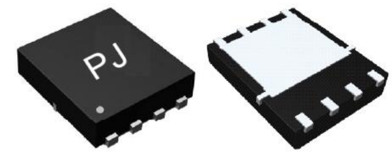
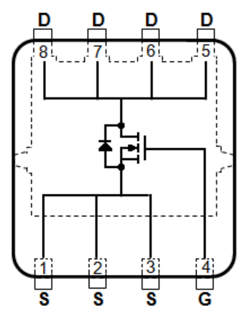
PJQ5448-AU

40V N-Channel Enhancement Mode MOSFET

Voltage	40 V	Current	50A

DFN5060-8L





Features

- $R_{DS(ON)}$, V_{GS}@10V, I_D@20A<11mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V, I_D@10A<15mΩ
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- AEC-Q101 qualified
- 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

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	$\pm$20	V
Continuous Drain Current (Note 4)	T_C=25°C	I_D	50	A
	T_C=100°C		31.5	
Pulsed Drain Current (Note 1)	T_C=25°C	I_{DM}	120	A
Power Dissipation	T_C=25°C	P_D	65.2	W
	T_C=100°C		32.6	
Continuous Drain Current (Note 4)	T_A=25°C	I_D	9.6	A
	T_A=70°C		7.6	
Power Dissipation	T_A=25°C	P_D	2.4	W
	T_A=70°C		1.6	
Single Pulse Avalanche Energy (Note 6)		E_{AS}	62	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~175	°C
Typical Thermal Resistance (Note 4,5)	Junction to Case	$R_{\theta JC}$	2.3	°C/W
	Junction to Ambient	$R_{\theta JA}$	62.5	

- Limited only By Maximum Junction Temperature

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Electrical Characteristics (T_A=25^{o}C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	40	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	9	11	mΩ
		V_{GS}=4.5V, I_D=10A	-	11.5	15	mΩ
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=$\pm$20V, V_{DS}=0V	-	-	$\pm$100	nA
Dynamic (Note 7)						
Total Gate Charge	Q_g	V_{DS}=20V, I_D=10A, V_{GS}=4.5V (Note 2,3)	-	10	-	nC
Gate-Source Charge	Q_{gs}		-	3.5	-	nC
Gate-Drain Charge	Q_{gd}		-	3.6	-	nC
Input Capacitance	Ciss	V_{DS}=20V, V_{GS}=0V, f=1MHZ	-	1040	-	pF
Output Capacitance	Coss		-	117	-	pF
Reverse Transfer Capacitance	Crss		-	84	-	pF
Turn-On Delay Time	$td_{(on)}$	V_{DS}=20V, I_D=1A, V_{GS}=10V, R_G=6Ω (Note 2,3)	-	9.4	-	ns
Turn-On Rise Time	t_r		-	19	-	ns
Turn-Off Delay Time	$td_{(off)}$		-	66	-	ns
Turn-Off Fall Time	t_f		-	67	-	ns
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	50	A
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V	-	0.7	1	V

NOTES:
1. Pulse width$\leq$300us, Duty cycle$\leq$2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J =25°C.
4. The maximum current rating is package limited.
5. $R_{\Theta JA}$ 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^2 with 2oz.square pad of copper.
6. The test condition is L=0.1mH, I_{AS}=35A, V_{DD}=25V, V_{GS}=10V, Starting T_J=25^{o}C.
7. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

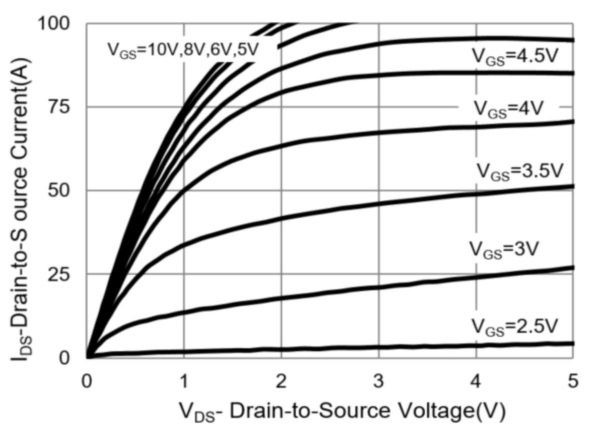

Fig.1 On-Region Characteristics

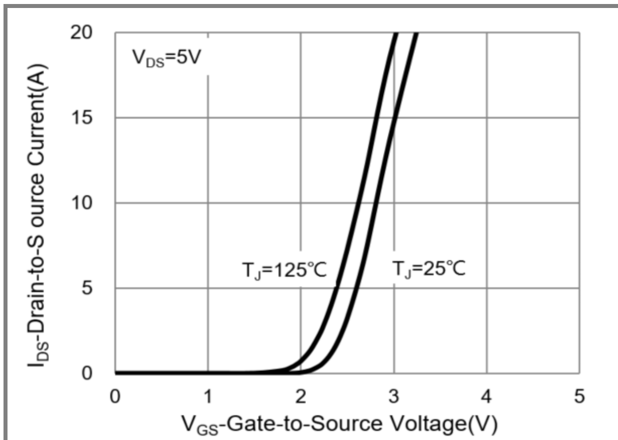

Fig.2 Transfer Characteristics

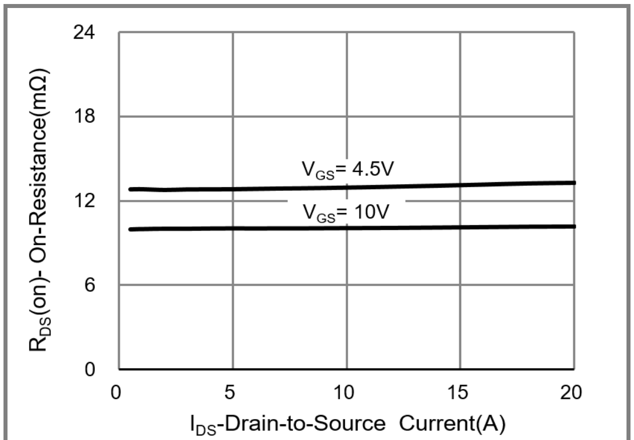

Fig.3 On-Resistance vs. Drain Current

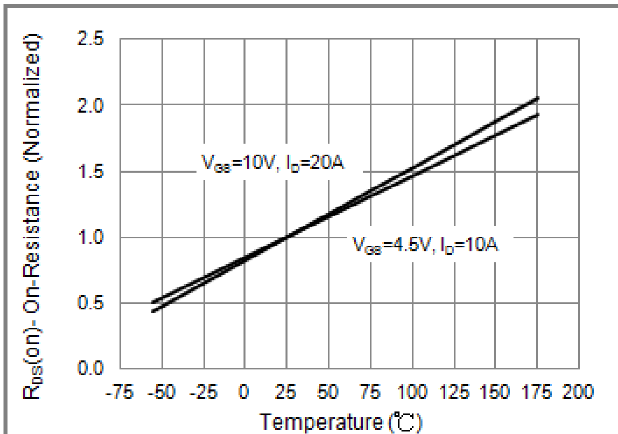

Fig.4 On-Resistance vs. Junction temperature

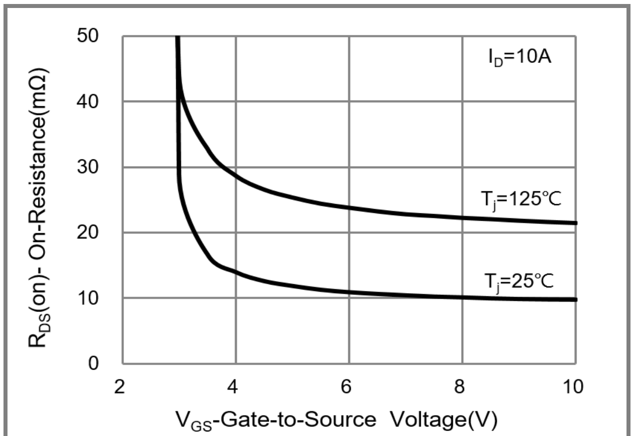

Fig.5 On-Resistance Variation with V_{GS}

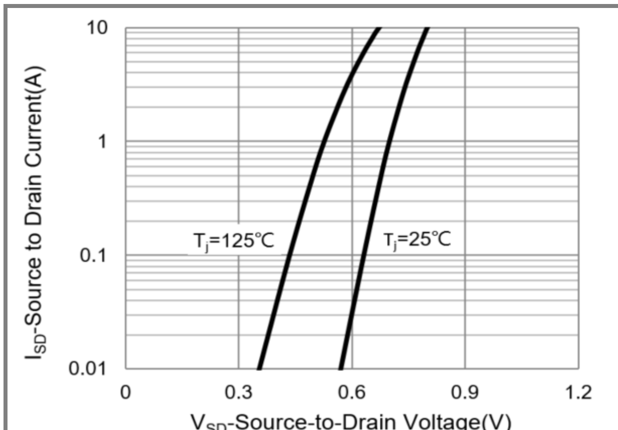

Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

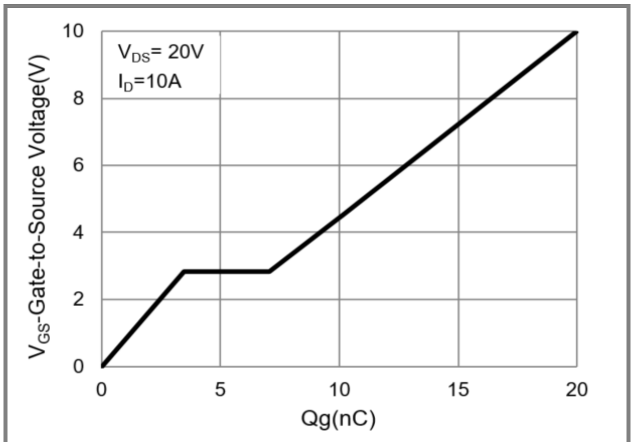


Fig.7 Gate-Charge Characteristics

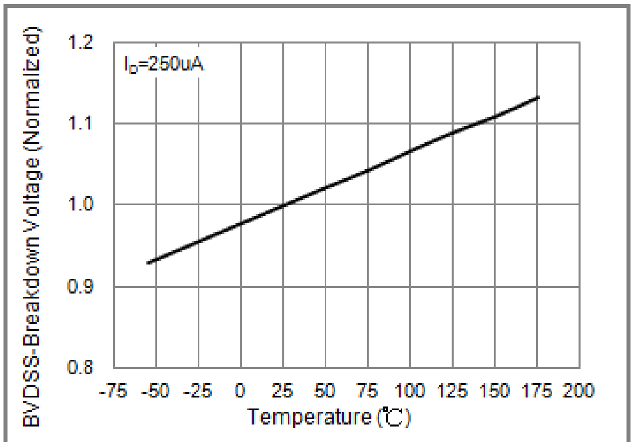


Fig.8 Breakdown Voltage Variation vs. Temperature

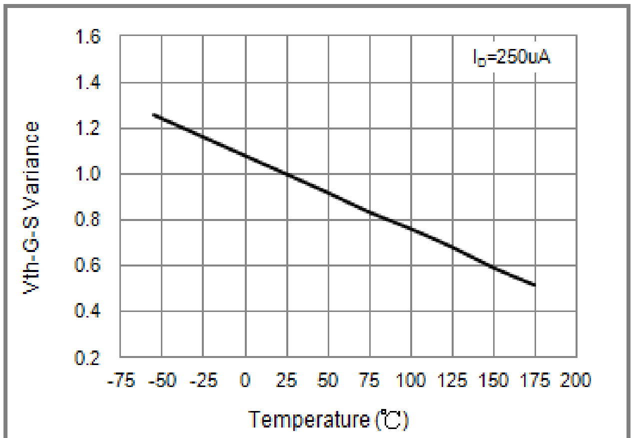


Fig.9 Threshold Voltage Variation with Temperature

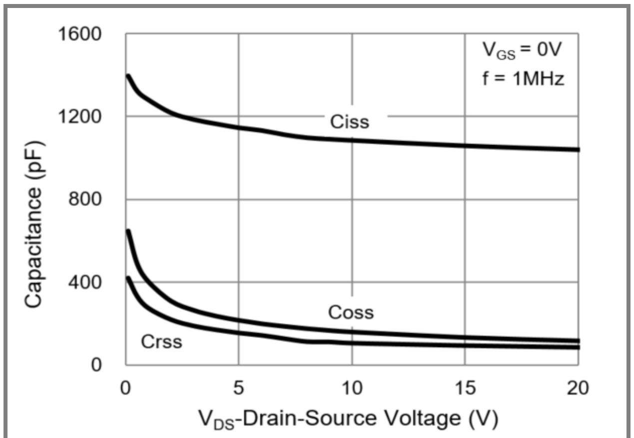


Fig.10 Capacitance vs. Drain-Source Voltage

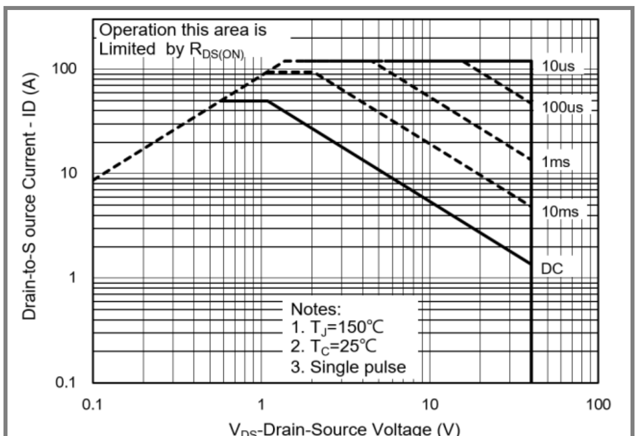


Fig.11 Maximum Safe Operating Area

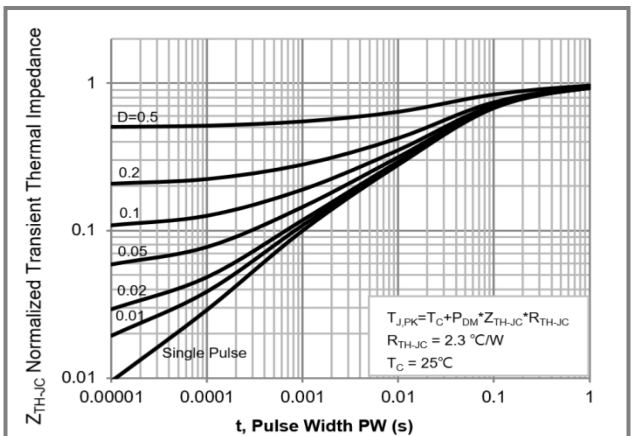


Fig.12 Normalized Transient Thermal Impedance

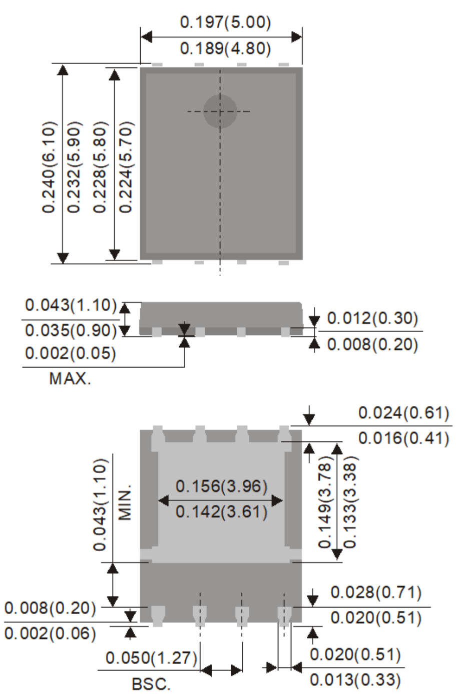
PJQ5448-AU

Part No Packing Code Version

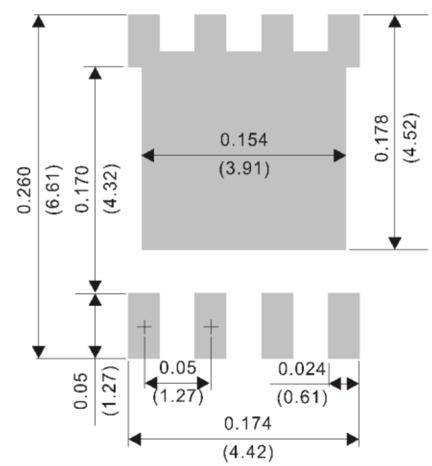
Part No Packing Code	Package Type	Packing Type	Marking	Version
PJQ5448-AU_R2_000A1	DFN5060-8L	3000pcs / 13” reel	Q5448	Halogen free

Packaging Information & Mounting Pad Layout

DFN5060-8L Dimension Unit: inch(mm)



DFN5060-8L Pad Layout Unit: inch(mm)



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