



PJL9438A

60V N-Channel Enhancement Mode MOSFET

Voltage	60 V	Current	6 A
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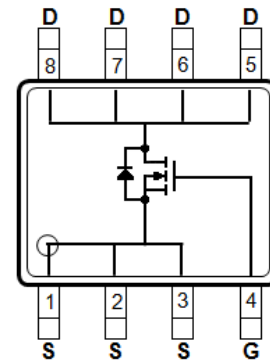
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@6.0A < 34m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@3.0A < 40m\Omega$
- Advanced Trench Process Technology
- High density cell design for ultra low on-resistance
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case: SOP-8 package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0029 ounces, 0.083 grams
- Marking: L9438A

SOP-8



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_A=25^\circ C$	6
		$T_A=70^\circ C$	5
Pulsed Drain Current ^(Note 1)	I_{DM}	24	A
Power Dissipation	P_D	$T_A=25^\circ C$	2.5
		$T_A=70^\circ C$	1.6
Single Pulse Avalanche Energy ^(Note 5)	E_{AS}	20	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Typical Thermal resistance	$R_{\theta JA}$	50	$^\circ C/W$
- Junction to Ambient, $t \leq 10s$ ^(Note 6)			



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Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.83	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=6.0A$	-	28	34	m Ω
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=3.0A$	-	33	40	m Ω
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Dynamic (Note 7)						
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=6.0A,$ $V_{GS}=10V$ (Note 1,2)	-	20	-	nC
Gate-Source Charge	Q_{gs}		-	3.8	-	
Gate-Drain Charge	Q_{gd}		-	3.9	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	1173	-	pF
Output Capacitance	C_{oss}		-	63	-	
Reverse Transfer Capacitance	C_{rss}		-	44	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=1A,$ $V_{GS}=10V, R_G=6\Omega$ (Note 1,2)	-	7.1	-	ns
Turn-On Rise Time	t_r		-	25	-	
Turn-Off Delay Time	$t_{d(off)}$		-	31	-	
Turn-Off Fall Time	t_f		-	20	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	6.0	A
Diode Forward Voltage	V_{SD}	$I_S=1.0A, V_{GS}=0V$	-	0.72	1.2	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. Repetitive rating, pulse width limited by junction temperature $T_J(\text{MAX})=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J = 25^\circ\text{C}$.
5. The test condition is $L=0.1\text{mH}, I_{AS}=20A, V_{DD}=25V, V_{GS}=10V$
6. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch² with 2oz.square pad of copper.
7. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

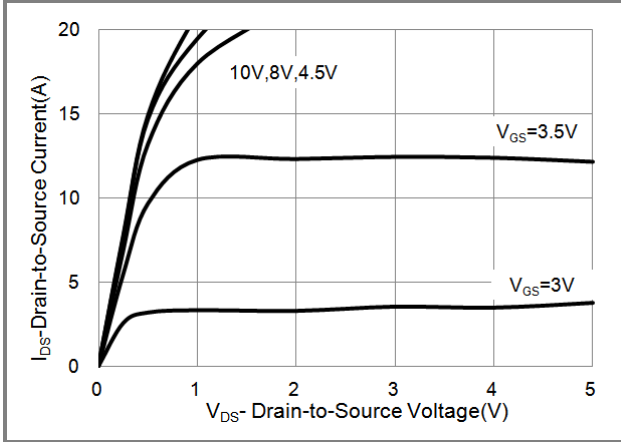


Fig.1 On-Region Characteristics

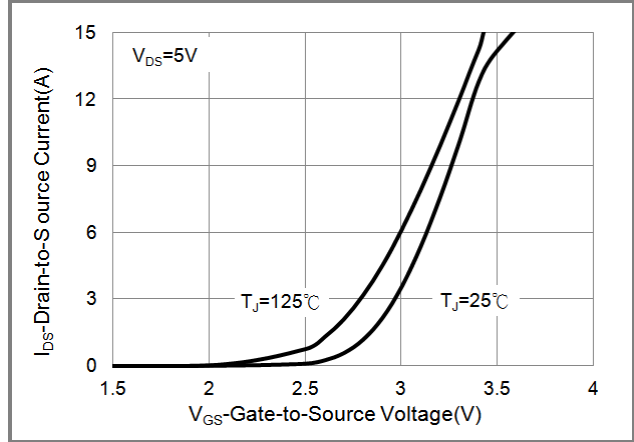


Fig.2 Transfer Characteristics

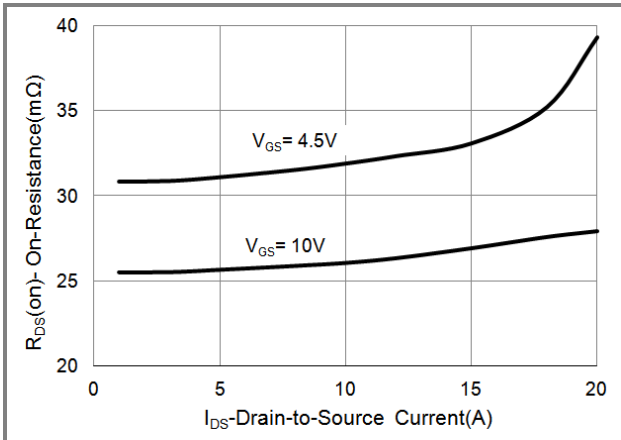


Fig.3 On-Resistance vs. Drain Current

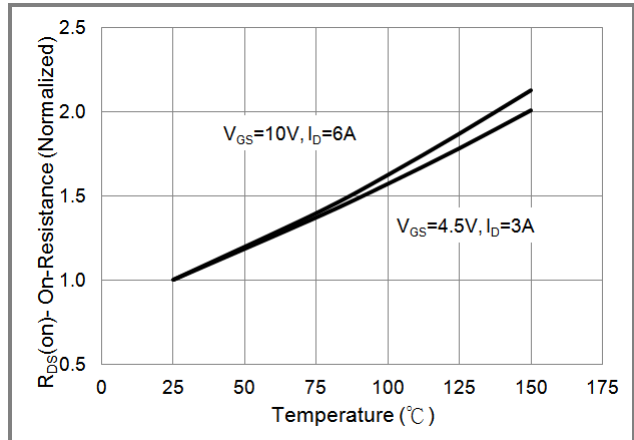


Fig.4 On-Resistance vs. Junction temperature

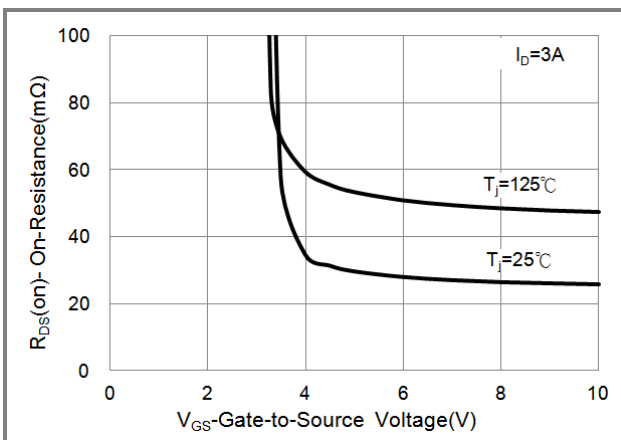


Fig.5 On-Resistance Variation with VGS.

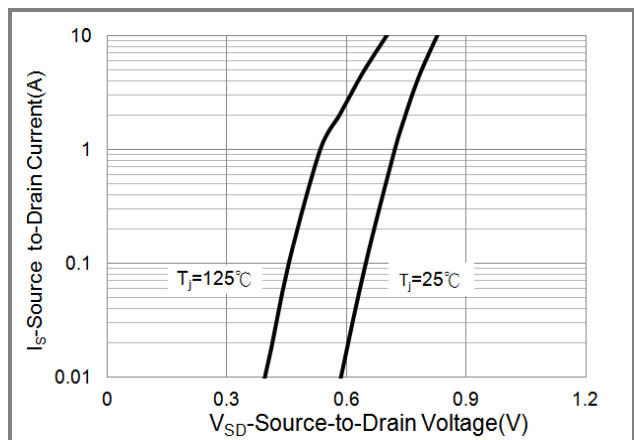


Fig.6 Body Diode Characteristics



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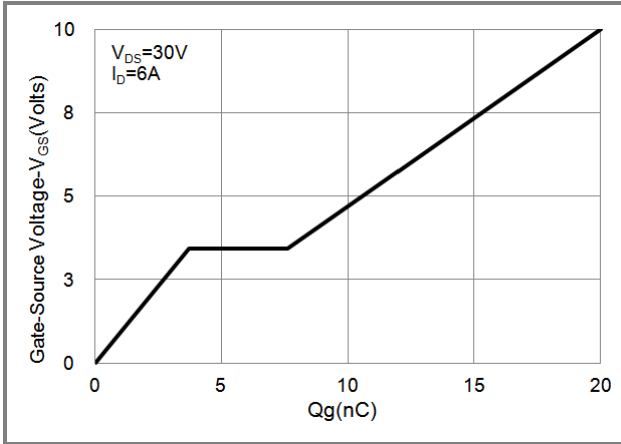


Fig.7 Gate-Charge Characteristics

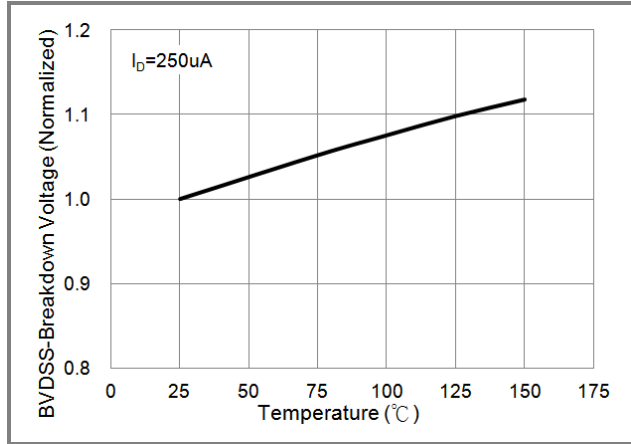


Fig.8 Breakdown Voltage Variation vs. Temperature

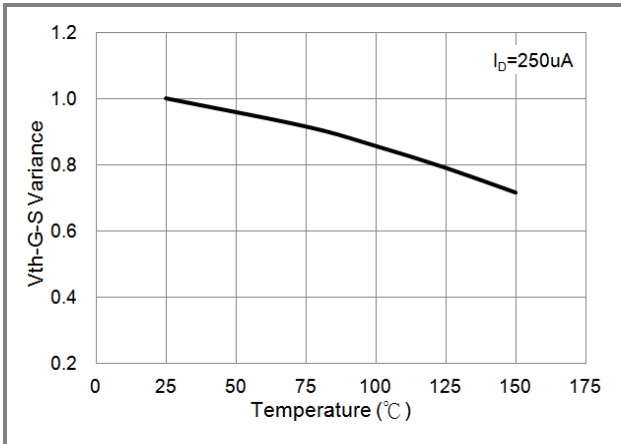


Fig.9 Threshold Voltage Variation with Temperature.

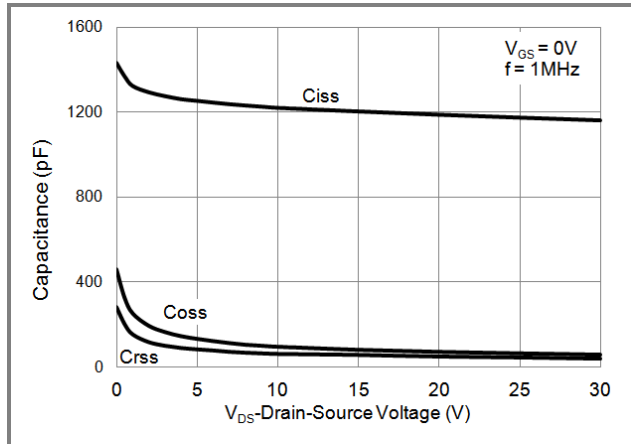


Fig.10 Capacitance vs. Drain-Source Voltage.

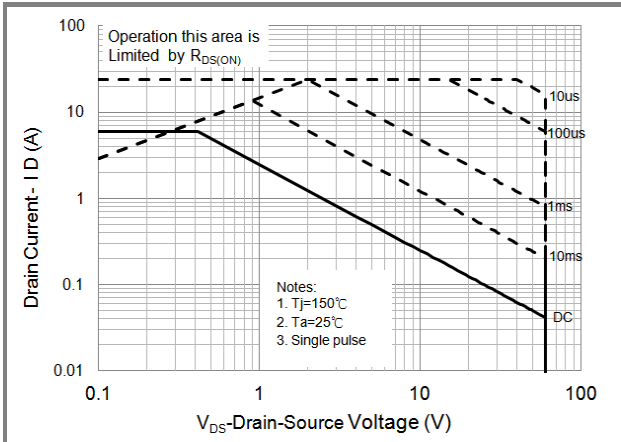


Fig.11 Maximum Safe Operating Area



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TYPICAL CHARACTERISTIC CURVES

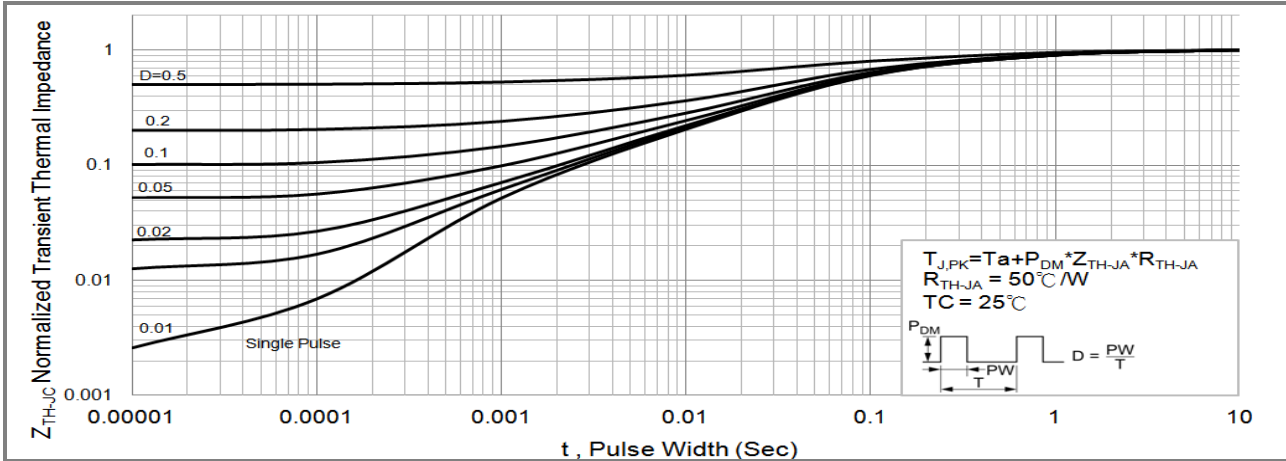


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

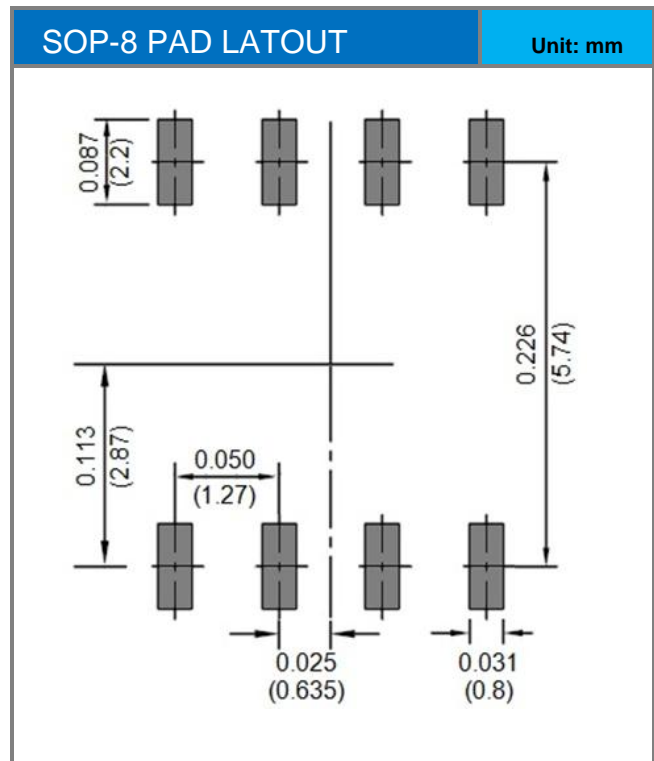
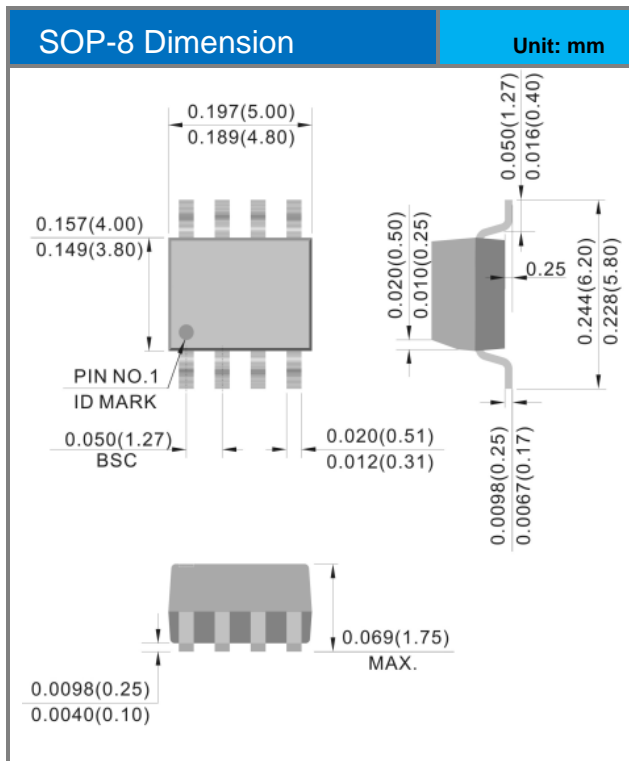


PJL9438A

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJL9438A_R2_00001	SOP-8	2.5K pcs / 13" reel	L9438A	Halogen free

Packaging Information & Mounting Pad Layout





PJL9438A

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