(ON_Typ)}(@V_{GS}=10V)$	51	$m\Omega$



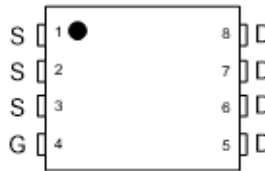
Top View



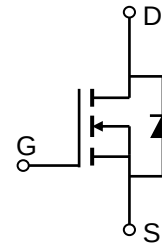
Bottom View



PDFN3X3-8L



Pin Assignment



Schematic Diagram

Ordering Information

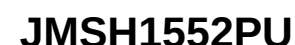
Device	Marking	MSL	Form	Package	Reel(pcs)	Per Carton (pcs)
JMSH1552PU-13	SH1552P	1	Tape&Reel	PDFN3x3-8L	5000	50000

Absolute Maximum Ratings (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-to-Source Voltage	150	V
V_{GS}	Gate-to-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$: 14 $T_C = 100^\circ\text{C}$: 9	A
I_{DM}	Pulsed Drain Current ⁽¹⁾	Refer to Fig.4	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	60	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$: 28 $T_C = 100^\circ\text{C}$: 11	W
T_{J_STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Max	Unit
R	Thermal Resistance, Junction to Ambient ⁽³⁾	42	$^\circ\text{C/W}$
R	Thermal Resistance, Junction to Case	4.4	$^\circ\text{C/W}$



Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} = 0V	150	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 120V, V _{GS} = 0V	-	-	1.0	μ
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.3	3.3	4.3	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽⁴⁾	V _{GS} = 10V, I _D = 10A	-	51	67	mΩ
Dynamic Characteristics						
R _g	Gate Resistance	f = 1MHz	-	1.1	-	Ω
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 75V, f = 1MHz	538	753	1016	pF
C _{oss}	Output Capacitance		55	77	104	pF
C _{rss}	Reverse Transfer Capacitance		-	12	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 75V, I _D = 10A	-	11	17	nC
Q _{gs}	Gate Source Charge		-	5	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	2.4	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 75V I _D =10A, R _{GEN} = 3Ω	-	8	-	ns
t _r	Turn-On Rise Time		-	14	-	ns
t _{d(off)}	Turn-Off DelayTime		-	11	-	ns
t _f	Turn-Off Fall Time		-	2.8	-	ns
Body Diode Characteristics						
I _S	Maximum Continuous Body Diode Forward Current		-	-	14	A
I _{SM}	Maximum Pulsed Body Diode Forward Current		-	-	54	A
V _{SD}	Body Diode Forward Voltage	V _{GS} = 0V, I _S = 10A	-		1.2	V
trr	Body Diode Reverse Recovery Time	I _F = 10A, di/dt = 100A/us	46	65	88	ns
Qrr	Body Diode Reverse Recovery Charge		-	142	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25C, V_{DD}=75V, V_{GS}=10V, R_G=25ohm, L=3mH, I_{AS}=6.3A, V_{DD}=0V during time in avalanche.
3. R is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.
4. Pulse Test: Pulse Width ≤ ≤ 0.5%.



Typical Performance Characteristics



Typical Performance Characteristics



Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

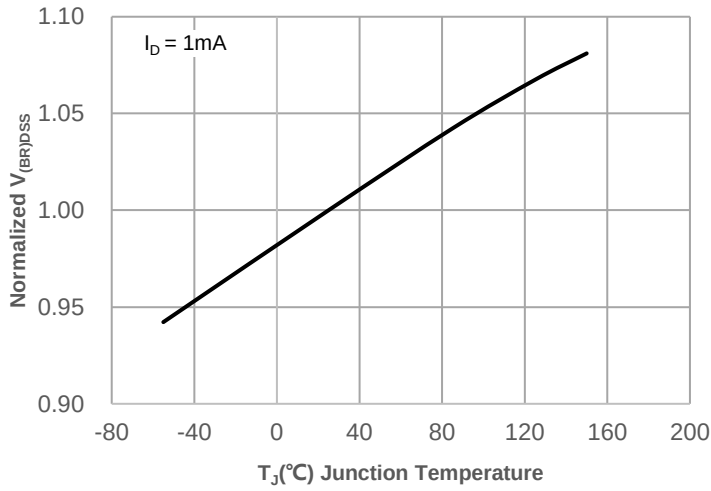


Figure 12: Normalized on Resistance vs. Junction Temperature

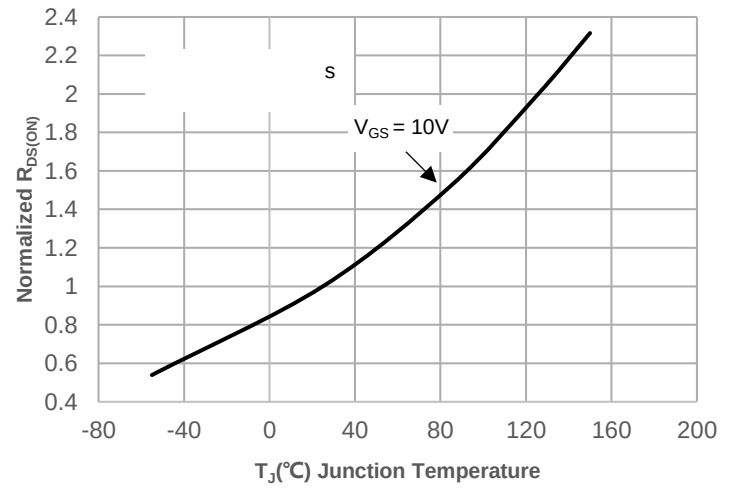


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

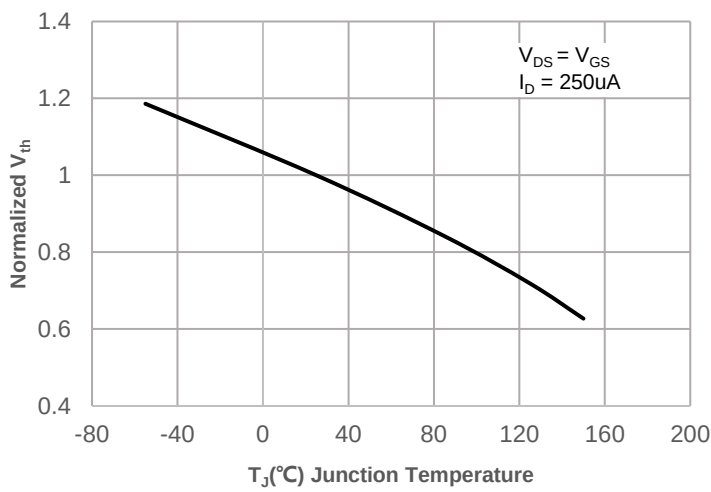


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

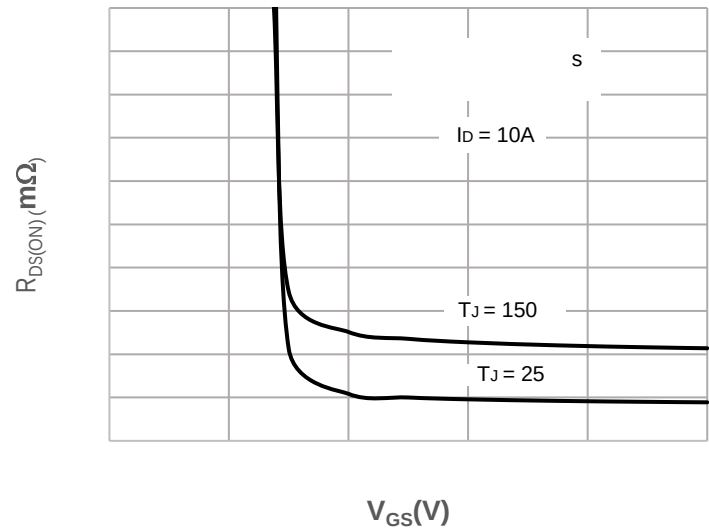
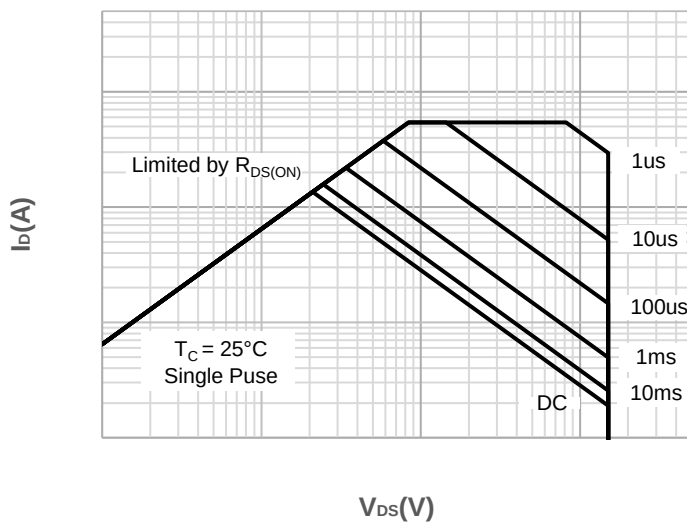


Figure 15: Maximum Safe Operating Area



Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform

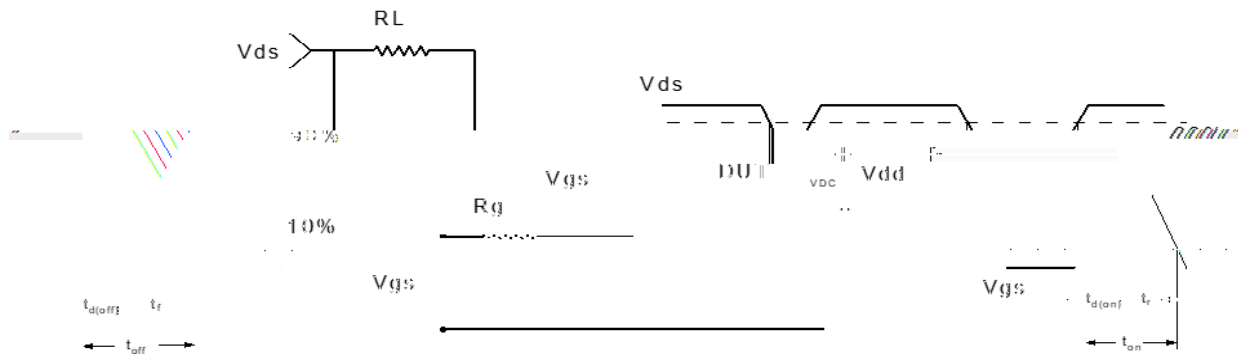


Figure 2: Resistive Switching Test Circuit & Waveform

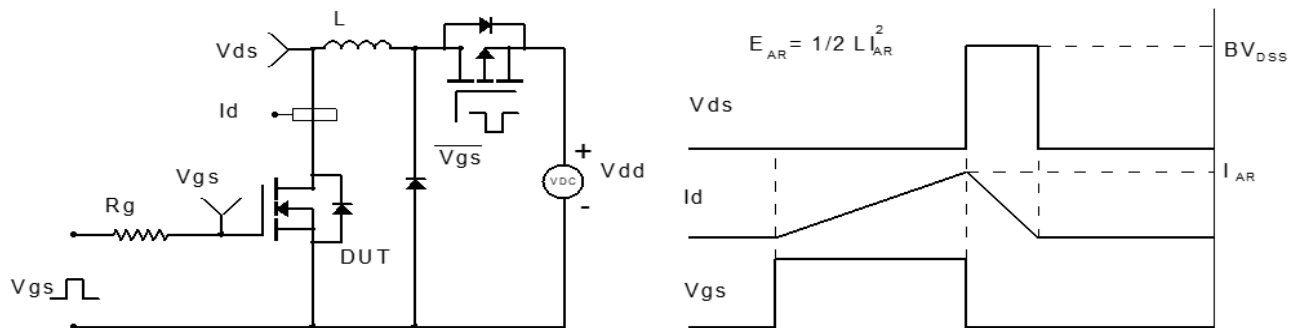


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

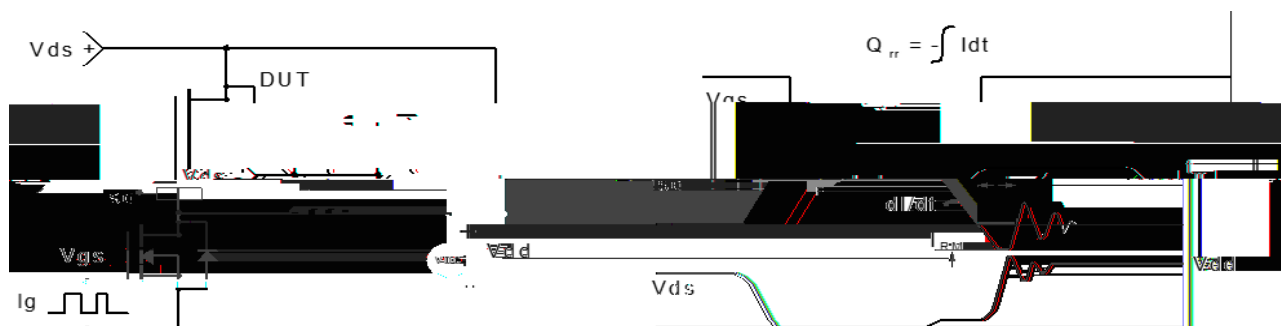
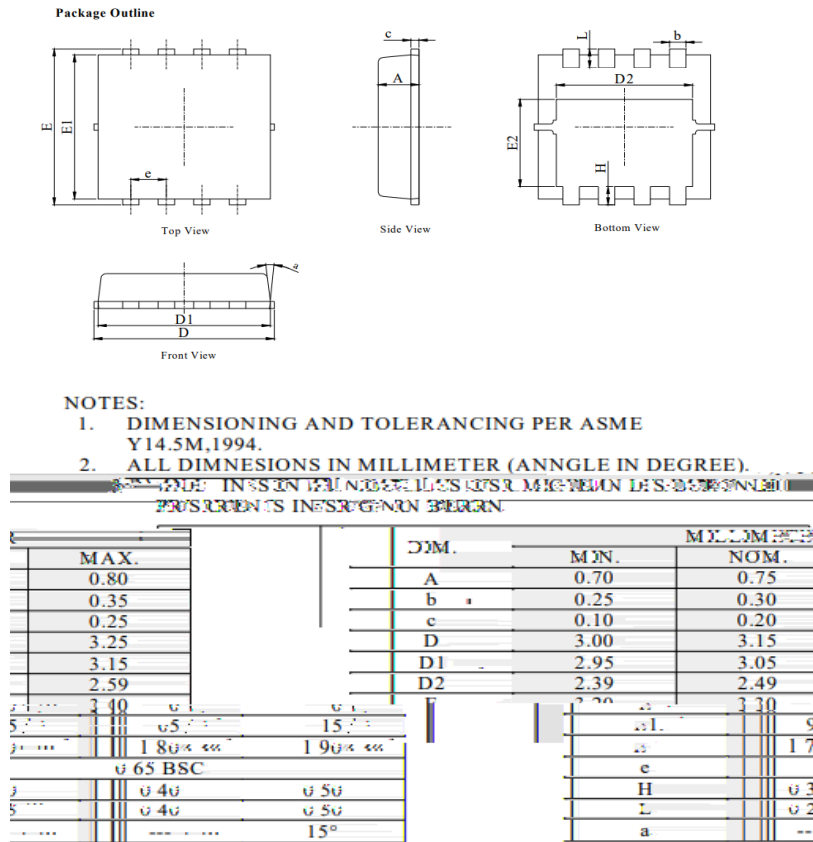
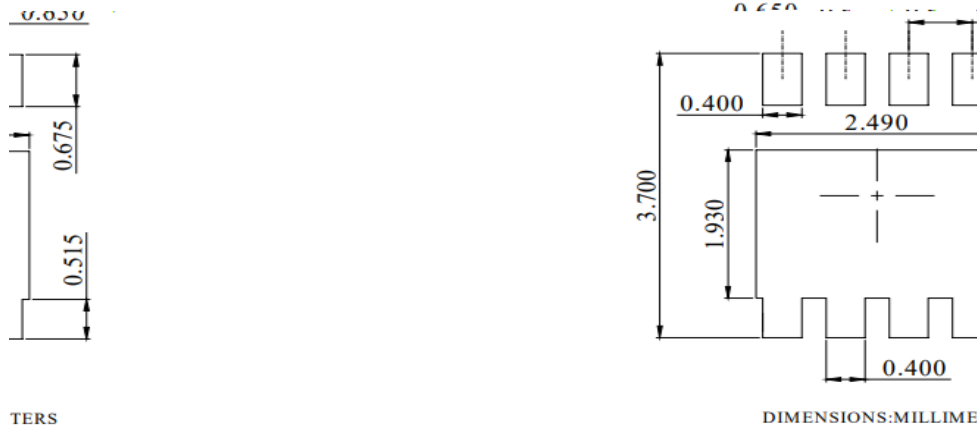


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN3X3-8L)



Recommended Soldering Footprint



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