



# PJQ1902

## 30V N-Channel Enhancement Mode MOSFET – ESD Protected

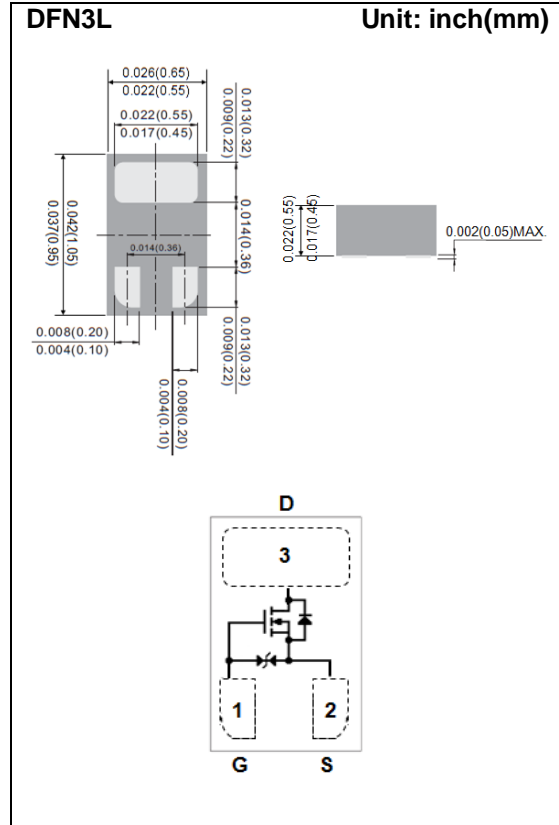
**Voltage** 30 V **Current** 500mA

### Features

- $R_{DS(ON)}$  ,  $V_{GS}@4.5V$  ,  $I_D@350mA < 1.2\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@2.5V$  ,  $I_D@200mA < 1.6\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@1.8V$  ,  $I_D@80mA < 2.3\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@1.5V$  ,  $I_D@10mA < 2.5\Omega$ (typ.)
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected 2KV HBM
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. (Halogen Free)

### Mechanical Data

- Case: DFN3L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00004 ounces, 0.0011 grams
- Marking: 2



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

PARAMETER	SYMBOL	LIMIT	UNITS	
Drain-Source Voltage	$V_{DS}$	30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V	
Continuous Drain Current	$I_D$	500	mA	
Pulsed Drain Current	$I_{DM}$	1500	mA	
Power Dissipation	$P_D$	$T_a=25^\circ C$	700	mW
		Derate above $25^\circ C$	5.6	mW/ $^\circ C$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ C$	
Typical Thermal resistance	$R_{\theta JA}$	175	$^\circ C/W$	
- 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
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6	0.85	1.1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=350mA$	-	0.94	1.2	$\Omega$
		$V_{GS}=2.5V, I_D=200mA$	-	1.32	1.6	
		$V_{GS}=1.8V, I_D=80mA$	-	1.82	2.3	
		$V_{GS}=1.5V, I_D=10mA$	-	2.5	-	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$	-	0.01	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	$\pm 10$	
		$V_{GS}=\pm 5V, V_{DS}=0V$	-	-	$\pm 1$	
<b>Dynamic</b> (Note 5)						
Total Gate Charge	$Q_g$	$V_{DS}=15V, I_D=350mA,$ $V_{GS}=4.5V$ (Note 1,2)	-	0.87	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.26	-	
Gate-Drain Charge	$Q_{gd}$		-	0.16	-	
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	34	-	pF
Output Capacitance	$C_{oss}$		-	8.9	-	
Reverse Transfer Capacitance	$C_{rss}$		-	2.5	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=80mA,$ $V_{GS}=4.0V,$ $R_G=6\Omega$ (Note 1,2)	-	7.1	-	ns
Turn-On Rise Time	$t_r$		-	20	-	
Turn-Off Delay Time	$t_{d(off)}$		-	41	-	
Turn-Off Fall Time	$t_f$		-	31	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	350	mA
Diode Forward Voltage	$V_{SD}$	$I_S=350mA, V_{GS}=0V$	-	0.88	1.3	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 FR-4 with 2oz. 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

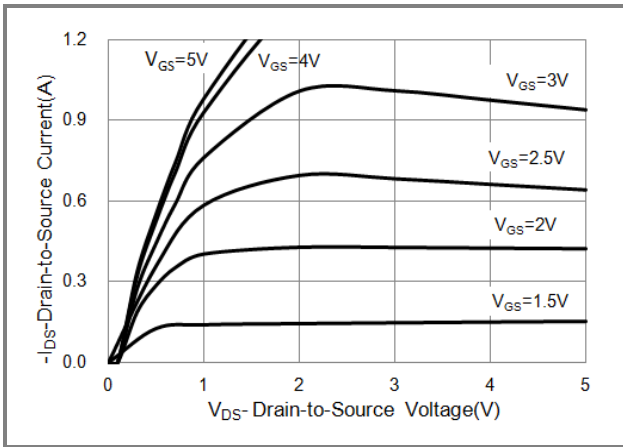


Fig.1 On-Region Characteristics

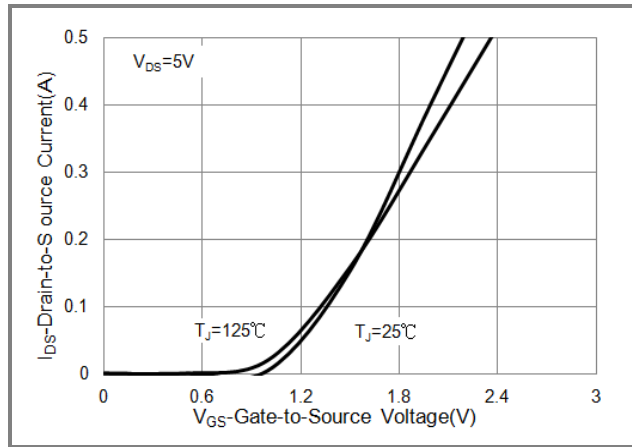


Fig.2 Transfer Characteristics

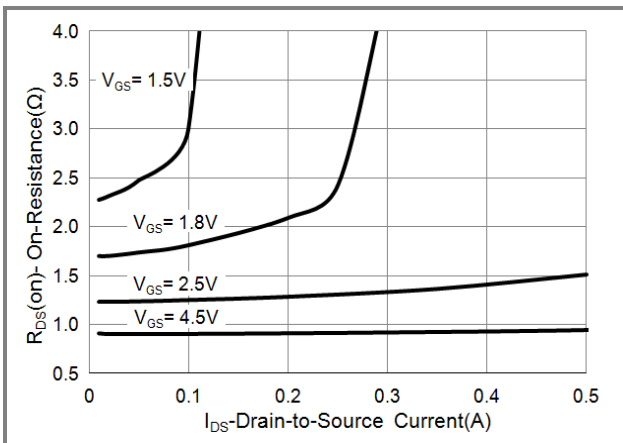


Fig.3 On-Resistance vs. Drain Current

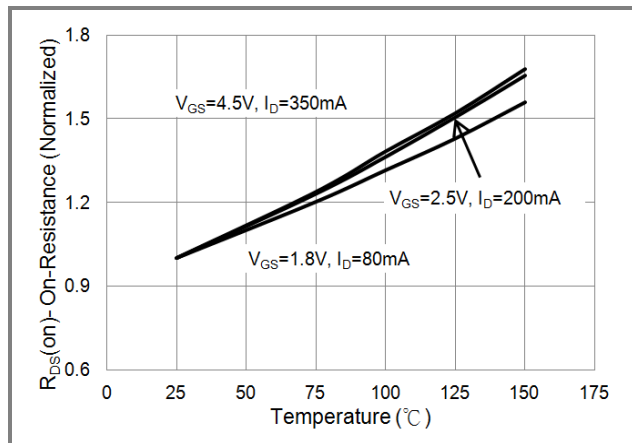


Fig.4 On-Resistance vs. Junction temperature

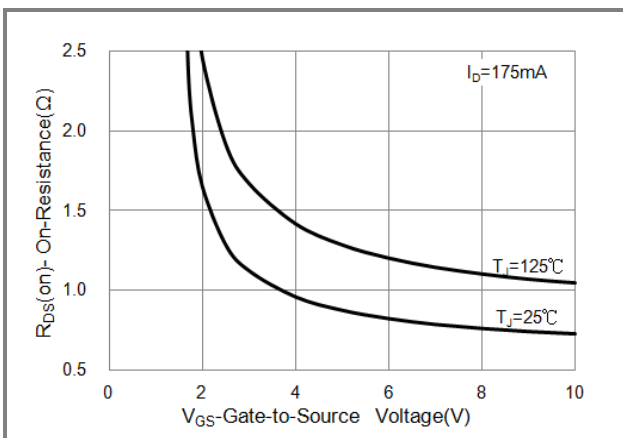


Fig.5 On-Resistance Variation with V\_GS.

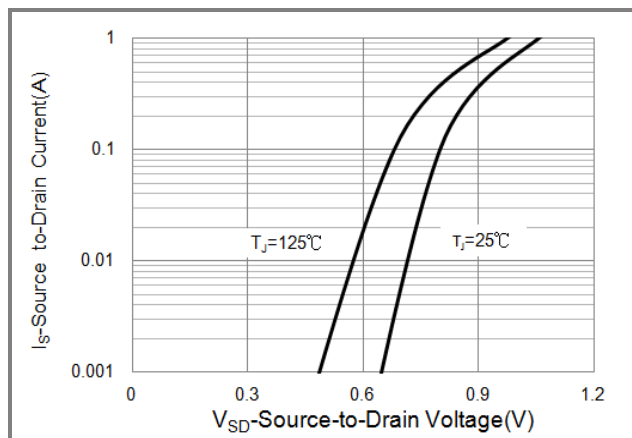


Fig.6 Body Diode Characteristics



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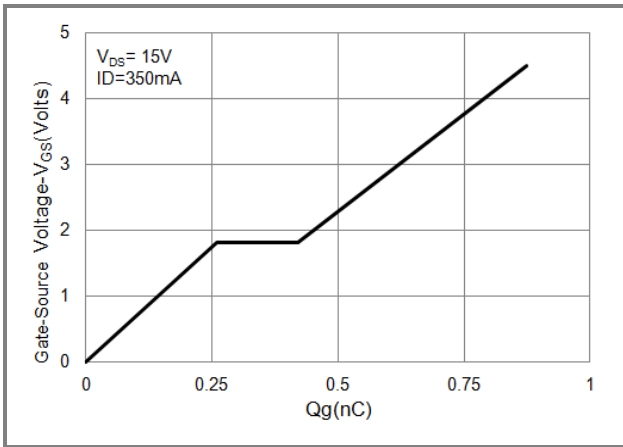


Fig.7 Gate-Charge Characteristics

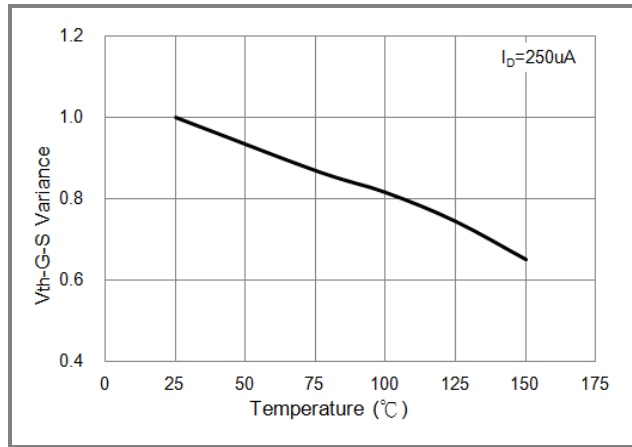


Fig.8 Threshold Voltage Variation with Temperature.

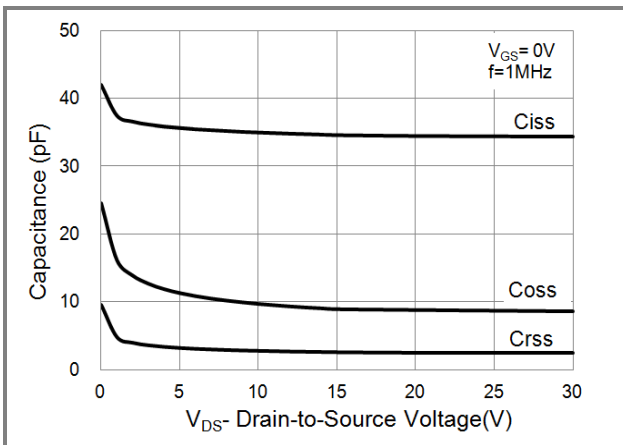


Fig.9 Capacitance vs. Drain-Source Voltage.

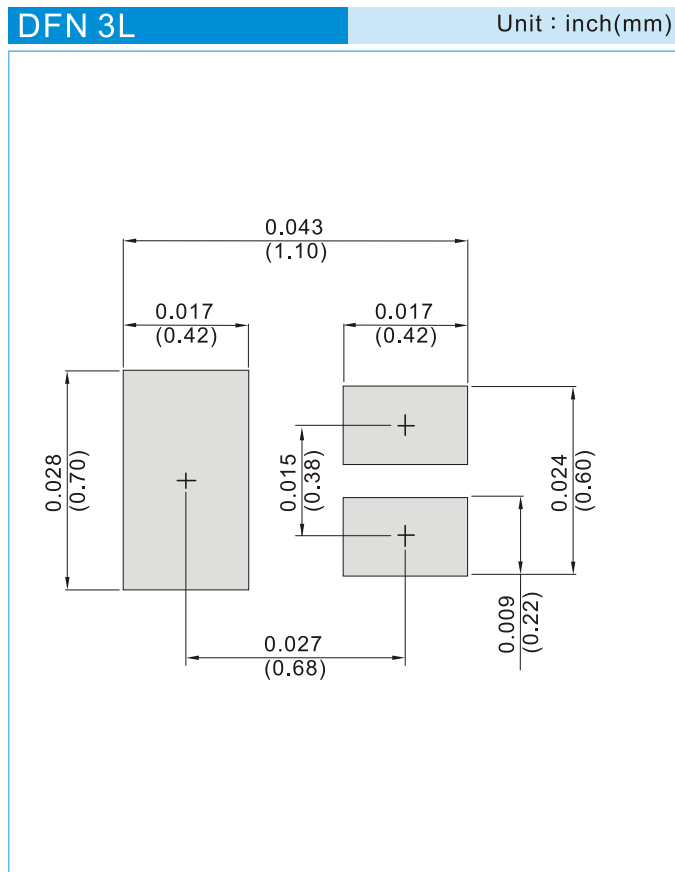


# PJQ1902

## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJQ1902_R1_00001	DFN3L	8K pcs / 7" reel	2	Halogen free

## MOUNTING PAD LAYOUT





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