

# PJQ1908-AU

## 50V N-Channel Enhancement Mode MOSFET

Voltage	50 V	Current	500mA
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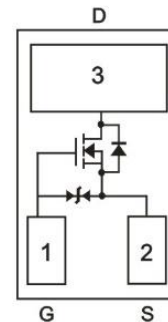
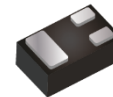
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@10V$ ,  $I_D@500mA < 1.45\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@4.5V$ ,  $I_D@200mA < 1.95\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@2.5V$ ,  $I_D@100mA < 4\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@1.8V$ ,  $I_D@10mA < 6\Omega$
- Advanced Trench Process Technology
- ESD Protected 2KV HBM
- AEC-Q101 qualified
- Specially Designed for Switch Load
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : DFN1006-3L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0007 grams

DFN1006-3L



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

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	$V_{DS}$	50	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>(Note 4)</sup>	$I_D$	500	mA
Pulsed Drain Current <sup>(Note 1)</sup>	$I_{DM}$	1200	
Power Dissipation	$T_A=25^\circ\text{C}$	900	mW
	Derate above $25^\circ\text{C}$	7.2	mW/ $^\circ\text{C}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Thermal Resistance	$R_{\theta JA}$	139	$^\circ\text{C}/\text{W}$
- Junction to Ambient, $t < 10\text{s}$ <sup>(Note 5)</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	50	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	0.5	0.86	1	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =500mA	-	1.2	1.45	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA	-	1.3	1.95	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =100mA	-	1.7	4	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =10mA	-	3	6	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =50V, 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> <sup>(Note 6)</sup>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =25V, I <sub>D</sub> =500mA, V <sub>GS</sub> =4.5V <sup>(Note 1,2)</sup>	-	0.95	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.34	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	0.32	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	-	36	-	pF
Output Capacitance	C <sub>oss</sub>		-	11	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	6.6	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =25V, I <sub>D</sub> =500mA, V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω <sup>(Note 1,2)</sup>	-	2.3	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	20	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	7	-	
Turn-Off Fall Time	t <sub>f</sub>		-	20	-	
<b>Drain-Source Diode</b>						
Diode Forward Current	I <sub>S</sub>	---	-	-	500	mA
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =500mA, V <sub>GS</sub> =0V	-	0.9	1.5	V

**NOTES :**

1. Pulse width ≤ 300us, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25°C.
4. The maximum current rating is package limited.
5. 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<sup>2</sup> with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

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## TYPICAL CHARACTERISTIC CURVES

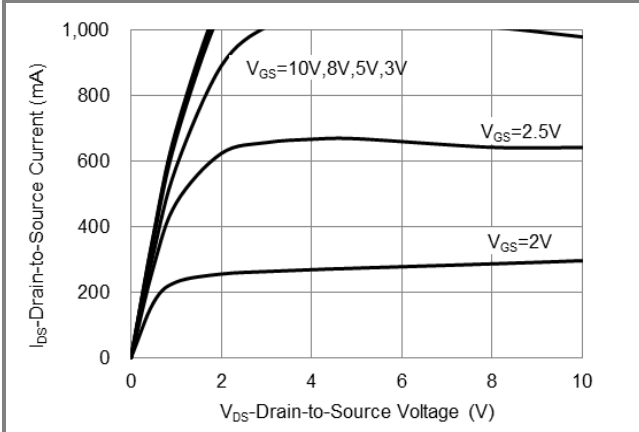


Fig.1 Output Characteristics

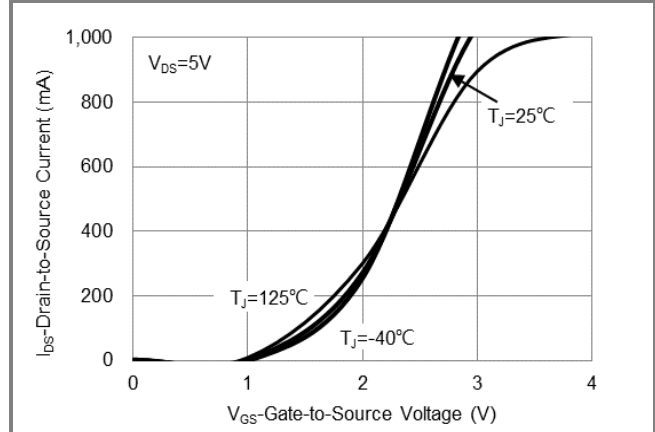


Fig.2 Transfer Characteristics

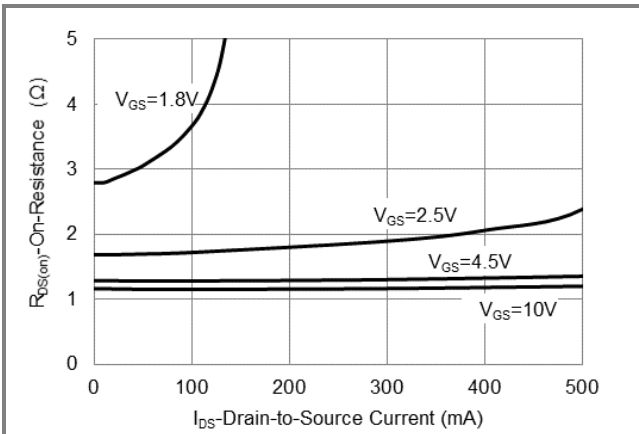


Fig.3 On-Resistance vs. Drain Current

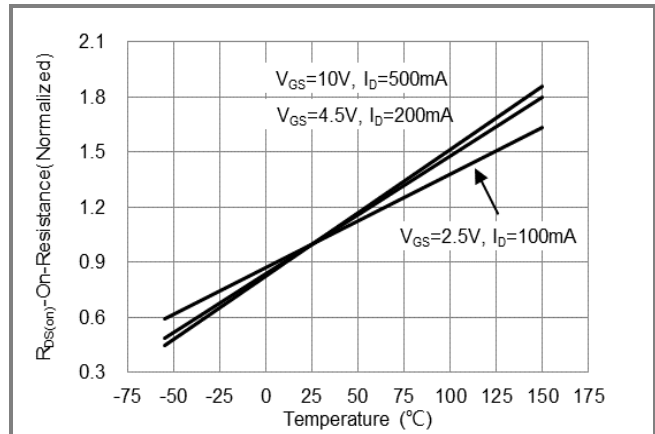


Fig.4 On-Resistance vs. Junction temperature

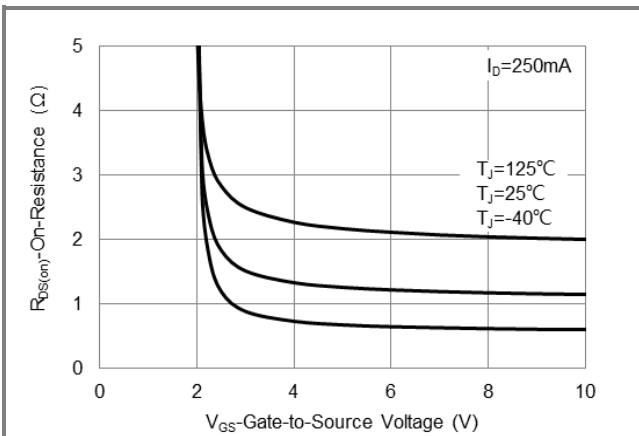


Fig.5 On-Resistance Variation with V\_GS

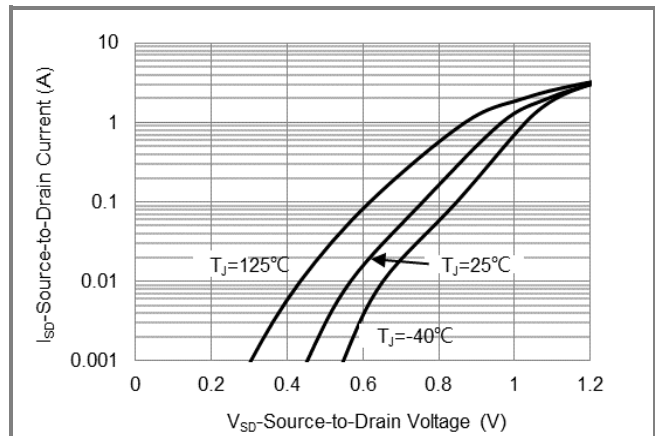
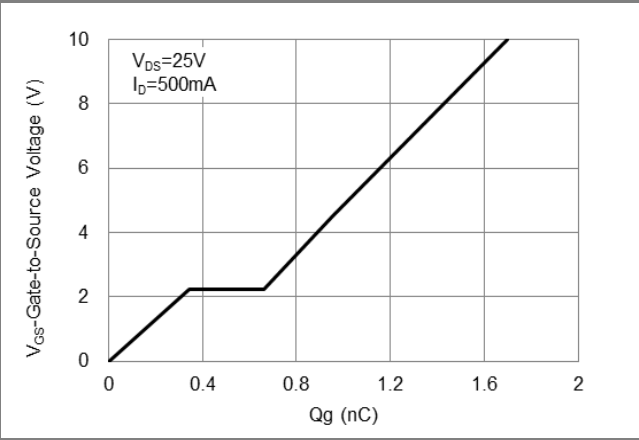


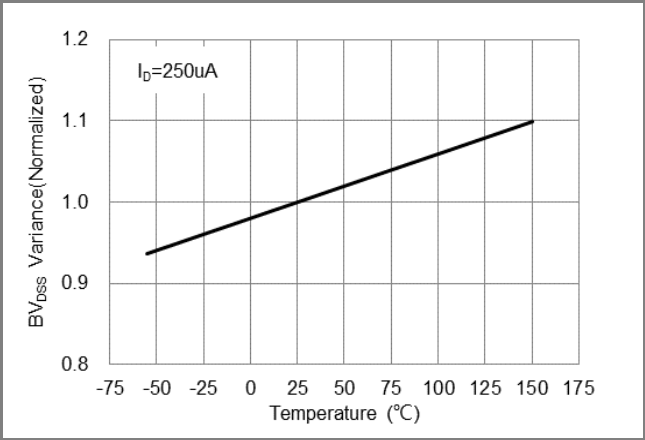
Fig.6 Source-Drain Diode Forward Voltage

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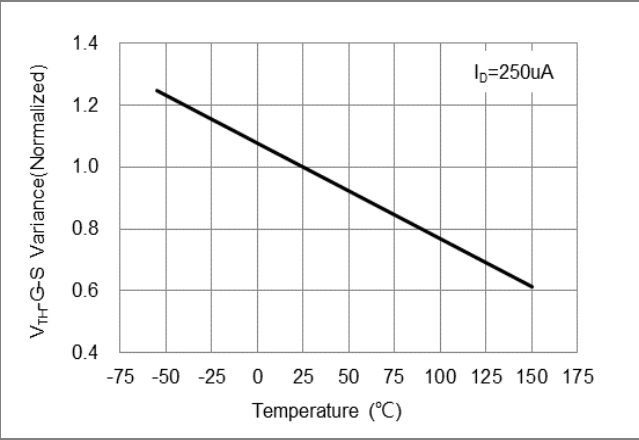
## TYPICAL CHARACTERISTIC CURVES



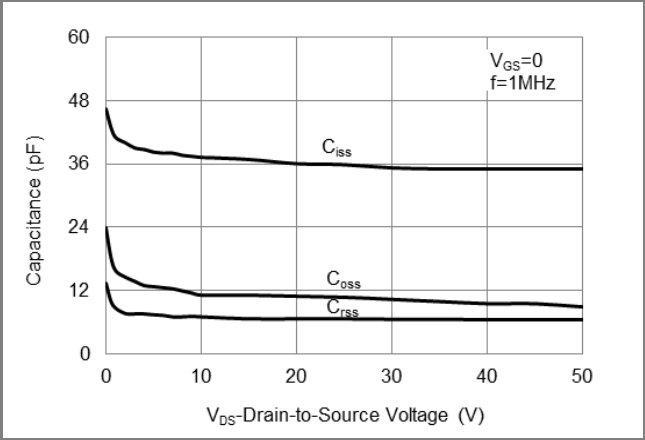
**Fig.7 Gate-Charge Characteristics**



**Fig.8 Breakdown Voltage Variation vs. Temperature**



**Fig.9 Threshold Voltage Variation with Temperature**



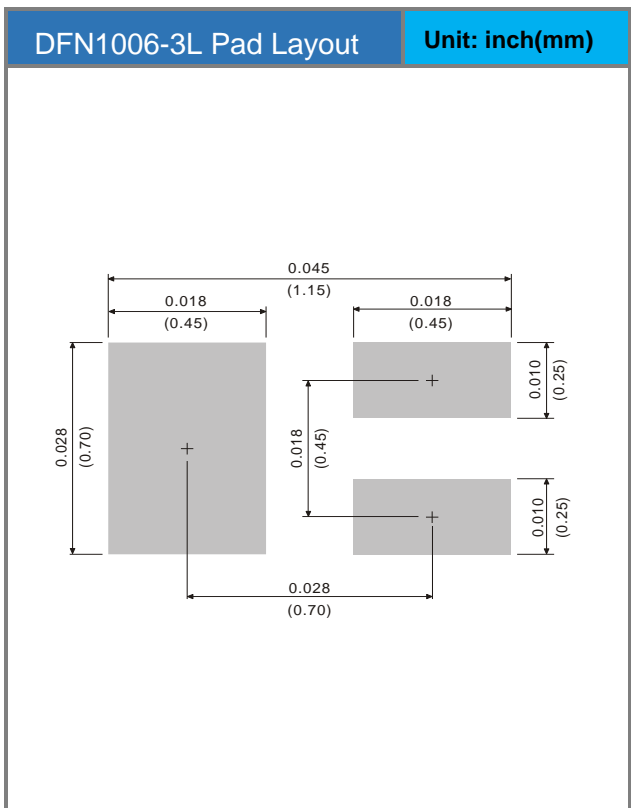
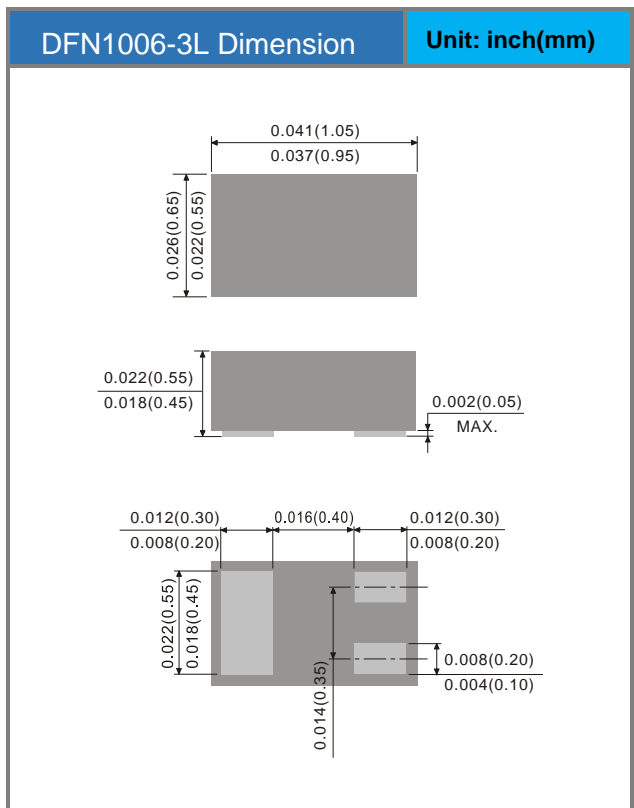
**Fig.10 Capacitance vs. Drain-Source Voltage**

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## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJQ1908-AU	DFN1006-3L	10K pcs / 7" reel	8

## Packaging Information & Mounting Pad Layout



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