

PJX138L

60V N-Channel Enhancement Mode MOSFET

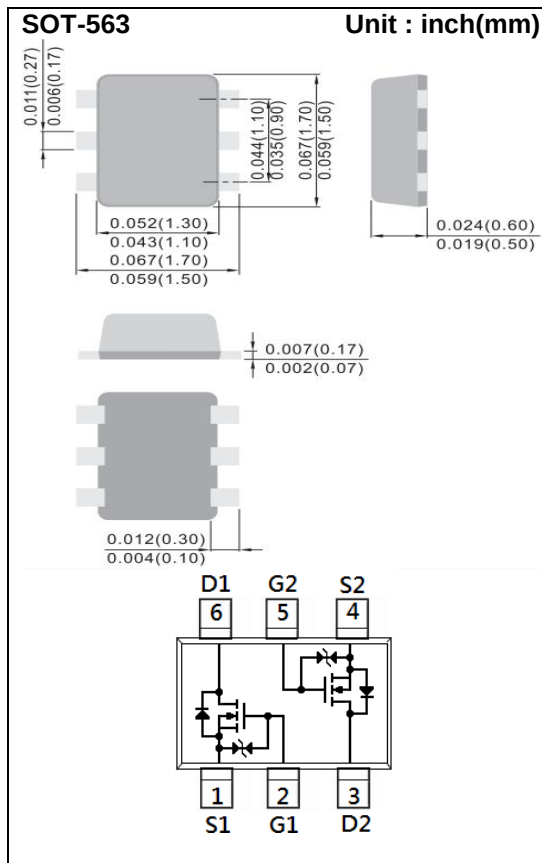
Voltage	60 V	Current	160mA
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Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@160mA < 4.2\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@100mA < 5\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@50mA < 7\Omega$
- Advanced Trench Process Technology
- ESD Protected
- Specially Designed for Relay driver, Speed line drive, etc.
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: SOT-563 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00009 ounces, 0.0026 grams
- Marking: X8L



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	160	mA
Pulsed Drain Current		I _{DM}	800	mA
Power Dissipation	T _A =25°C	P _D	223	mW
	Derate above 25°C		1.8	mW/°C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Typical Thermal resistance		R _{θJA}	560	°C/W
- Junction to Ambient ^(Note 3)				



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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 =250uA	60	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.8	1.2	1.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V,I _D =160mA	-	2.5	4.2	Ω
		V _{GS} =4.5V,I _D =100mA	-	2.8	5	
		V _{GS} =2.5V,I _D =50mA	-	3.7	7	
		V _{GS} =1.8V,I _D =10mA	-	12	-	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V,V _{GS} =0V	-	0.01	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =+20V,V _{DS} =0V	-	±1.0	±10	uA
Dynamic (Note 4)						
Total Gate Charge	Q _g	V _{DS} =15V, I _D =160mA, V _{GS} =4.5V (Note 1,2)	-	0.7	-	nC
Gate-Source Charge	Q _{gs}		-	0.33	-	
Gate-Drain Charge	Q _{gd}		-	0.2	-	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHZ	-	15	-	pF
Output Capacitance	C _{oss}		-	8.4	-	
Reverse Transfer Capacitance	C _{rss}		-	4.2	-	
Turn-On Delay Time	td _(on)	V _{DD} =10V, I _D =160mA, V _{GS} =10V, R _G =6Ω (Note 1,2)	-	7	-	ns
Turn-On Rise Time	tr		-	22	-	
Turn-Off Delay Time	td _(off)		-	21	-	
Turn-Off Fall Time	tf		-	25	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	160	mA
Diode Forward Voltage	V _{SD}	I _S =160mA, V _{GS} =0V	-	0.8	1.1	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\theta JA}$ 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 inch square pad of copper
4. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

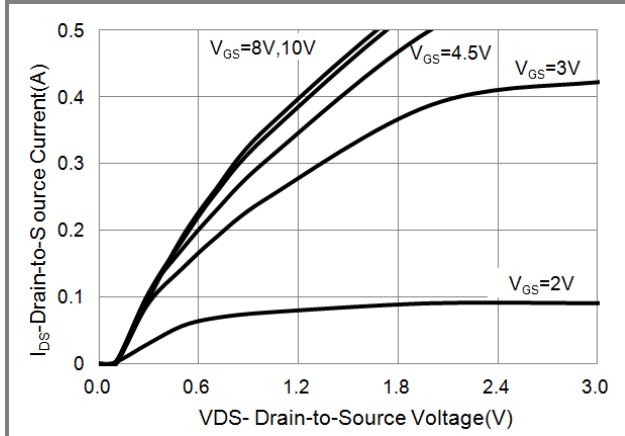


Fig.1 On-Region Characteristics

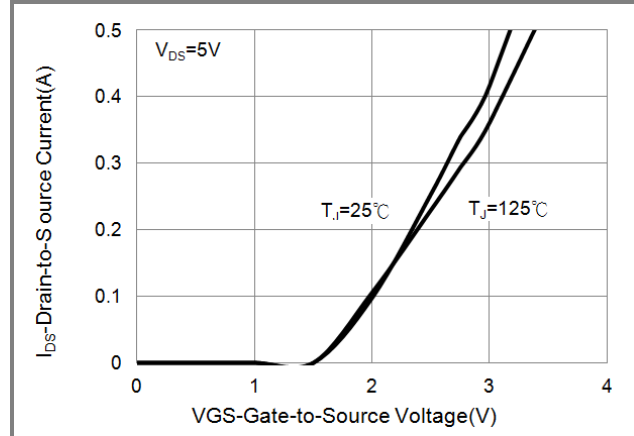


Fig.2 Transfer Characteristics

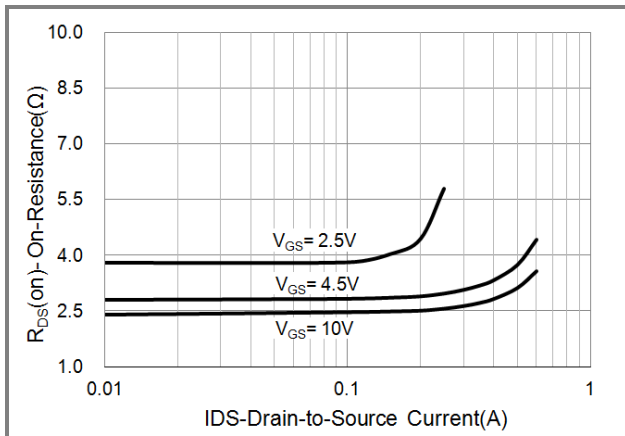


Fig.3 On-Resistance vs. Drain Current

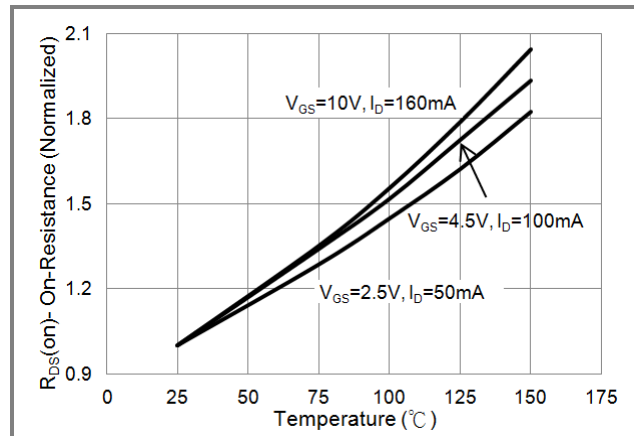


Fig.4 On-Resistance vs. Junction temperature

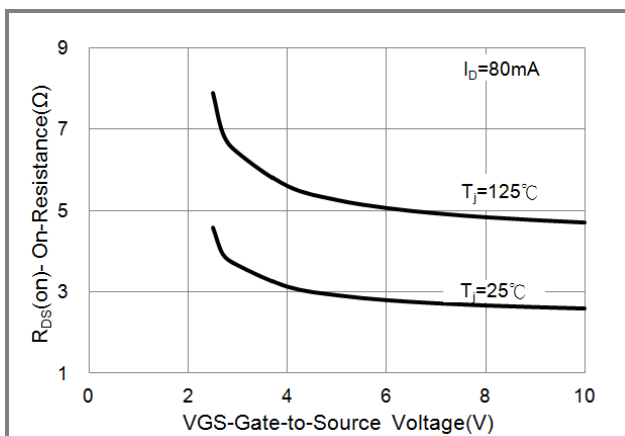


Fig.5 On-Resistance Variation with VGS.

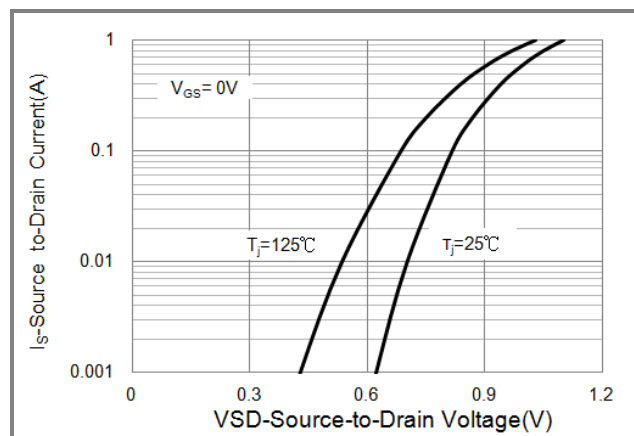


Fig.6 Body Diode Characteristics



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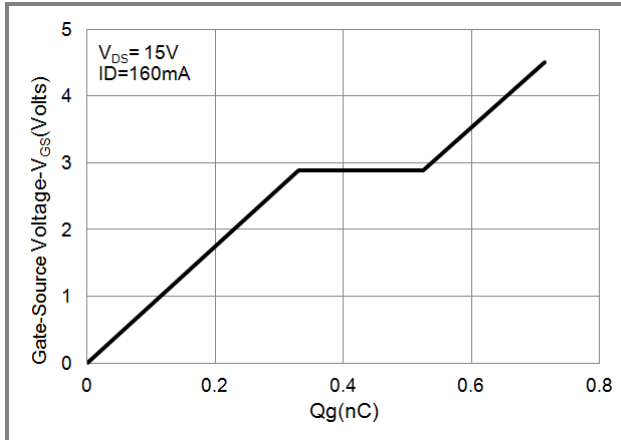


Fig.7 Gate-Charge Characteristics

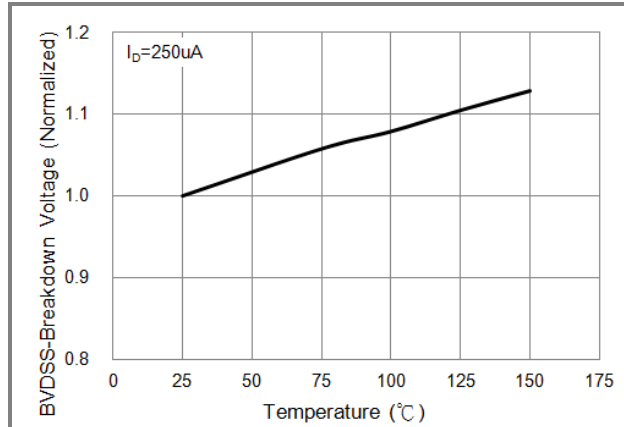


Fig.8 Breakdown Voltage Variation vs. Temperature

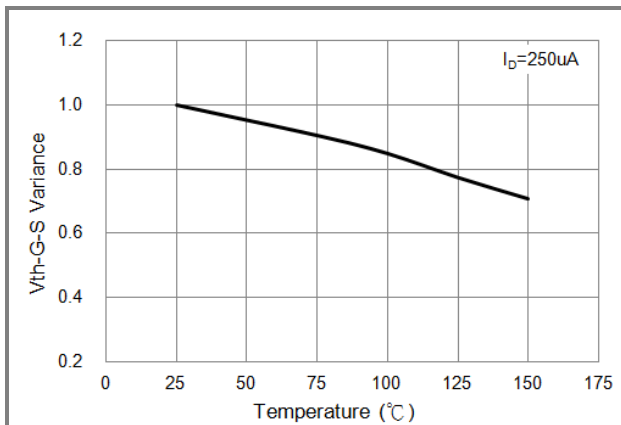


Fig.9 Threshold Voltage Variation with Temperature.

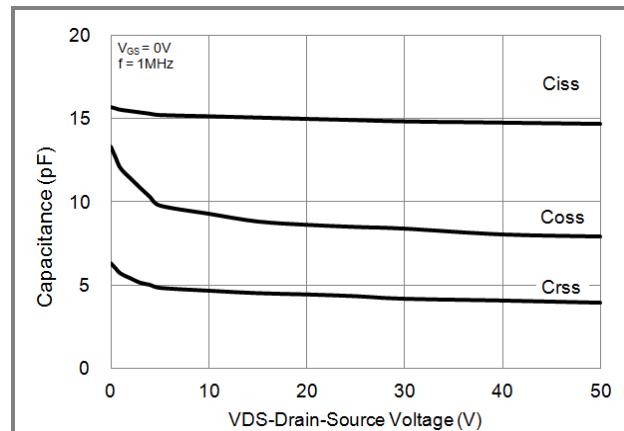


Fig.10 Capacitance vs. Drain-Source Voltage.



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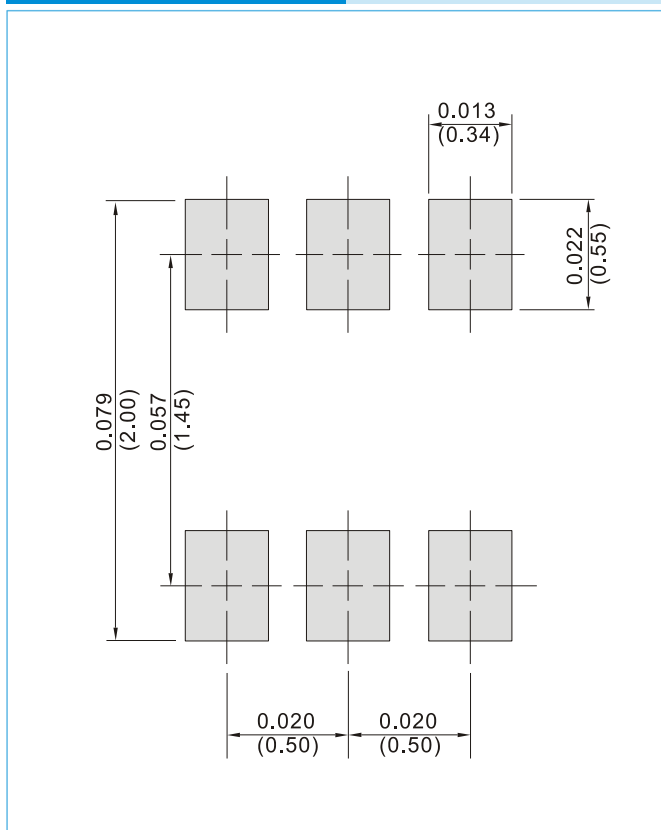
PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJX138L_R1_00001	SOT-563	4K pcs / 7" reel	X8L	Halogen free
PJX138L_R2_00001	SOT-563	10K pcs / 13" reel	X8L	Halogen free

MOUNTING PAD LAYOUT

SOT-563

Unit : inch(mm)





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