



# PJS6800

## 30V N-Channel Enhancement Mode MOSFET

Voltage

30 V

Current

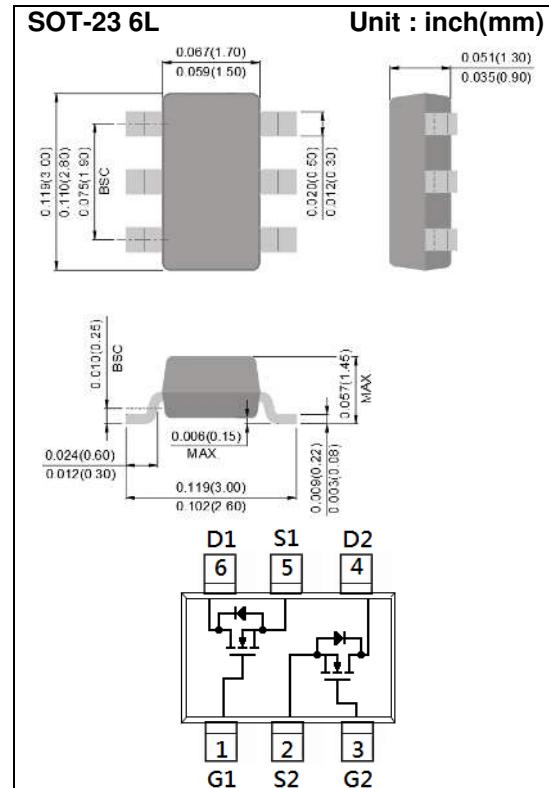
3.9A

### Features

- RDS(ON) , VGS@10V, ID@3.9A<48mΩ
- RDS(ON) , VGS@4.5V, ID@3.2A<53mΩ
- RDS(ON) , VGS@2.5V, ID@2.5A<66mΩ
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: SOT-23 6L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0005 ounces, 0.014 grams
- Marking: ST0



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

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	+12	V
Continuous Drain Current	$I_D$	3.9	A
Pulsed Drain Current	$I_{DM}$	15.6	A
Power Dissipation	$T_a=25^\circ\text{C}$	1.25	W
	Derate above 25°C	10	mW/ $^\circ\text{C}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Typical Thermal Resistance - Junction to Ambient (Note 3)	$R_{\theta JA}$	100	$^\circ\text{C/W}$



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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$\text{BV}_{\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	30	-	-	V
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	0.4	0.72	1.2	V
Drain-Source On-State Resistance	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=3.9\text{A}$	-	41	48	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=3.2\text{A}$	-	44	53	
		$V_{\text{GS}}=2.5\text{V}, I_{\text{D}}=2.5\text{A}$	-	51	66	
Zero Gate Voltage Drain Current	$I_{\text{DSS}}$	$V_{\text{DS}}=30\text{V}, V_{\text{GS}}=0\text{V}$	-	0.01	1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{\text{GSS}}$	$V_{\text{GS}}=\pm 12\text{V}, V_{\text{DS}}=0\text{V}$	-	$\pm 10$	$\pm 100$	nA
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{\text{DS}}=15\text{V}, I_{\text{D}}=3.9\text{A}, V_{\text{GS}}=10\text{V}^{\text{(Note 1,2)}}$	-	11.3	-	nC
Gate-Source Charge	$Q_{\text{gs}}$		-	1.2	-	
Gate-Drain Charge	$Q_{\text{gd}}$		-	1.6	-	
Input Capacitance	$C_{\text{iss}}$	$V_{\text{DS}}=15\text{V}, V_{\text{GS}}=0\text{V}, f=1.0\text{MHZ}$	-	490	-	pF
Output Capacitance	$C_{\text{oss}}$		-	44	-	
Reverse Transfer Capacitance	$C_{\text{rss}}$		-	32	-	
<b>Switching</b>						
Turn-On Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=15\text{V}, I_{\text{D}}=3.9\text{A}, V_{\text{GS}}=10\text{V}, R_{\text{G}}=6\Omega^{\text{(Note 1,2)}}$	-	2	-	ns
Turn-On Rise Time	$t_r$		-	57	-	
Turn-Off Delay Time	$t_{\text{d}(\text{off})}$		-	78	-	
Turn-Off Fall Time	$t_f$		-	79	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_s$	---	-	-	1.5	A
Diode Forward Voltage	$V_{\text{SD}}$	$I_s=1.0\text{A}, V_{\text{GS}}=0\text{V}$	-	0.77	1.2	V

### NOTES :

1. Pulse width $\leq 300\mu\text{s}$ , Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3.  $R_{\text{eJA}}$  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 FR-4 with 2oz. square pad of copper
4. The maximum current rating is package limited



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## TYPICAL CHARACTERISTIC CURVES

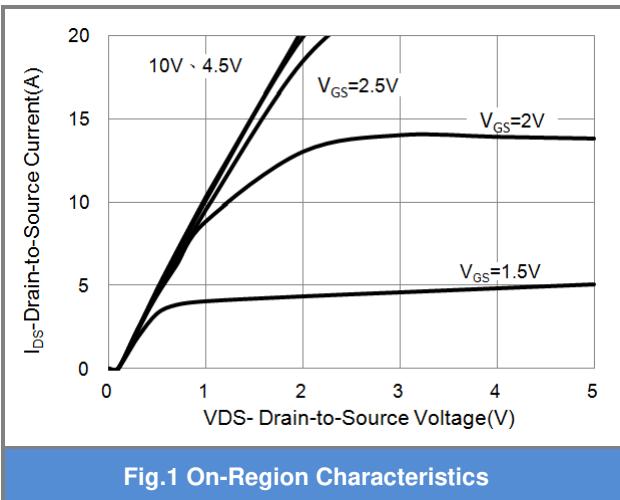


Fig.1 On-Region Characteristics

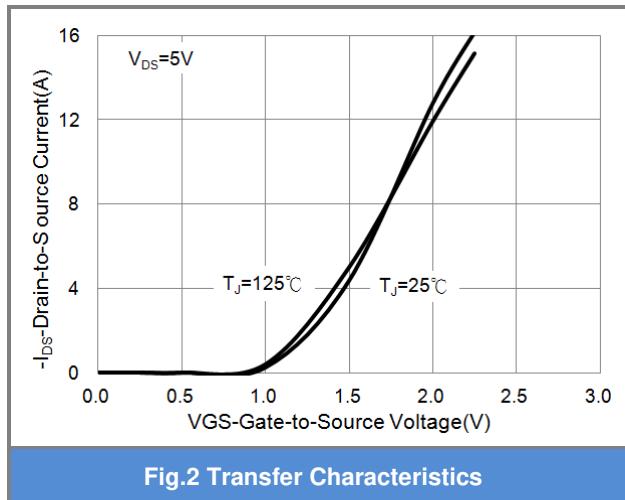


Fig.2 Transfer Characteristics

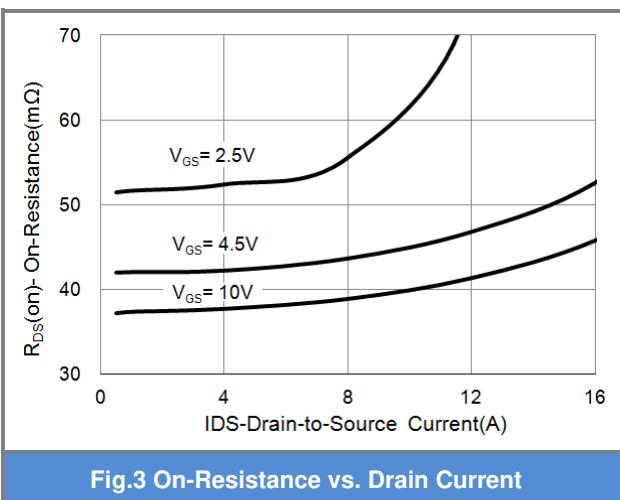


Fig.3 On-Resistance vs. Drain Current

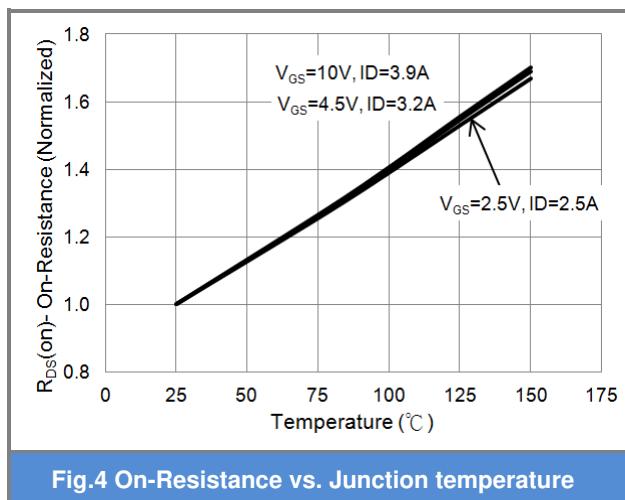


Fig.4 On-Resistance vs. Junction temperature

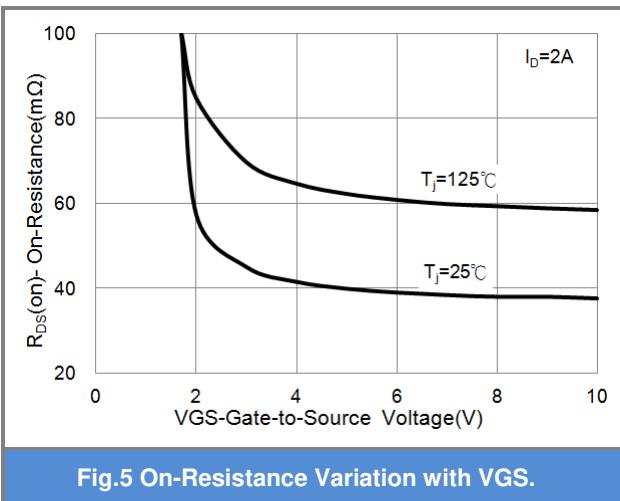


Fig.5 On-Resistance Variation with VGS.

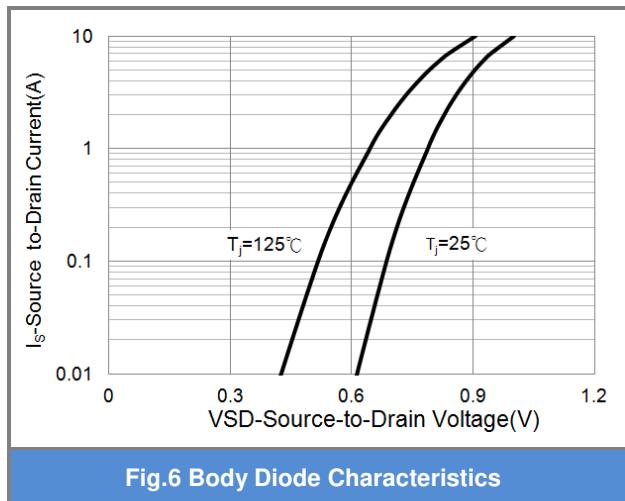


Fig.6 Body Diode Characteristics



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### TYPICAL CHARACTERISTIC CURVES

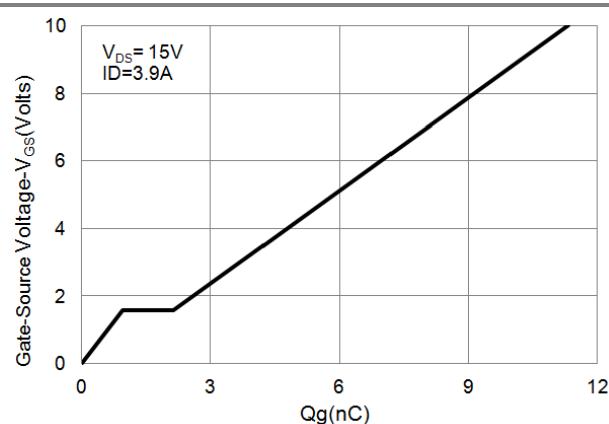


Fig.7 Gate-Charge Characteristics

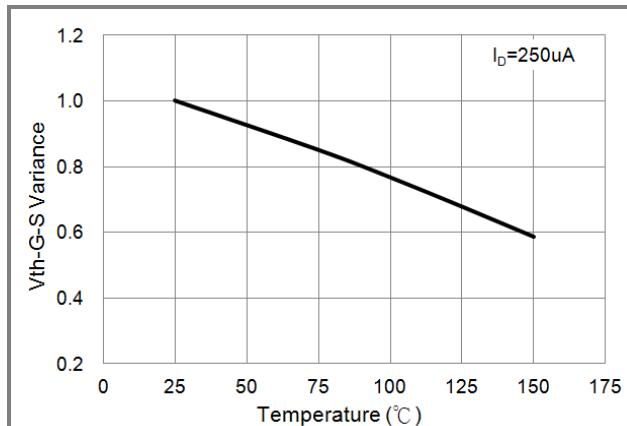


Fig.8 Threshold Voltage Variation with Temperature

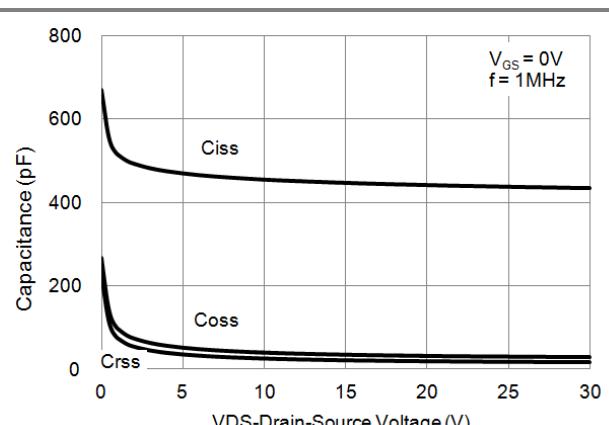


Fig.9 Capacitance vs. Drain-Source Voltage.

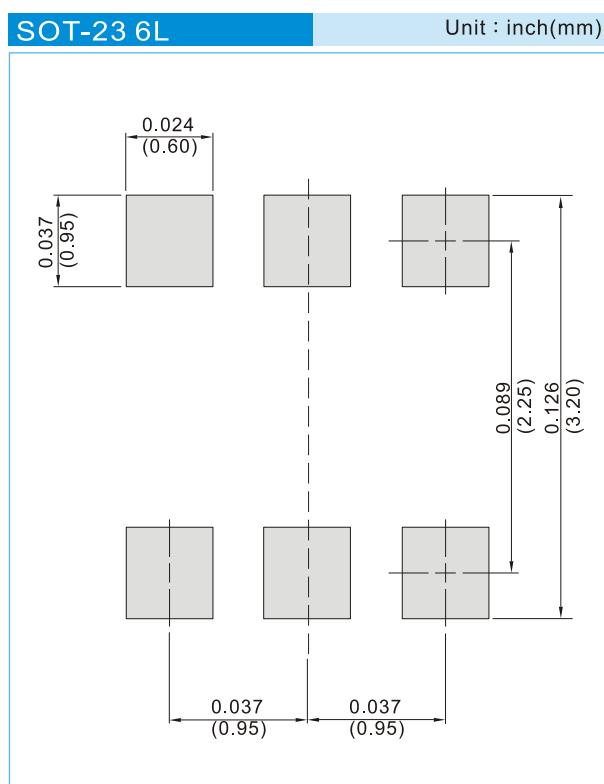


# PJS6800

## PART NO. PACKING CODE VERSION

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJS6800_S1_00001	SOT-23 6L	3K pcs / 7" reel	ST0	Halogen free RoHS compliant
PJS6800_S2_00001	SOT-23 6L	10K pcs / 13" reel	ST0	Halogen free RoHS compliant

## MOUNTING PAD LAYOUT





## PJS6800

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