



# PJV138L

## 60V N-Channel Enhancement Mode Mosfet

**Voltage** 60 V **Current** 130mA

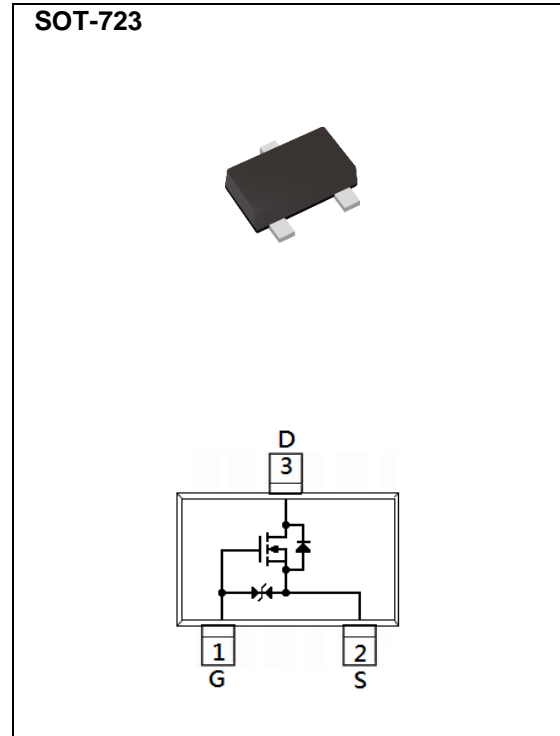
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@10V$ ,  $I_D@130mA < 4.2\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@4.5V$ ,  $I_D@100mA < 5\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@2.5V$ ,  $I_D@50mA < 7\Omega$
- 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-723 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0001 ounce, 0.0013 gram

SOT-723



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	60	V
Gate-Source Voltage		$V_{GS}$	+20	
Continuous Drain Current <sup>(Note 4)</sup>		$I_D$	130	mA
Pulsed Drain Current <sup>(Note 1)</sup>		$I_{DM}$	800	
Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	150	mW
	Derate above 25°C		1.2	mW/°C
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150	°C
Typical Thermal Resistance		$R_{\theta JA}$	833	°C/W
- Junction to Ambient <sup>(Note 3,4)</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	0.8	1.2	1.5	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =130mA	-	3.2	4.2	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =100mA	-	3.8	5	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =50mA	-	5.3	7	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =10mA	-	12	-	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, 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	-	-	±10	
<b>Dynamic</b> (Note 5)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =130mA, V <sub>GS</sub> =4.5V(Note 2)	-	0.7	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.33	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	0.2	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1.0MHZ	-	15	-	pF
Output Capacitance	C <sub>oss</sub>		-	8.4	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	4.2	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =130mA, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω(Note 2)	-	7	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	22	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	21	-	
Turn-Off Fall Time	t <sub>f</sub>		-	25	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	130	mA
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =130mA, V <sub>GS</sub> =0V	-	0.8	1.1	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 cm square pad of copper.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing.



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## TYPICAL CHARACTERISTIC CURVES

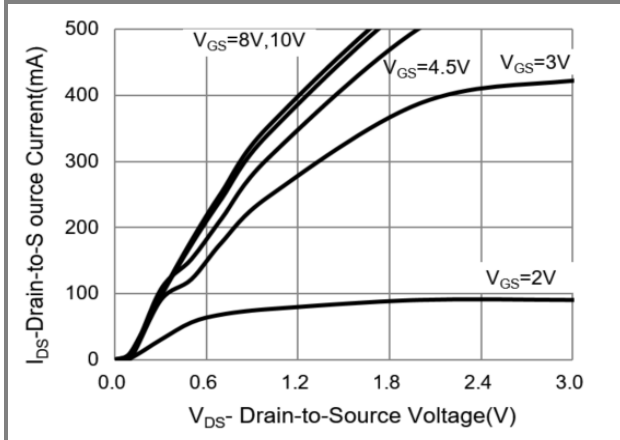


Fig.1 On-Region Characteristics

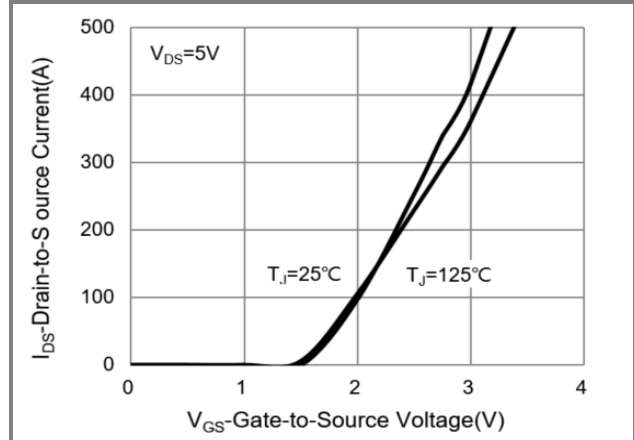


Fig.2 Transfer Characteristics

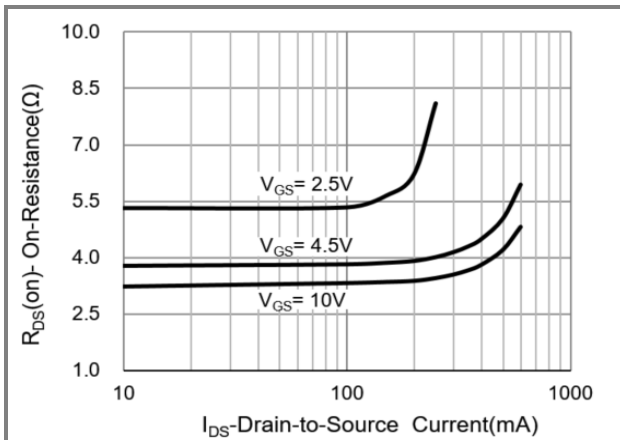


Fig.3 On-Resistance vs. Drain Current

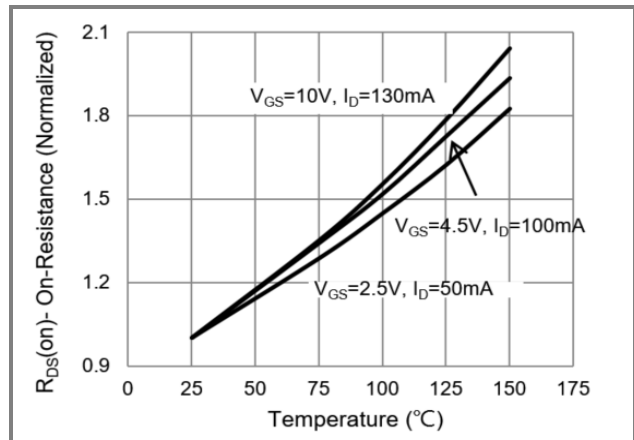


Fig.4 On-Resistance vs. Junction temperature

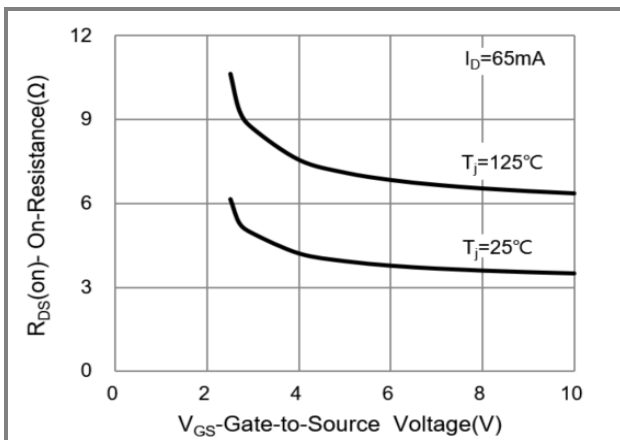


Fig.5 On-Resistance Variation with  $V_{GS}$

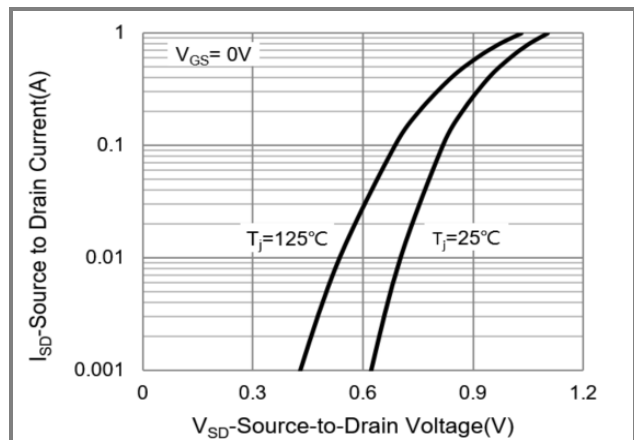


Fig.6 Body Diode Characteristics



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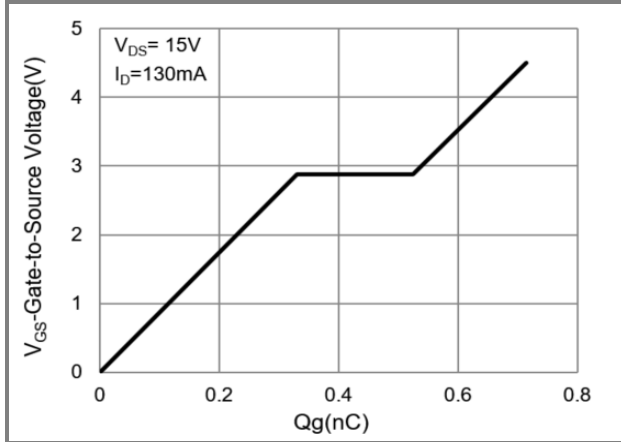


Fig.7 Gate-Charge Characteristics

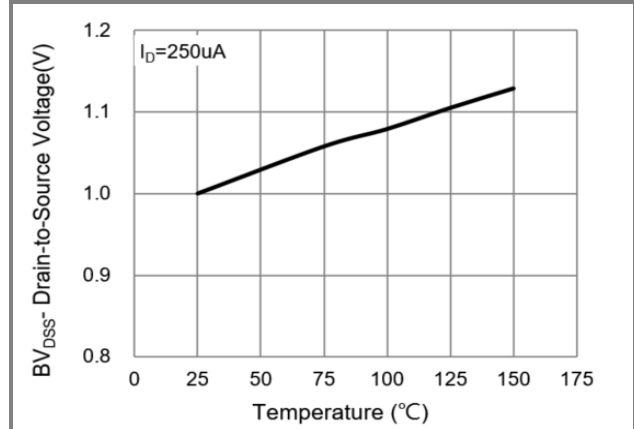


Fig.8 Breakdown Voltage Variation vs. Temperature

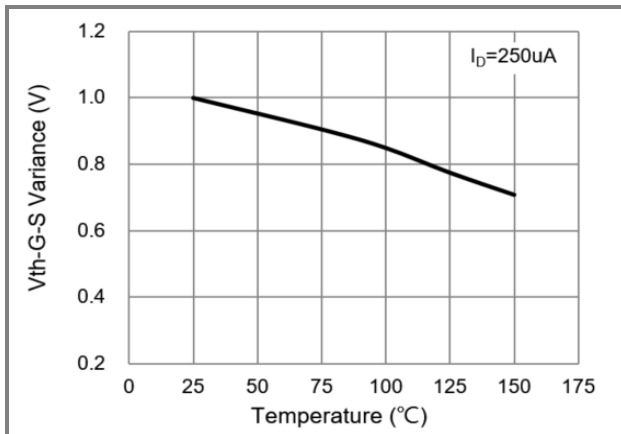


Fig.9 Threshold Voltage Variation with Temperature

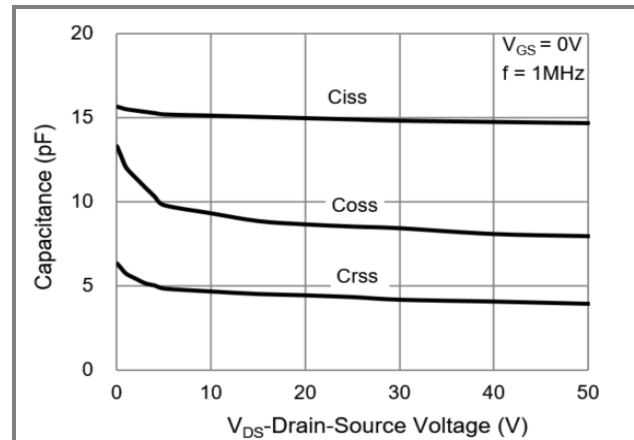


Fig.10 Capacitance vs. Drain-Source Voltage

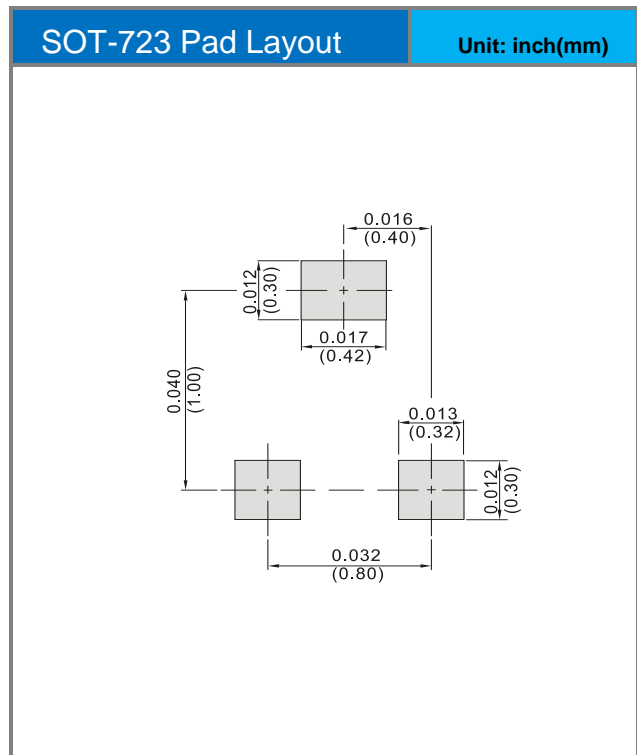
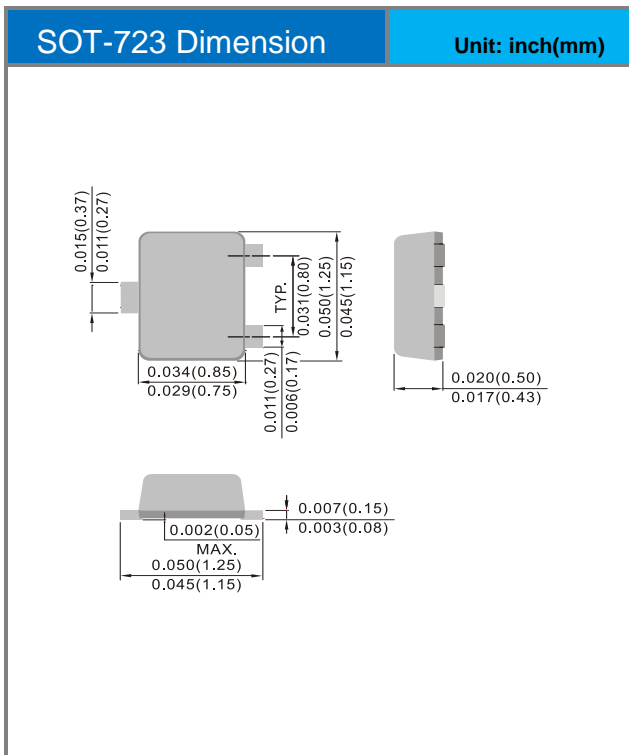


# PJV138L

## Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJV138L_R1_00301	SOT-723	8K pcs / 7" reel	8L	Halogen free RoHS compliant

## Packaging Information & Mounting Pad Layout





## PJV138L

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