



PJQ5412

30V N-Channel Enhancement Mode MOSFET

Voltage

30 V

Current

45A

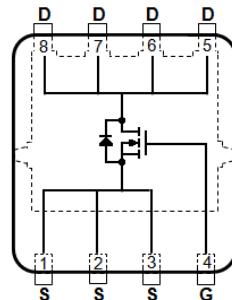
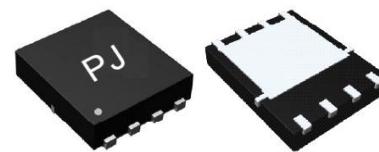
Features

- $R_{DS(ON)}$, $V_{GS} @ 10V$, $I_D @ 10A < 12m\Omega$
- $R_{DS(ON)}$, $V_{GS} @ 4.5V$, $I_D @ 5A < 18m\Omega$
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: DFN5060-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0028 ounces, 0.08 grams

DFN5060-8L



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}	± 20	
Continuous Drain Current	I_D	45	A
		28	
Pulsed Drain Current ^(Note 1)	I_{DM}	180	W
Power Dissipation	P_D	40	
		16	
Continuous Drain Current	I_D	10	A
		8	
Power Dissipation	P_D	2.0	W
Power Dissipation		1.3	
Single Pulse Avalanche Energy ^(Note 6)	E_{AS}	13	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	°C
Typical Thermal Resistance ^(Note 4,5)	Junction to Case	$R_{\theta JC}$	3.1
	Junction to Ambient	$R_{\theta JA}$	62.5

- Limited only by Maximum Junction Temperature



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Electrical Characteristics ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.53	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$	-	9.7	12	$m\Omega$
		$V_{GS}=4.5V, I_D=5A$	-	13	18	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Dynamic <small>(Note 7)</small>						
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=5A,$ $V_{GS}=4.5V$ <small>(Note 3)</small>	-	7.1	-	nC
Gate-Source Charge	Q_{gs}		-	2.0	-	
Gate-Drain Charge	Q_{gd}		-	2.8	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$	-	660	-	pF
Output Capacitance	C_{oss}		-	92	-	
Reverse Transfer Capacitance	C_{rss}		-	71	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=1A,$ $V_{GS}=10V, R_G=6\Omega$ <small>(Note 3)</small>	-	6.7	-	ns
Turn-On Rise Time	t_r		-	11	-	
Turn-Off Delay Time	$t_{d(off)}$		-	27	-	
Turn-Off Fall Time	t_f		-	8.3	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_s	---	-	-	45	A
Diode Forward Voltage	V_{SD}	$I_s=1A, V_{GS}=0V$	-	0.71	1	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ C$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ C$.
4. The maximum current rating is package limited.
5. $R_{ThetaJA}$ 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 inch² with 2oz.square pad of copper.
6. The test condition is $L=0.1mH, I_{AS}=16A, V_{DD}=25V, V_{GS}=10V$, Starting $T_J=25^\circ C$.
7. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

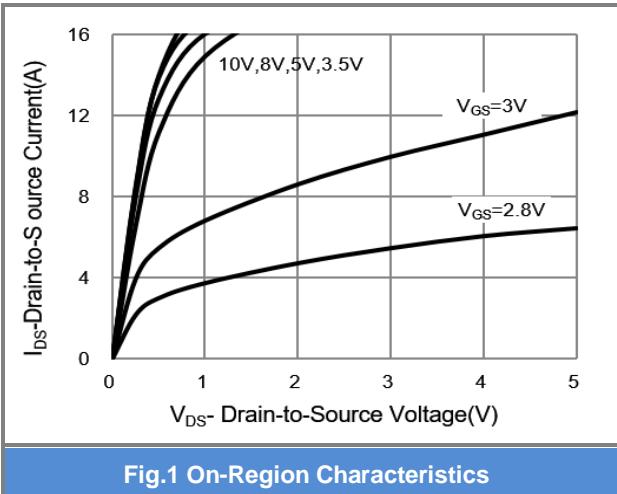


Fig.1 On-Region Characteristics

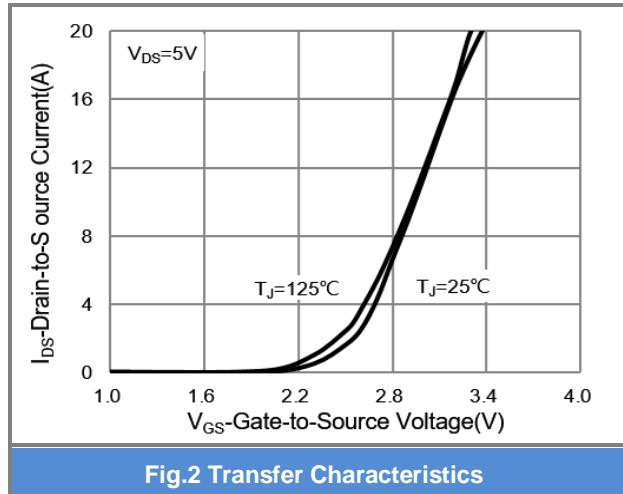


Fig.2 Transfer Characteristics

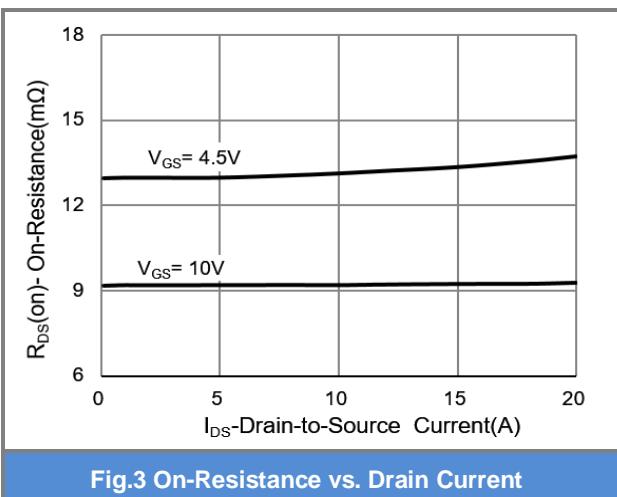


Fig.3 On-Resistance vs. Drain Current

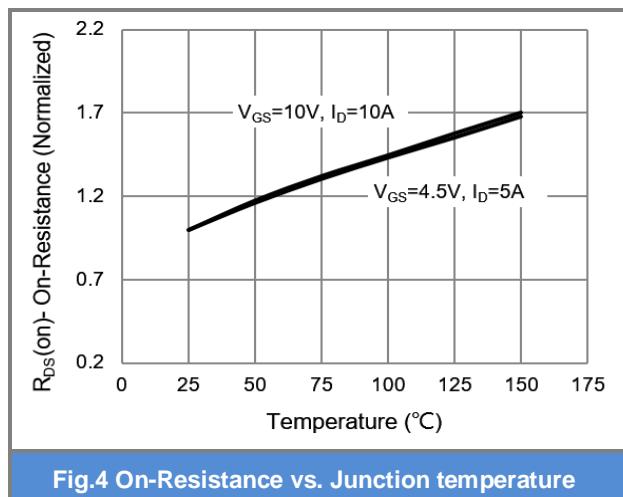


Fig.4 On-Resistance vs. Junction temperature

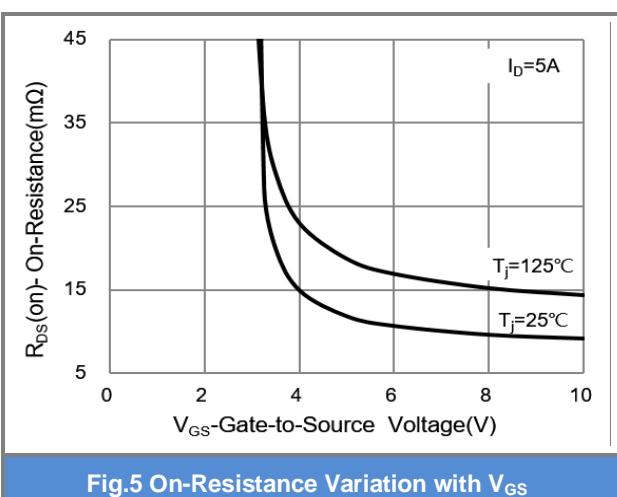


Fig.5 On-Resistance Variation with V_GS

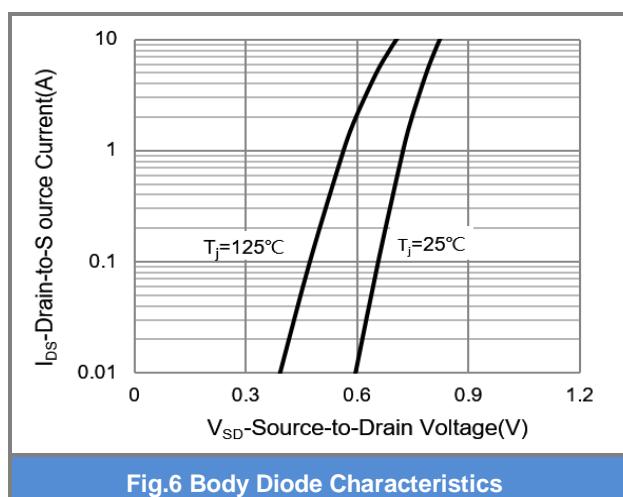


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

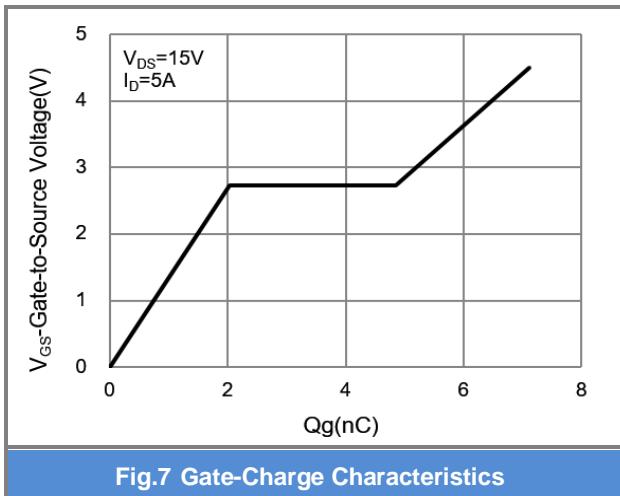


Fig.7 Gate-Charge Characteristics

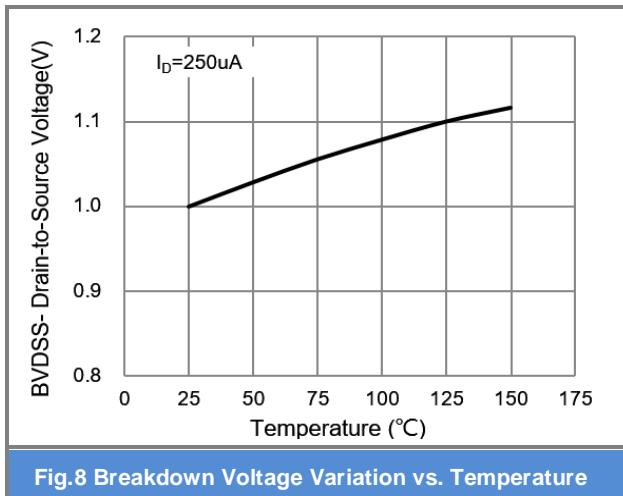


Fig.8 Breakdown Voltage Variation vs. Temperature

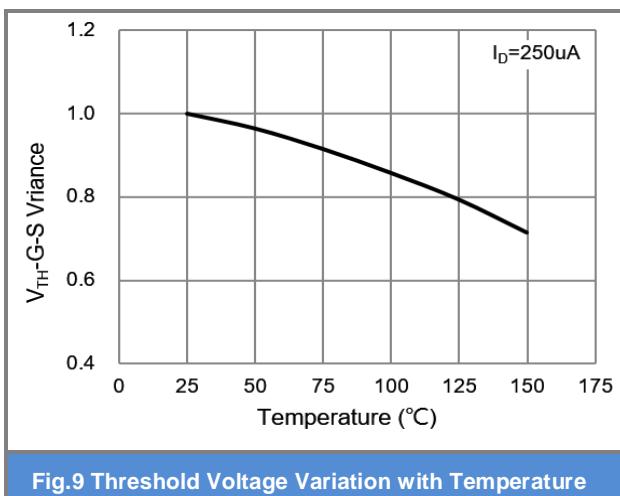


Fig.9 Threshold Voltage Variation with Temperature

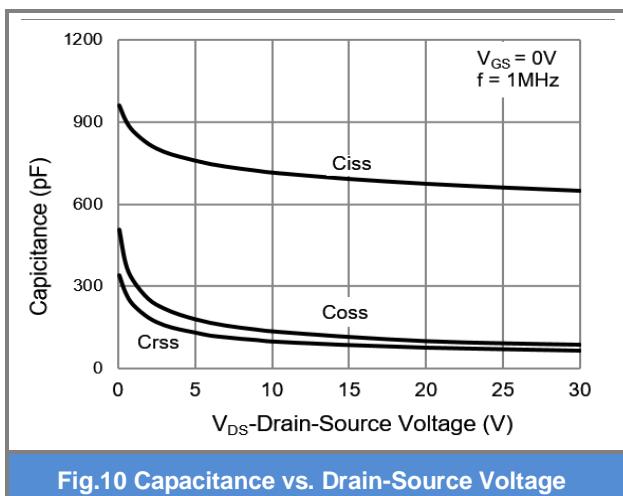


Fig.10 Capacitance vs. Drain-Source Voltage

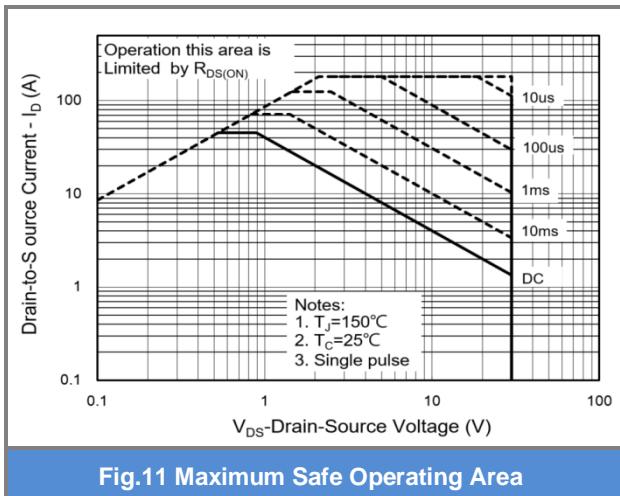


Fig.11 Maximum Safe Operating Area

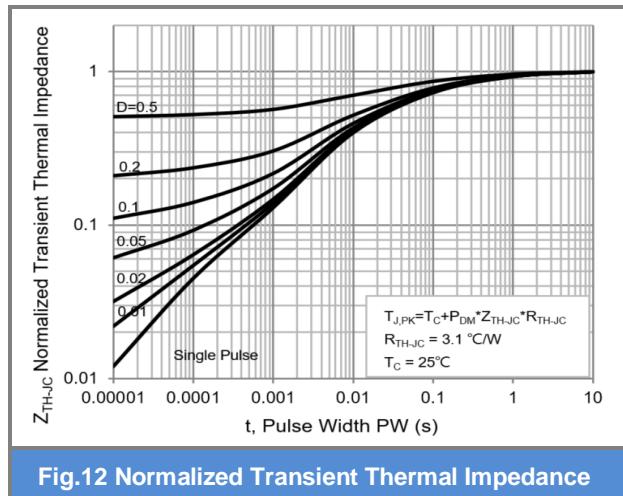


Fig.12 Normalized Transient Thermal Impedance

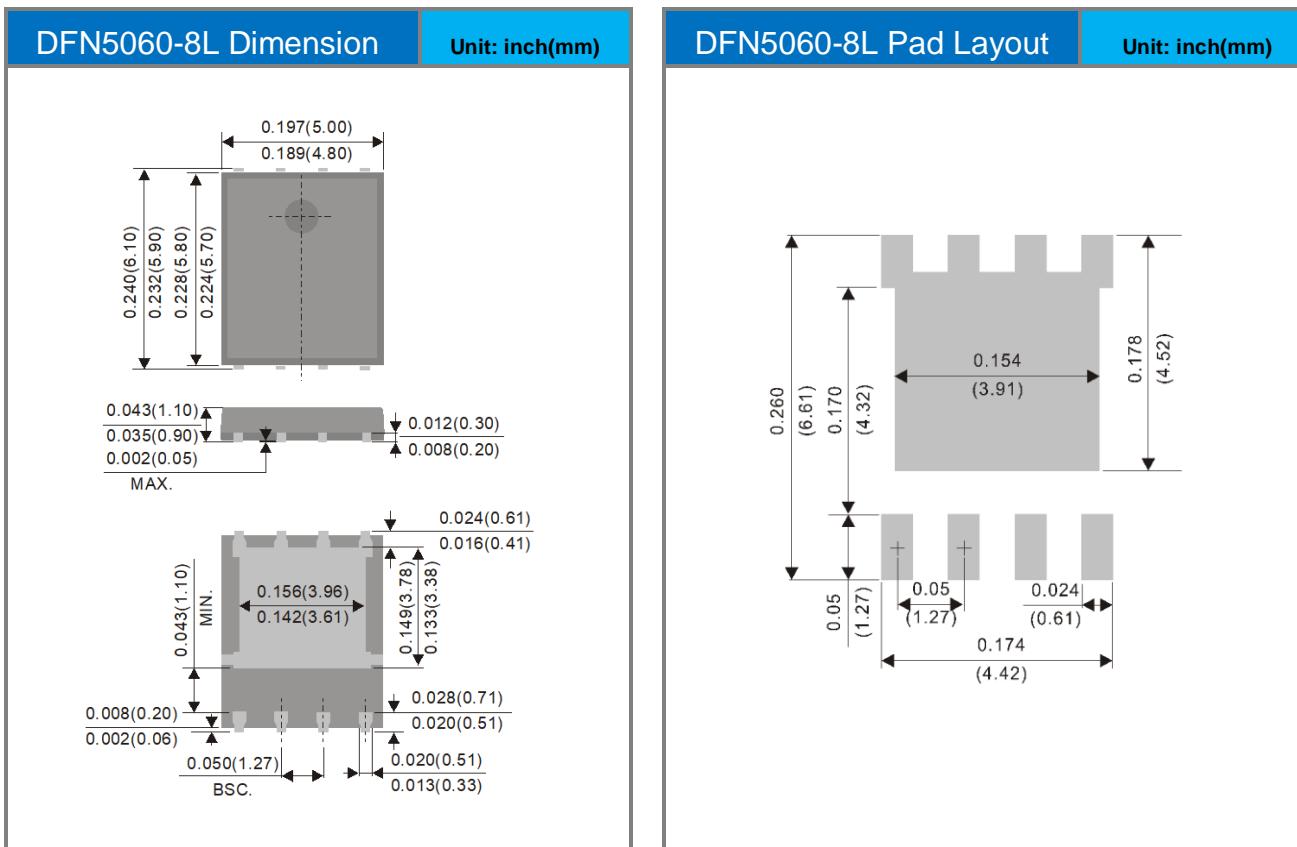


PJQ5412

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJQ5412_R2_00001	DFN5060-8L	3000pcs / 13" reel	Q5412	Halogen free

Packaging Information & Mounting Pad Layout





PJQ5412

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