PJQ5462A

60V N-Channel Enhancement Mode MOSFET

| Voltage	60 V	Current	42 A

DFN5060-8L

Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@20A<12mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V,I_D@10A<15mΩ
- 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
- Marking: Q5462A
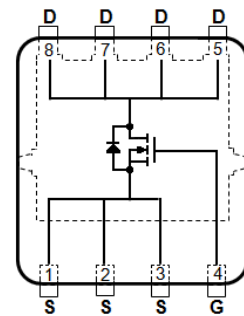
Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	42	A
	T_C=100°C		26	
Pulsed Drain Current [(Note 1)]	T_C=25°C	I_{DM}	84	
Power Dissipation	T_C=25°C	P_D	60	W
	T_C=100°C		24	
Continuous Drain Current	T_A=25°C	I_D	8.5	A
	T_A=70°C		6.8	A
Power Dissipation	T_A=25°C	P_D	2.0	W
Power Dissipation	T_A=70°C		1.3	
Single Pulse Avalanche Energy [(Note 6)]		E_{AS}	72	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	^{o}C
Typical Thermal Resistance[(Note 4,5)]	Junction to Case	$R_{θJC}$	2.1	^{o}C/W
	Junction to Ambient	$R_{θJA}$	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}	$V_{GS}=0V, I_D=250uA$	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250uA$	1.0	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	10	12	mΩ
		$V_{GS}=4.5V, I_D=10A$	-	11	15	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1.0	uA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm20V, V_{DS}=0V$	-	-	±100	nA
Dynamic [7]						
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=10A,$ $V_{GS}=10V$ [1,2]	-	40	-	nC
Gate-Source Charge	Q_{gs}		-	6.0	-	
Gate-Drain Charge	Q_{gd}		-	7.2	-	
Input Capacitance	Ciss	$V_{DS}=25V, V_{GS}=0V,$ f=1.0MHZ	-	2142	-	pF
Output Capacitance	Coss		-	149	-	
Reverse Transfer Capacitance	Crss		-	86	-	
Turn-On Delay Time	$td_{(on)}$	$V_{DD}=15V, I_D=10A,$ $V_{GS}=10V, R_G=6Ω$ (Note 1,2)	-	14	-	ns
Turn-On Rise Time	t_r		-	25	-	
Turn-Off Delay Time	$td_{(off)}$		-	58	-	
Turn-Off Fall Time	t_f		-	18	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	42	A
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$	-	0.67	1.0	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 TJ(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial TJ =25°C.
4. The maximum current rating is package limited.
5. RΘJA 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=0.5mH, $I_{AS}=17A$, $V_{DD}=25V$, $V_{GS}=10V$
7. Guaranteed by design, not subject to production testing.
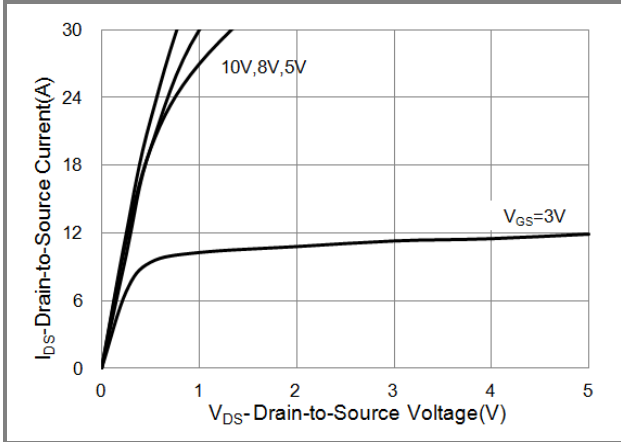
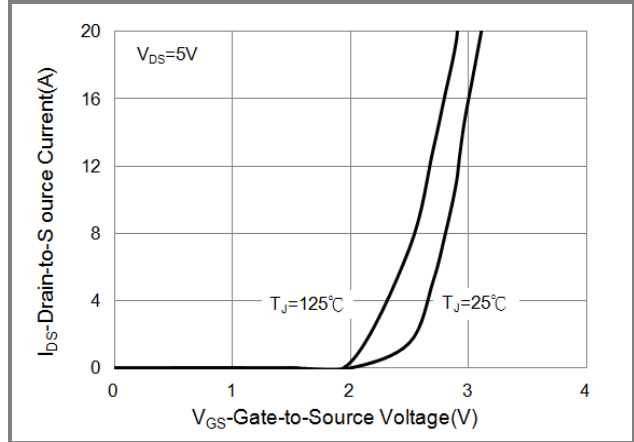## TYPICAL CHARACTERISTIC CURVES

Fig.1 Output Characteristics
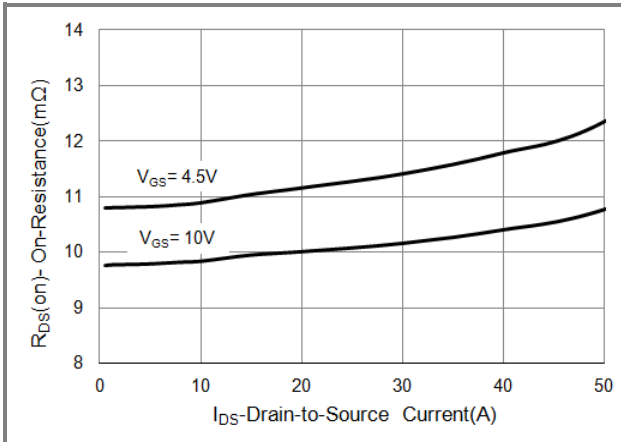

Fig.2 Transfer Characteristics

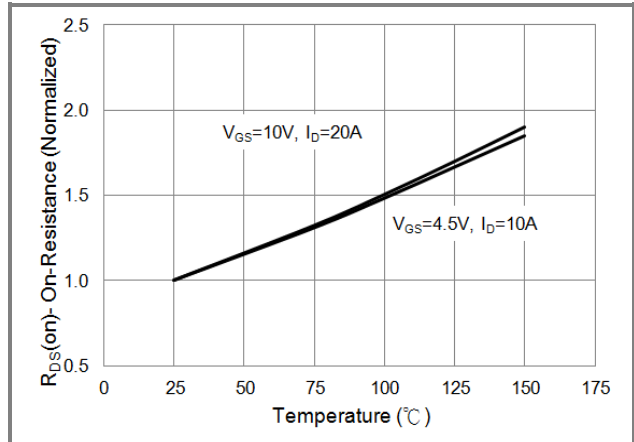**Fig.3 On-Resistance vs. Drain Current**

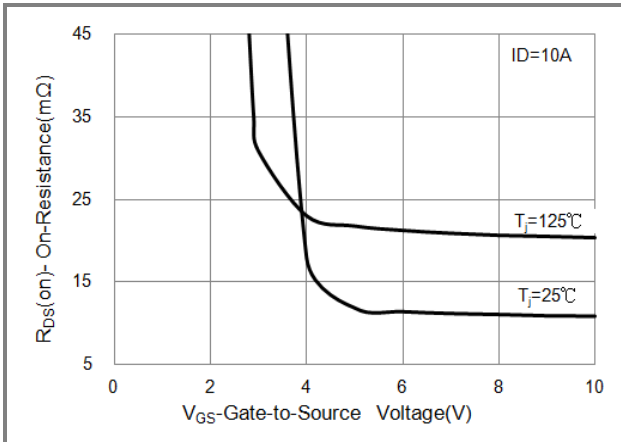**Fig.4 On-Resistance vs. Junction temperature**
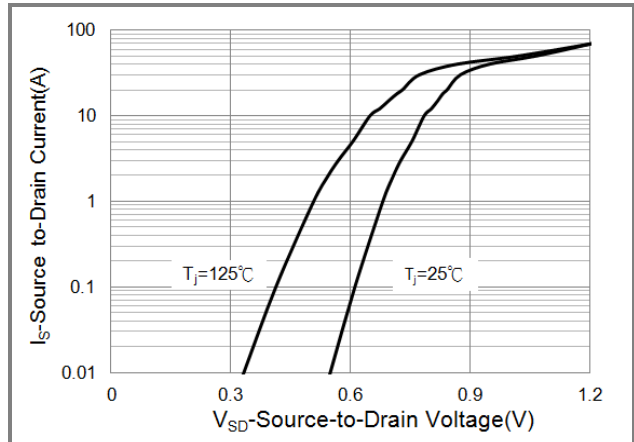

Fig.5 On-Resistance Variation with VGS.

Fig.6 Source-Drain Diode Forward Voltage
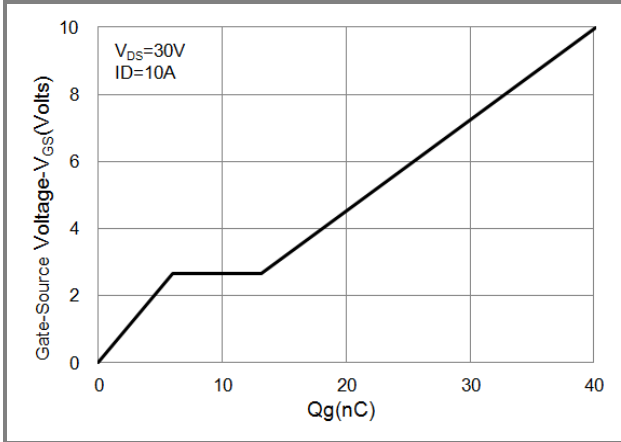
TYPICAL CHARACTERISTIC CURVES
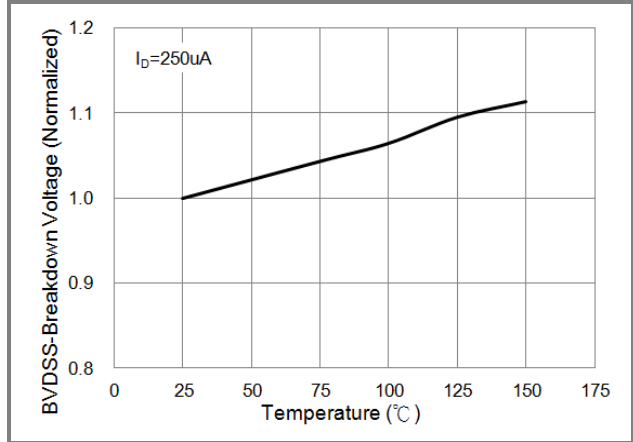
Fig.7 Gate-Charge Characteristics

V_{DS}=30V
ID=10A

Fig.8 Breakdown Voltage Variation vs. Temperature

I_D=250uA
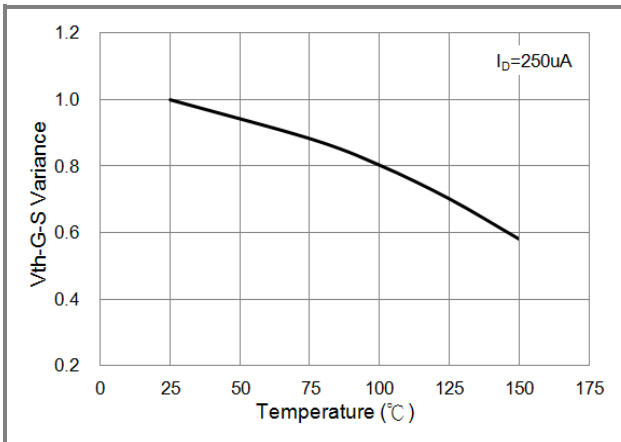
Fig.9 Threshold Voltage Variation with Temperature

I_D=250uA
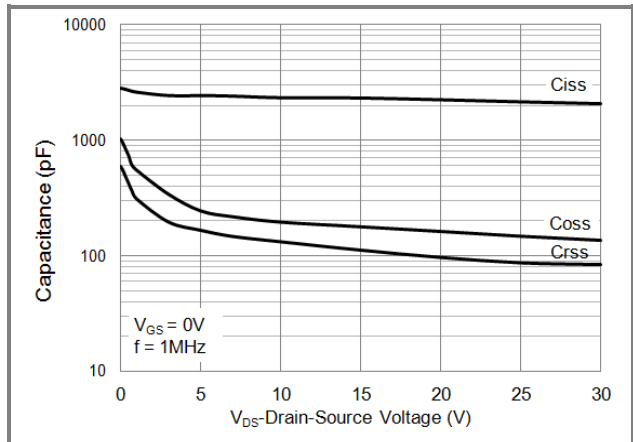
Fig.10 Capacitance vs. Drain-Source Voltage

Ciss
Coss
Crss

V_{GS} = 0V
f = 1MHz
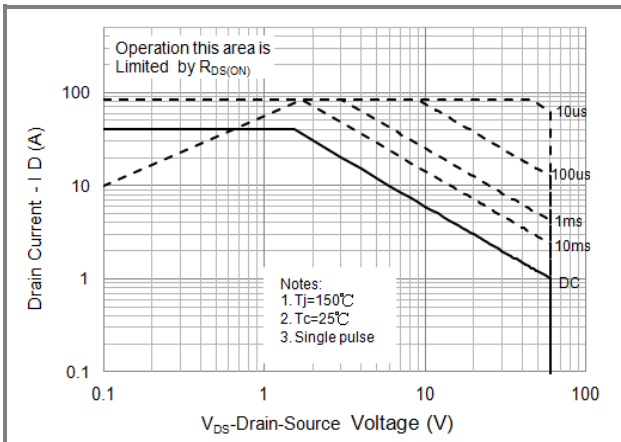
Fig.11 Maximum Safe Operating Area

Operation this area is Limited by $R_{DS(ON)}$

10us
100us
1ms
10ms
DC

Notes:
1. Tj=150℃
2. Tc=25℃
3. Single pulse

TYPICAL CHARACTERISTIC CURVES

$$T_{J,PK} = Tc + P_{DM} * Z_{TH-JC} * R_{TH-JC}$$
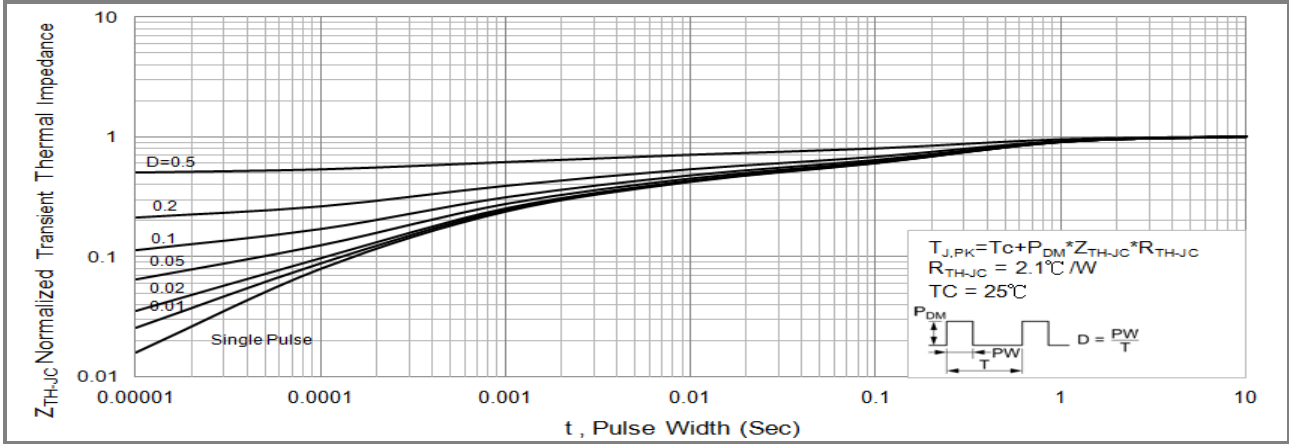$$R_{TH-JC} = 2.1\ ℃/W$$
$$TC = 25℃$$

$$D = \frac{PW}{T}$$

Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

PJQ5462A

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJQ5462A_R2_00001	DFN5060-8L	3000pcs / 13" reel	Q5462A	Halogen free

Packaging Information & Mounting Pad Layout

DFN5060-8L Dimension	Unit: mm

DFN5060-8L PAD LATOUT	Unit: mm
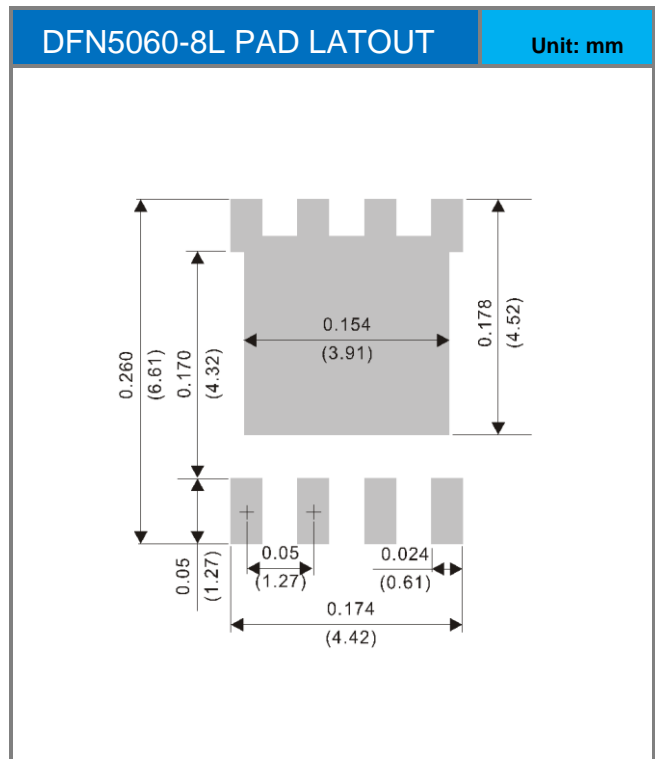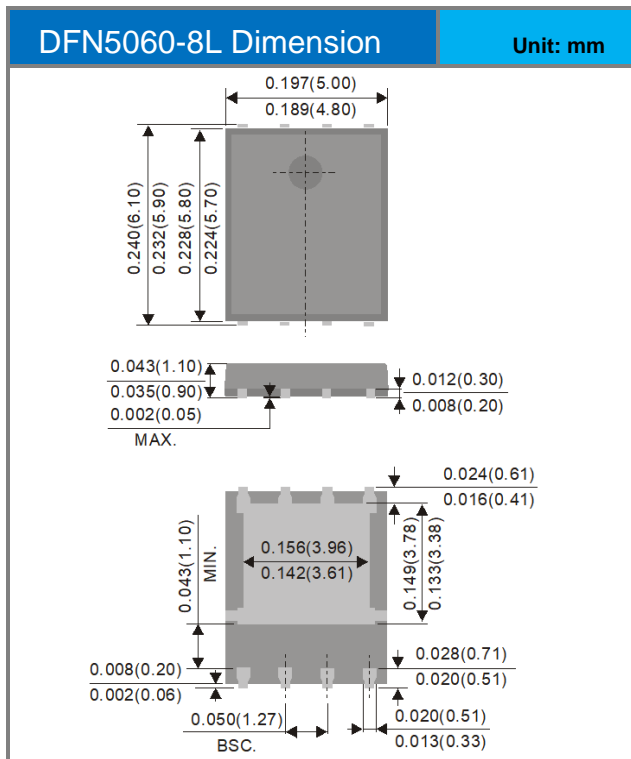
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