



# PJQ1900

## 20V N-Channel Enhancement Mode MOSFET

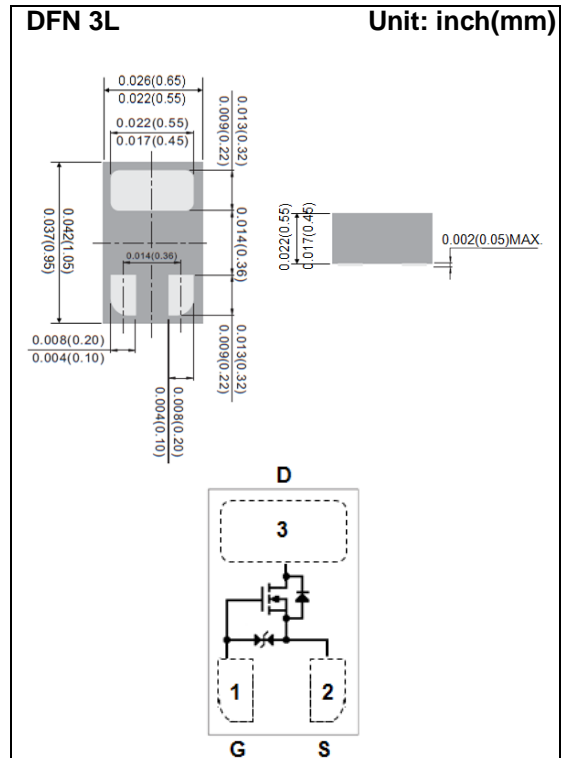
<b>Voltage</b>	<b>20 V</b>	<b>Current</b>	<b>1.2 A</b>
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### Features

- Low Voltage Drive (1.2V).
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

### Mechanical Data

- Case: DFN 3L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00004 ounces, 0.0011 grams
- Marking: 0



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	20	V
Gate-Source Voltage		$V_{GS}$	$\pm 10$	V
Continuous Drain Current	$T_A=25^\circ\text{C}$	$I_D$	1.2	A
	$T_{sp}=25^\circ\text{C}$ (Note 3)		2.0	
Pulsed Drain Current, $t_p \leq 10\mu\text{s}$		$I_{DM}$	4.0	A
Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	900	mW
	Derate above $25^\circ\text{C}$		7.2	$\text{mW}/^\circ\text{C}$
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Typical Thermal resistance		$R_{\theta JA}$	139	$^\circ\text{C}/\text{W}$
- Junction to Ambient, $t < 10\text{s}$ (Note 4)				



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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	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.3	0.65	0.9	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=600mA$	-	300	400	m $\Omega$
		$V_{GS}=2.5V, I_D=200mA$	-	350	650	
		$V_{GS}=1.8V, I_D=100mA$	-	400	800	
		$V_{GS}=1.5V, I_D=50mA$	-	500	1200	
		$V_{GS}=1.2V, I_D=20mA$	-	1000	3000	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=16V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	$\pm 0.5$	$\pm 10$	$\mu A$
<b>Dynamic</b> (Note 6)						
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=300mA,$ $V_{GS}=4.5V$ (Note 2)	-	1.4	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.22	-	
Gate-Drain Charge	$Q_{gd}$		-	0.21	-	
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V,$ $f=1.0MHz$	-	67	-	pF
Output Capacitance	$C_{oss}$		-	19	-	
Reverse Transfer Capacitance	$C_{rss}$		-	6	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=150mA,$ $V_{GS}=4.0V,$ $R_G=10\Omega$ (Note 1,2)	-	2.8	-	ns
Turn-On Rise Time	$t_r$		-	20	-	
Turn-Off Delay Time	$t_{d(off)}$		-	23	-	
Turn-Off Fall Time	$t_f$		-	23	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	300	mA
Diode Forward Voltage	$V_{SD}$	$I_S=300mA, V_{GS}=0V$	-	0.87	1.3	V

NOTES :

1. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3.  $T_{sp}$  is the temperature at the soldering point of the source lead.
4.  $R_{\theta JA}$  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 1inch FR-4 with 2oz. square pad of copper.
5. The maximum current rating is package limited
6. Guaranteed by design, not subject to production testing.



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## TYPICAL CHARACTERISTIC CURVES

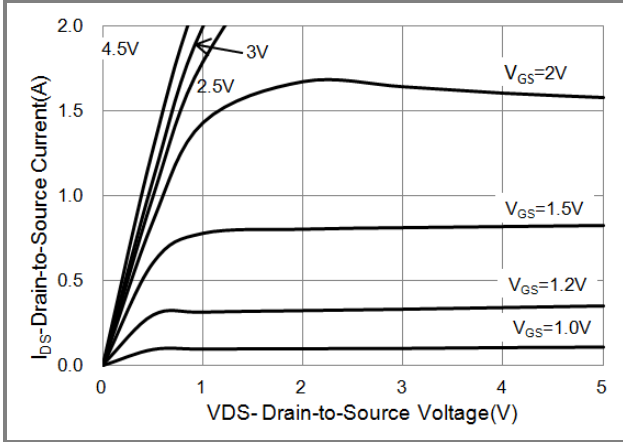


Fig.1 On-Region Characteristics

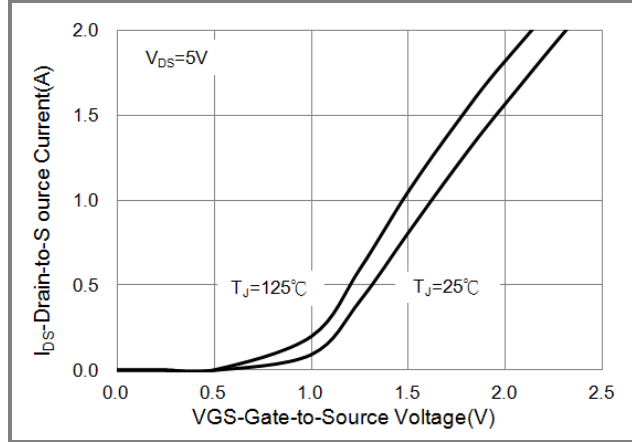


Fig.2 Transfer Characteristics

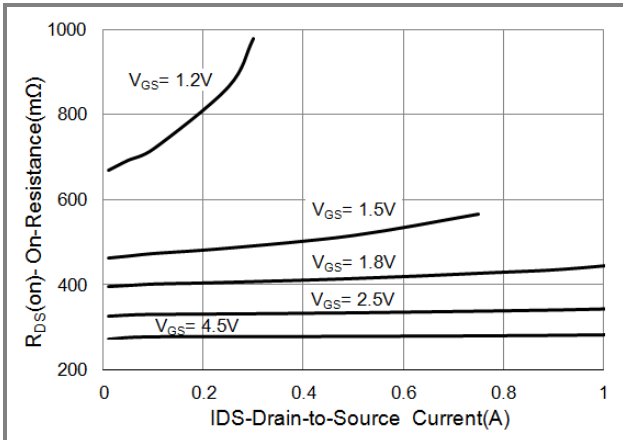


Fig.3 On-Resistance vs. Drain Current

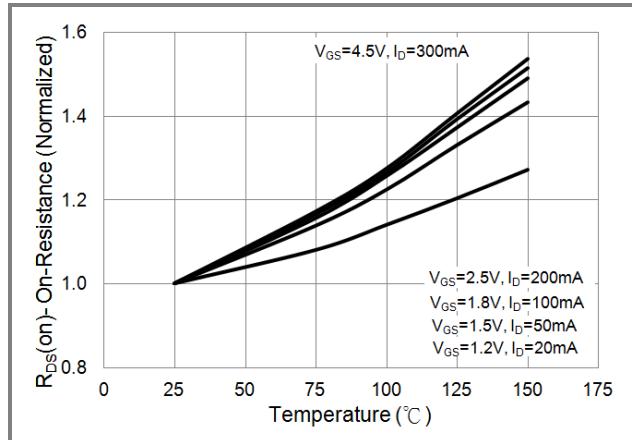


Fig.4 On-Resistance vs. Junction temperature

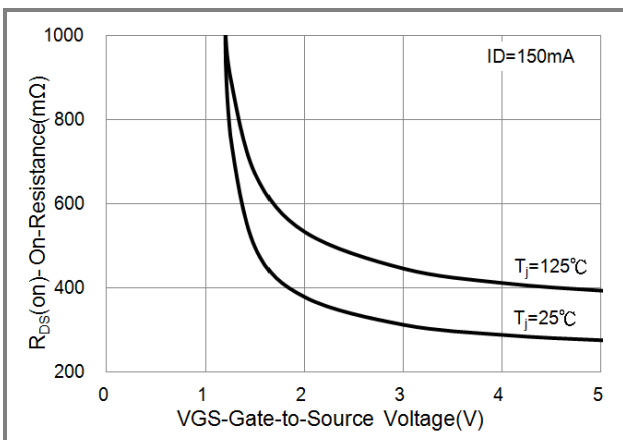


Fig.5 On-Resistance Variation with VGS.

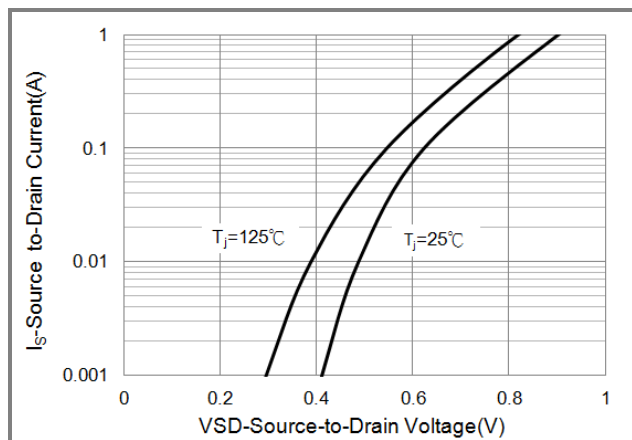


Fig.6 Body Diode Characteristics



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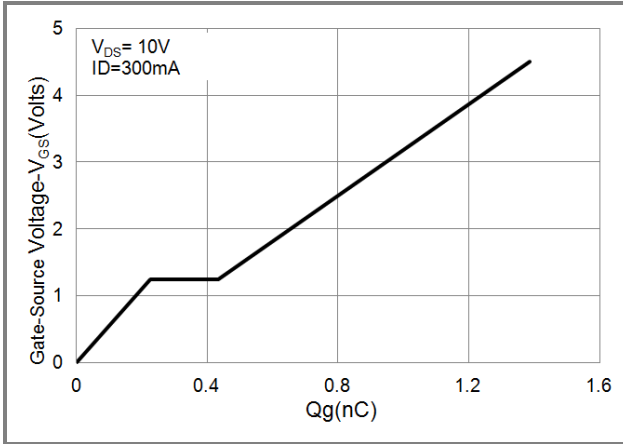


Fig.7 Gate-Charge Characteristics

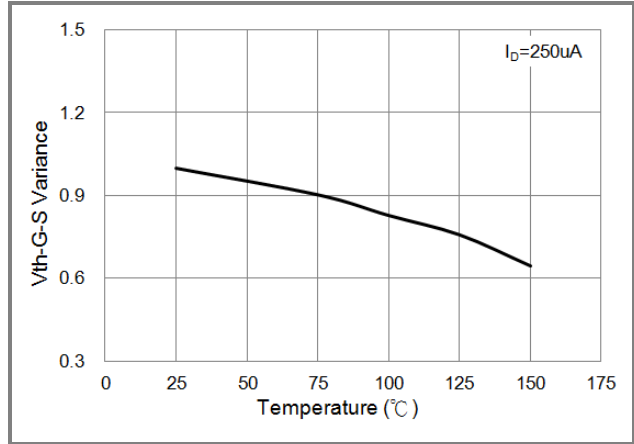


Fig.8 Threshold Voltage Variation with Temperature.

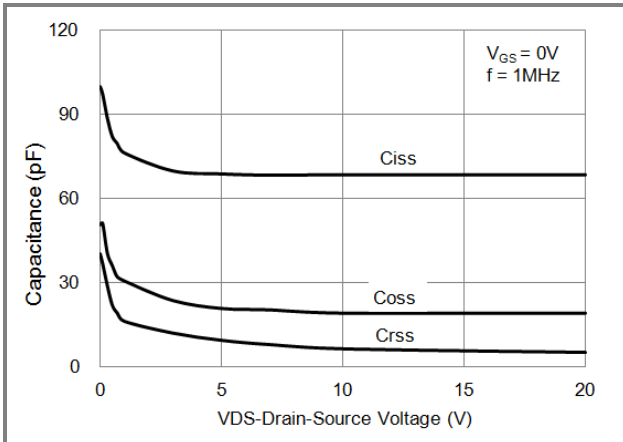


Fig.9 Capacitance vs. Drain-Source Voltage.

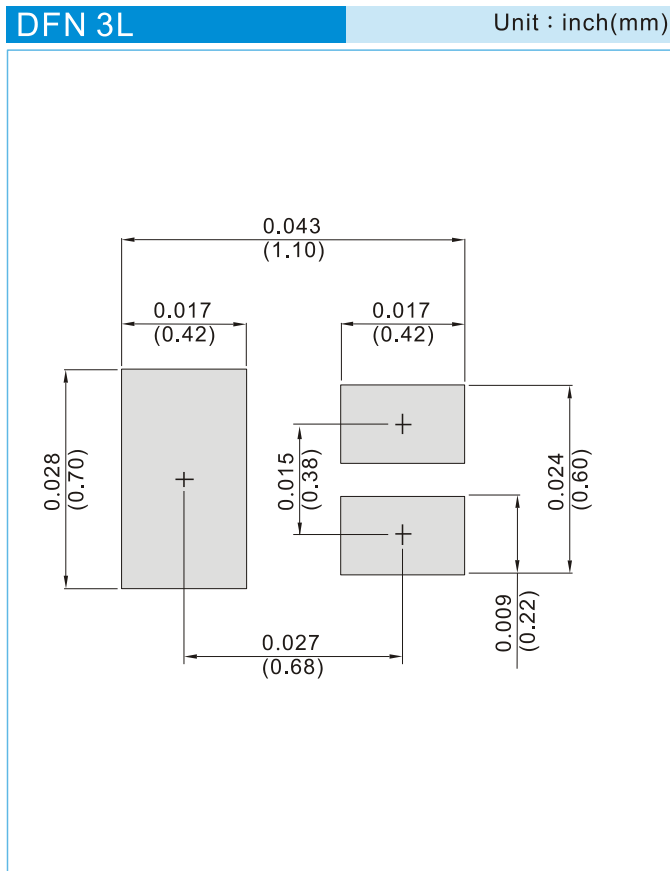


# PJQ1900

## PART NO PACKING CODE VERSION

PART NO PACKING CODE	Package Type	Packing type	Marking	Version
PJQ1900_R1_00001	DFN 3L	8K pcs / 7" reel	0	Halogen free

## MOUNTING PAD LAYOUT





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