



# PJX8839

## 60V P-Channel Enhancement Mode MOSFET

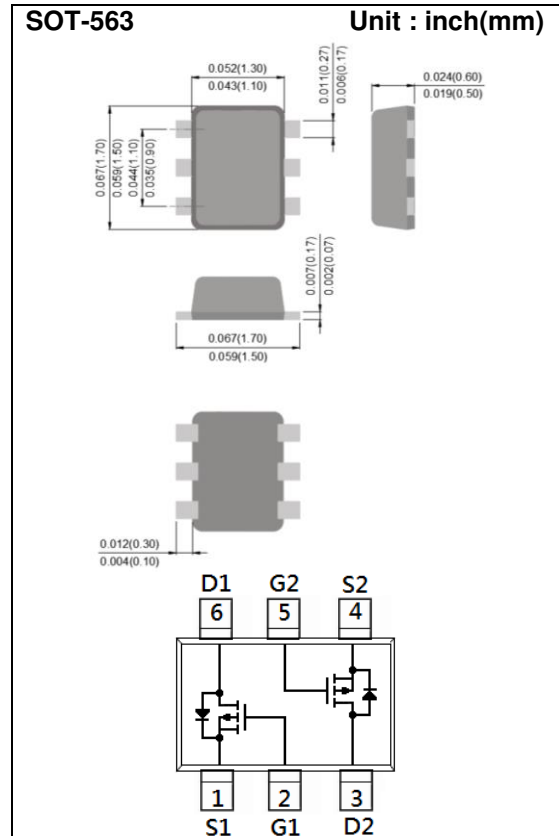
**Voltage**    **-60 V**    **Current**    **-200mA**

### Features

- RDS(ON) , VGS@-10V, ID@-500mA<4Ω
- RDS(ON) , VGS@-4.5V, ID@-200mA<6Ω
- RDS(ON) , VGS@-2.5V, ID@-50mA<13Ω
- Advanced Trench Process Technology
- 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 : 0.0026 grams
- Marking : X39



### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V <sub>DS</sub>	-60	V
Gate-Source Voltage		V <sub>GS</sub>	±20	V
Continuous Drain Current		I <sub>D</sub>	-200	mA
Pulsed Drain Current		I <sub>DM</sub>	-800	mA
Power Dissipation	T <sub>A</sub> =25°C	P <sub>D</sub>	300	mW
	Derate above 25°C		2.4	mW/°C
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C
Typical Thermal Resistance		R <sub>θJA</sub>	417	°C/W
- Junction to Ambient <sup>(Note 3)</sup>				



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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-60	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1.0	-1.5	-2.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-500mA	-	2.4	4	Ω
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-200mA	-	2.65	6	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-50mA	-	4.5	13	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-48V, V <sub>GS</sub> =0V	-	-	-1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>Dynamic</b> (Note 4)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-25V, I <sub>D</sub> =-100mA, V <sub>GS</sub> =-4.5V	-	1.1	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.3	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	0.2	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-25V, V <sub>GS</sub> =0V, f=1.0MHZ	-	51	-	pF
Output Capacitance	C <sub>oss</sub>		-	15	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	2.2	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-25V, I <sub>D</sub> =-100mA, V <sub>GS</sub> =-10V, R <sub>G</sub> =6Ω(Notes 1,2)	-	4.8	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	19	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	52	-	
Turn-Off Fall Time	t <sub>f</sub>		-	32	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	-200	mA
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-500mA, V <sub>GS</sub> =0V	-	-0.95	-1.3	V

**NOTES :**

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics.
3. R<sub>θJA</sub> 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

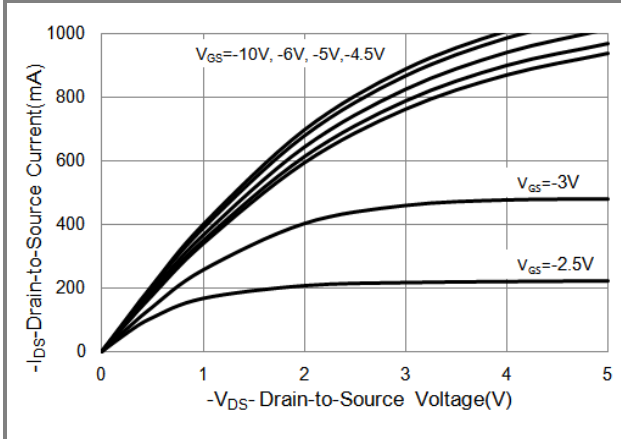


Fig.1 On-Region Characteristics

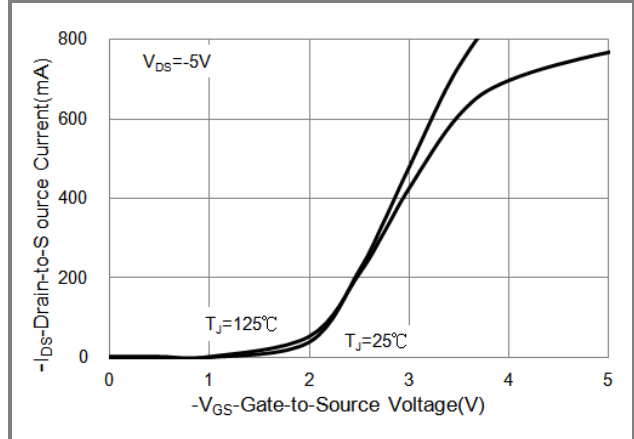


Fig.2 Transfer Characteristics

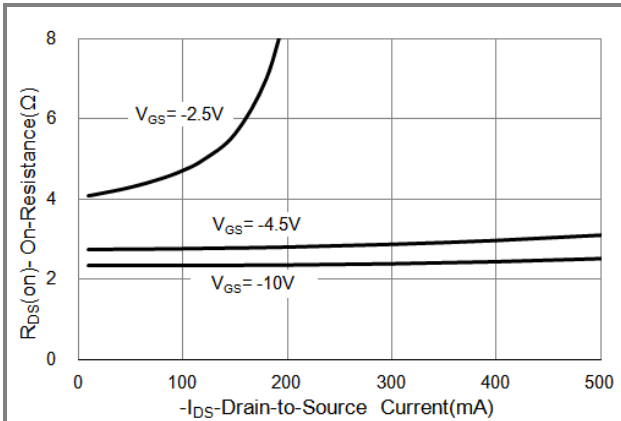


Fig.3 On-Resistance vs. Drain Current

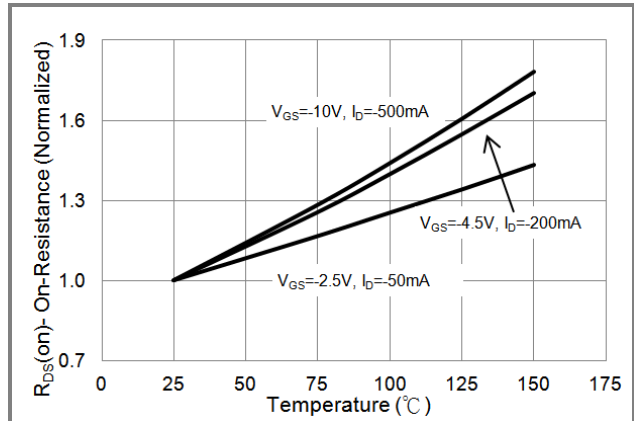


Fig.4 On-Resistance vs. Junction temperature

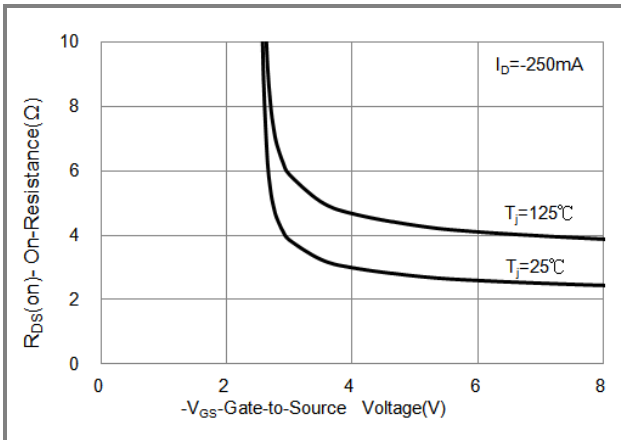


Fig.5 On-Resistance Variation with  $V_{GS}$ .

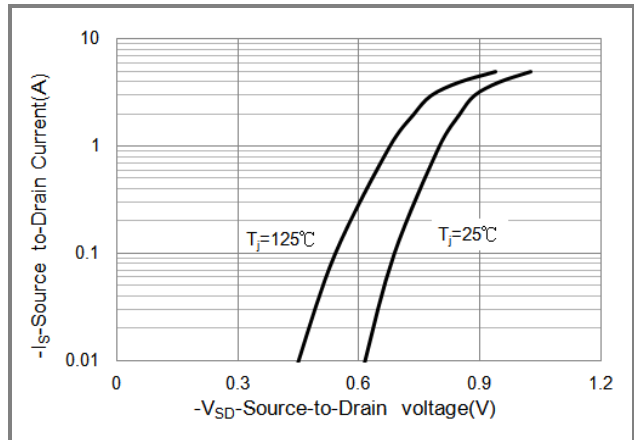


Fig.6 Body Diode Characteristics



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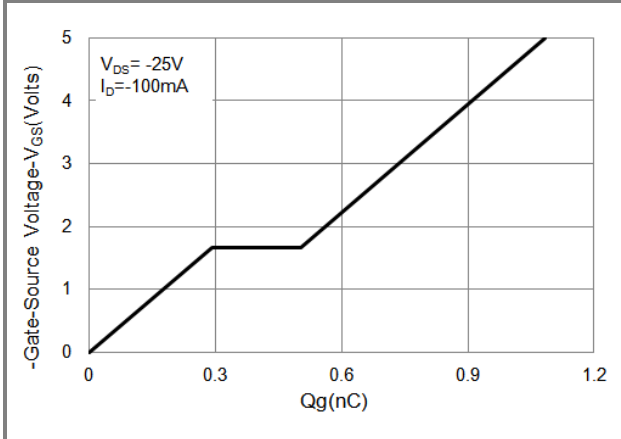


Fig.7 Gate-Charge Characteristics

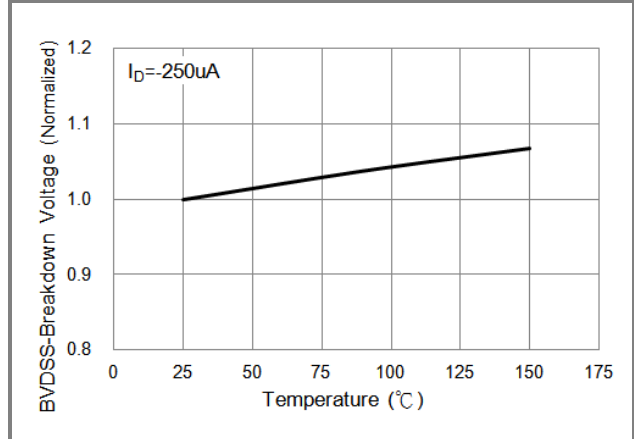


Fig.8 Breakdown Voltage Variation vs. Temperature

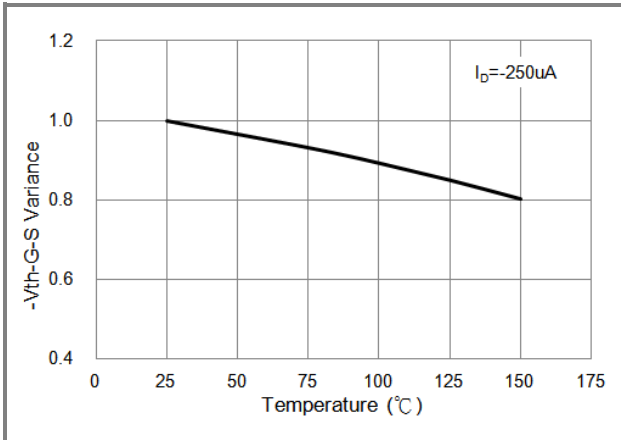


Fig.9 Threshold Voltage Variation with Temperature.

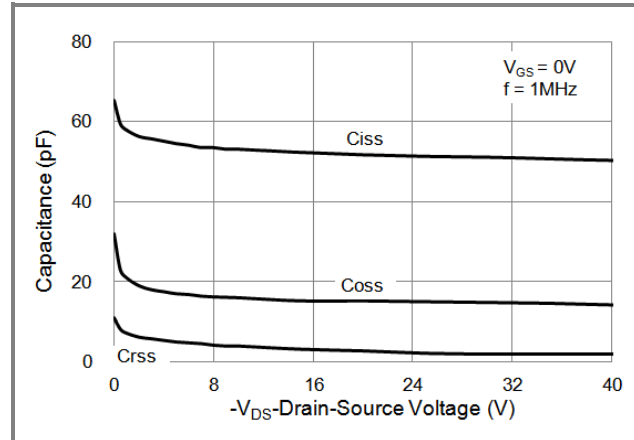


Fig.10 Capacitance vs. Drain-Source Voltage.

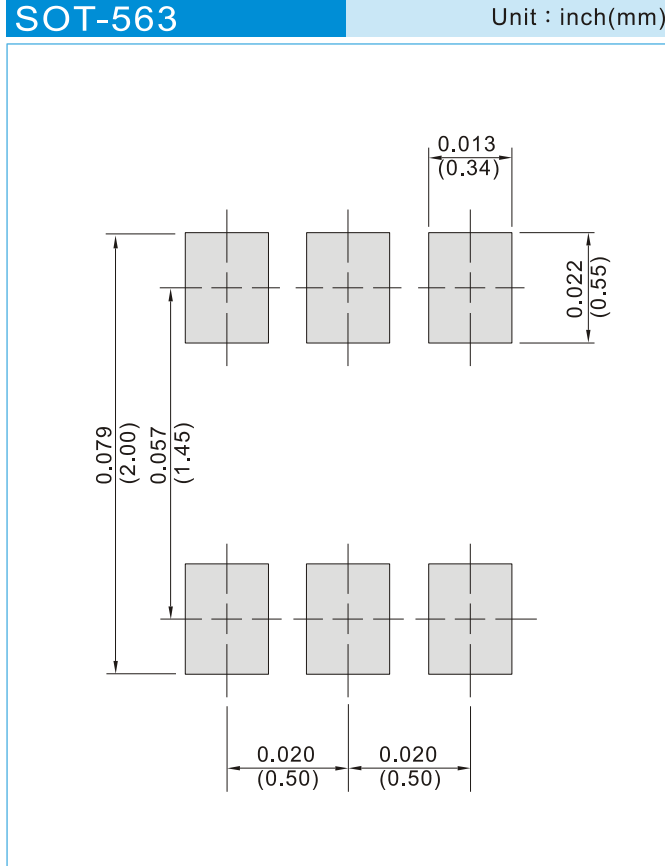


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## PART NO. PACKING CODE VERSION

PART NO. PACKING CODE	Package Type	Packing Type	Marking	Version
PJX8839_R1_00001	SOT-563	4K pcs / 7" reel	X39	Halogen free RoHS compliant
PJX8839_R2_00001	SOT-563	10K pcs / 13" reel	X39	Halogen free RoHS compliant

## MOUNTING PAD LAYOUT





## PJX8839

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