



# JMPL1050PU

## Features

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

## Applications

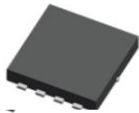
- Load Switch
- PWM Application
- Power Management

## Product Summary

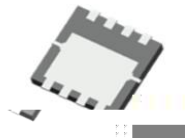
Parameters	Value	Unit
$V_{DSS}$	-100	V
$V_{GS(th)}_{Typ}$	-1.7	V
$I_D(@V_{GS}=-10V)$	-17	A
$R_{DS(ON)}_{Typ}(@V_{GS}=-10V)$	39	mΩ
$R_{DS(ON)}_{Typ}(@V_{GS}=-4.5V)$	51	mΩ



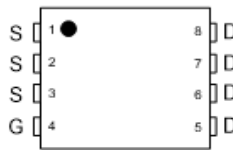
Top View



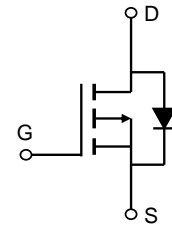
Bottom View



PDFN3x3-8L



Pin Assignment



Schematic Diagram

## Ordering Information

Device	Marking	MSL	Form	Package	Reel(pcs)	Per Carton (pcs)
JMPL1050PU-13	PL1050P	1	Tape&Reel	PDFN3x3-8L	5000	50000

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

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-to-Source Voltage	-100	V
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	$T_C = 25^\circ C$	-17
		$T_C = 100^\circ C$	-11
$I_{DM}$	Pulsed Drain Current <sup>(1)</sup>	Refer to Fig.4	A
$E_{AS}$	Single Pulsed Avalanche Energy <sup>(2)</sup>	165	mJ
$P_D$	Power Dissipation	$T_C = 25^\circ C$	30
		$T_C = 100^\circ C$	12
$T_J, T_{STG}$	Junction & Storage Temperature Range	-55 to 150	$^\circ C$

## Thermal Characteristics

Symbol	Parameter	Max	Unit
R	Thermal Resistance, Junction to Ambient <sup>(3)</sup>	48	$^\circ C/W$
R	Thermal Resistance, Junction to Case	4.2	



## Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise specified)

Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>					
V <sub>(BR)DSS</sub>		-100	-	-	V
I <sub>DSS</sub>		-	-	-1.0	μA
I <sub>GSS</sub>		-	-	±100	nA
<b>On Characteristics</b>					
V <sub>GS(th)</sub>		-1.2	-1.7	-2.2	V
		-	39	51	mΩ
		-	51	67	mΩ
R <sub>g</sub>		-	7.5	-	Ω
C <sub>iss</sub>		1261	1765	2383	pF
C <sub>oss</sub>		147	205	277	pF
C <sub>riss</sub>		12	17	24	pF
Q <sub>g</sub>		19	27	36	nC
Q <sub>gs</sub>		-	7.4	-	nC
Q <sub>gd</sub>		-	4.1	-	nC
<b>Switching Characteristics</b>					
t <sub>d(on)</sub>		-	7	-	ns
t <sub>r</sub>		-	6.5	-	ns
t <sub>d(off)</sub>		-	38	-	ns
t <sub>f</sub>		-	9.4	-	ns
<b>Thermal Characteristics</b>					
I <sub>S</sub>		-	-	-17	A
I <sub>SM</sub>		-	-	-69	A
V <sub>SD</sub>		-	-	-1.2	V
t <sub>rr</sub>		35	49	67	ns
Q <sub>rr</sub>		-	128	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
  2. E<sub>AS</sub> condition: Starting T<sub>J</sub>=25°C, V<sub>DD</sub>=-50V, V<sub>GS</sub>=-10V, R<sub>G</sub>=25ohm, L=3mH, I<sub>AS</sub>=-10.5A, V<sub>DD</sub>=0V during time in avalanche.
  3. R<sub>g</sub> is measured with the device mounted on a 1inch<sup>2</sup> pad of 2oz copper FR4 PCB.
  4. Pulse Test: Pulse Width



## Typical Performance Characteristics

Figure 5: Output Characteristics

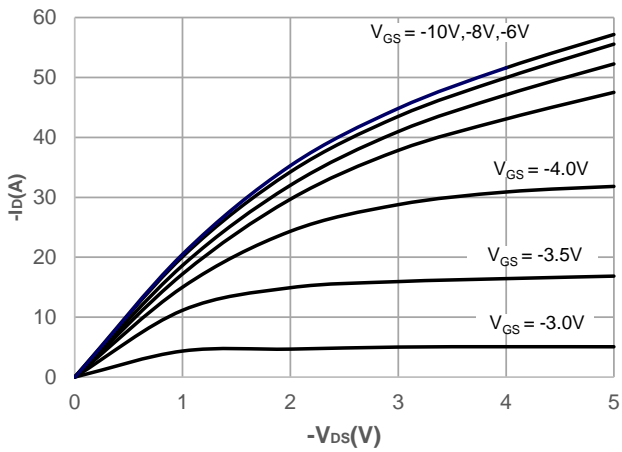


Figure 6: Typical Transfer Characteristics

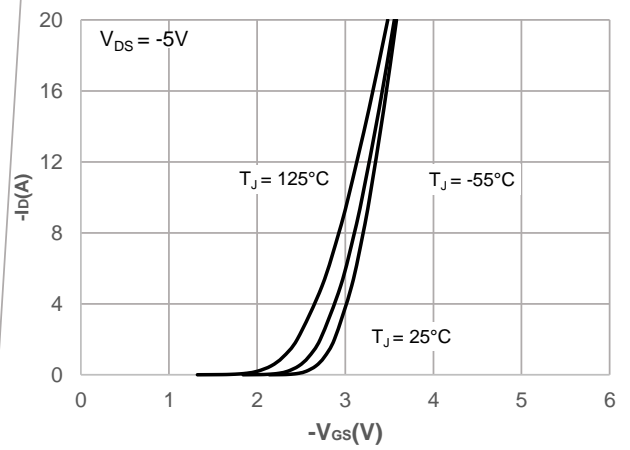


Figure 7: On-resistance vs. Drain Current

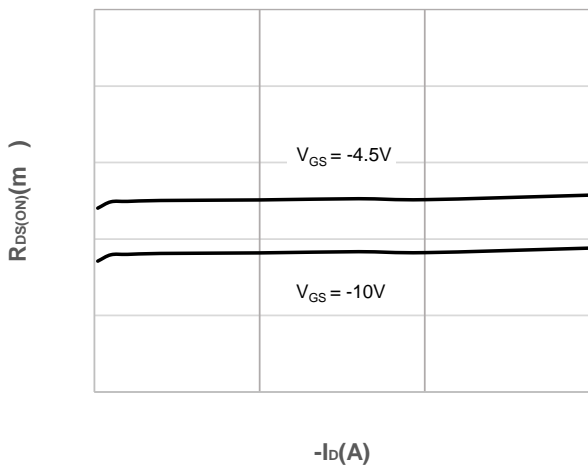
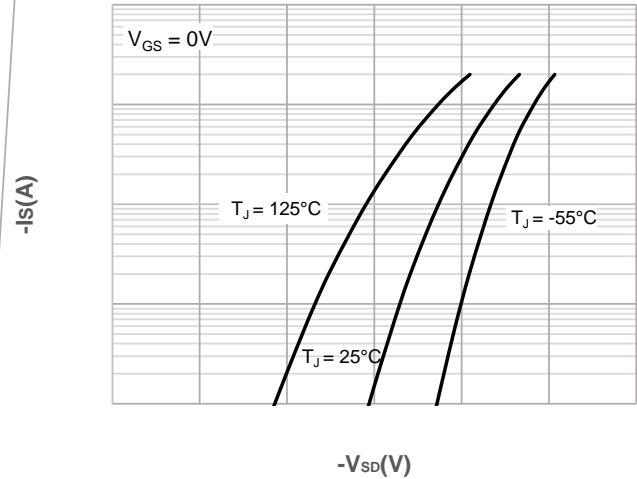
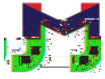


Figure 8: Body Diode Characteristics





### Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

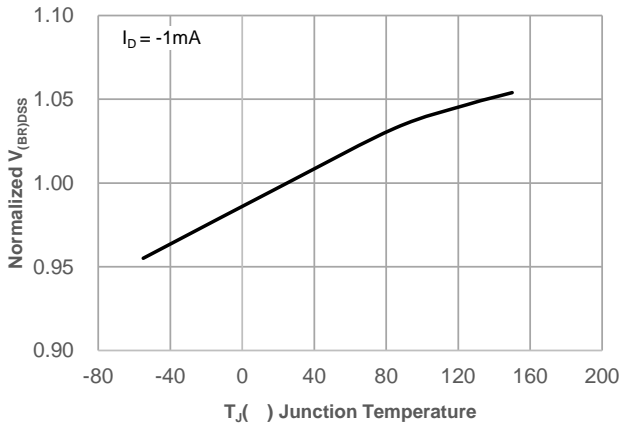


Figure 12: Normalized on Resistance vs. Junction Temperature

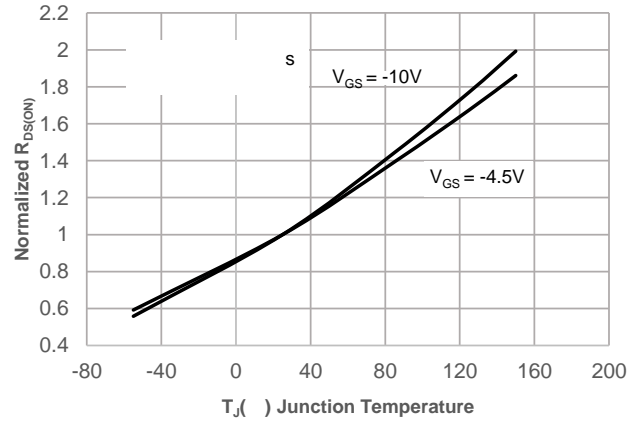


Figure 14:  $R_{DS(ON)}$  vs.  $V_{GS}$

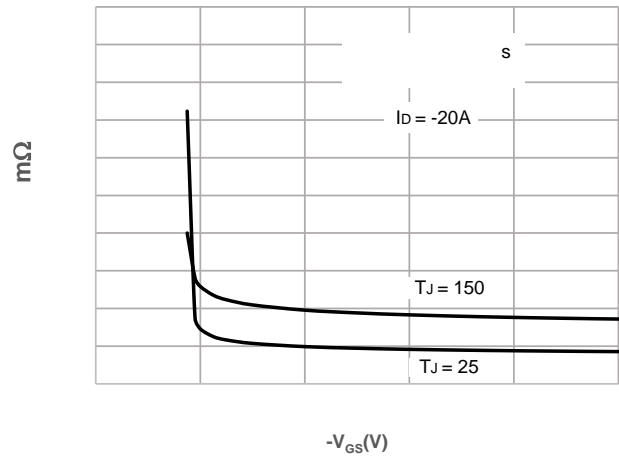
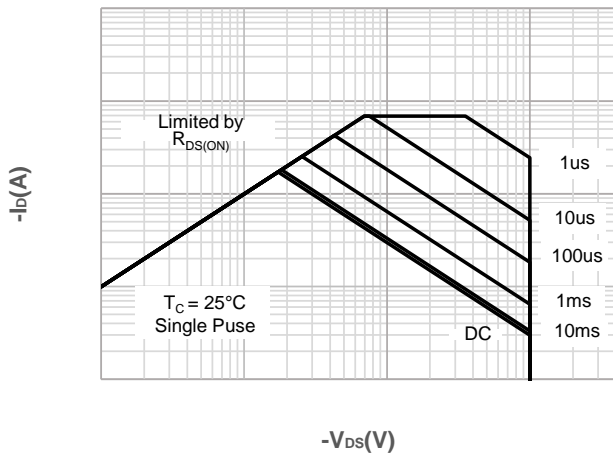


Figure 15: Maximum Safe Operating Area



## Test Circuit

**Package Mechanical Data( PDFN3X3-8L )**