PJQ5466A-AU

60V N-Channel Enhancement Mode MOSFET

| **Voltage**	**60 V**	**Current**	**40 A**

DFN5060-8L

Features

- $R_{DS(ON)}$, V_{GS}@10V, I_D@15A<21mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V, I_D@8A<24mΩ
- 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
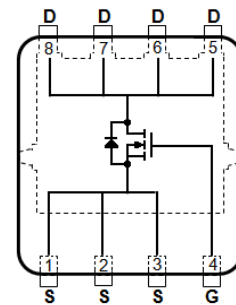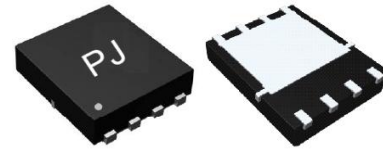
Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	$\pm$20	
Continuous Drain Current [Note 4]	T_C=25°C	I_D	40	A
	T_C=100°C		25	
Pulsed Drain Current [Note 1]	T_C=25°C	I_{DM}	160	
Power Dissipation	T_C=25°C	P_D	100	W
	T_C=100°C		50	
Continuous Drain Current [Note 4]	T_A=25°C	I_D	6.5	A
	T_A=70°C		5	
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}	42	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~175	^{o}C
Typical Thermal Resistance [Note 4,5]	Junction to Case	$R_{\theta JC}$	1.5	^{o}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°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	1.73	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=15A	-	18	21	mΩ
		V_{GS}=4.5V, I_D=8A	-	21	24	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=$\pm$20V, V_{DS}=0V	-	-	$\pm$100	nA
Dynamic [7]						
Total Gate Charge	Q_g	V_{DS}=30V, I_D=15A, V_{GS}=10V [2,3]	-	28	-	nC
Gate-Source Charge	Q_{gs}		-	3.5	-	
Gate-Drain Charge	Q_{gd}		-	6.5	-	
Input Capacitance	Ciss	V_{DS}=20V, V_{GS}=0V, f=1MHZ	-	1680	-	pF
Output Capacitance	Coss		-	115	-	
Reverse Transfer Capacitance	Crss		-	85	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=30V, I_D=1A, V_{GS}=10V, R_G=6Ω [2,3]	-	7.2	-	ns
Turn-On Rise Time	t_r		-	38	-	
Turn-Off Delay Time	$td_{(off)}$		-	34	-	
Turn-Off Fall Time	t_f		-	8.2	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	40	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. 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=0.1mH, I_{AS}=29A, V_{DD}=25V, V_{GS}=10V.
7. Guaranteed by design, not subject to production testing.
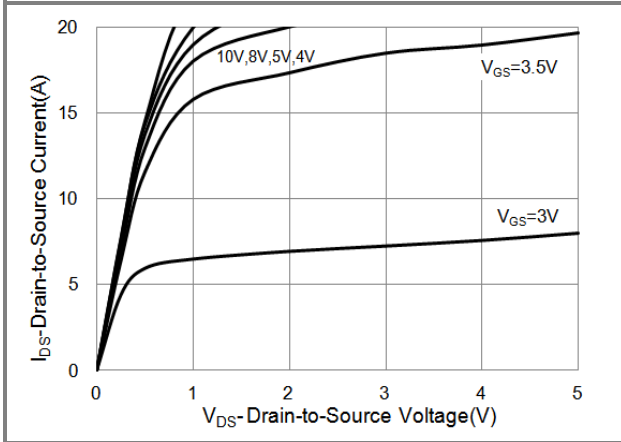
TYPICAL CHARACTERISTIC CURVES
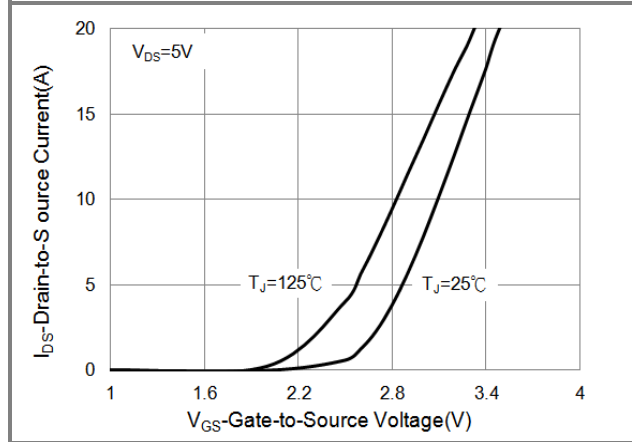
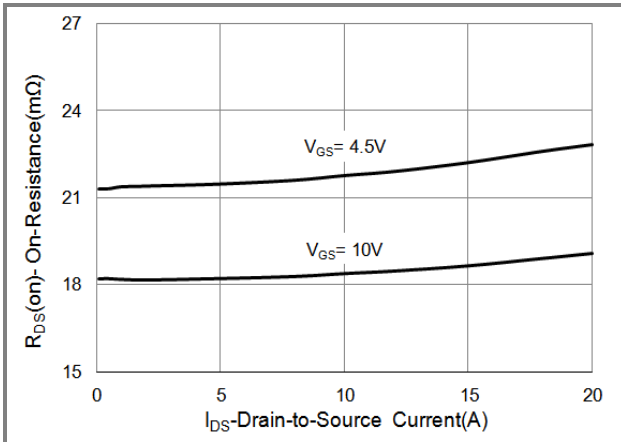Fig.1 Output Characteristics

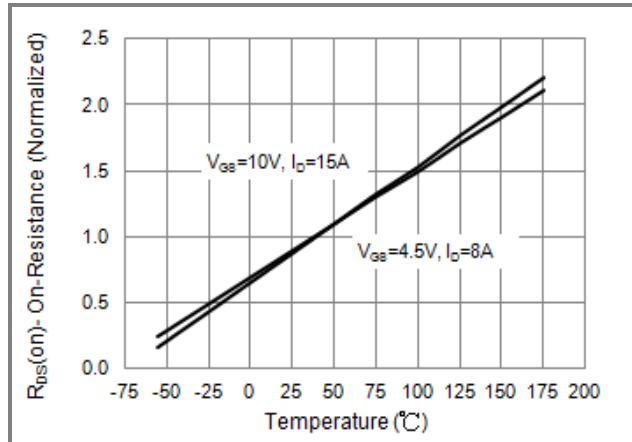Fig.2 Transfer Characteristics

Fig.3 On-Resistance vs. Drain Current

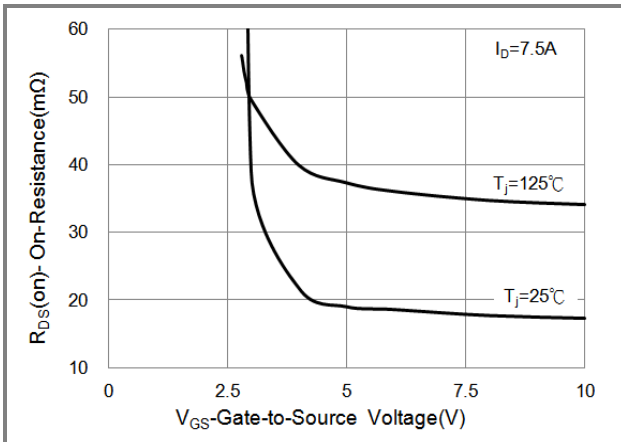Fig.4 On-Resistance vs. Junction temperature

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

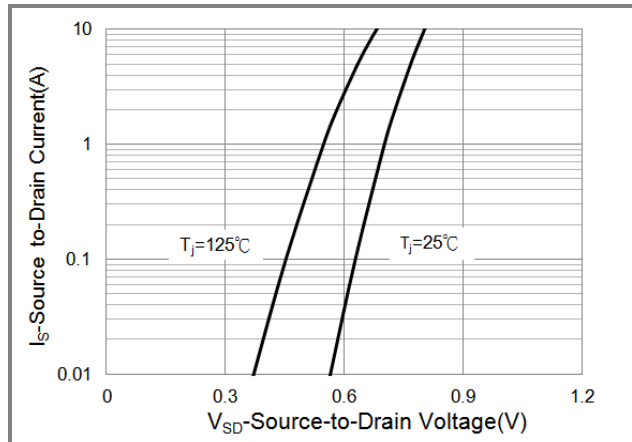Fig.6 Source-Drain Diode Forward Voltage
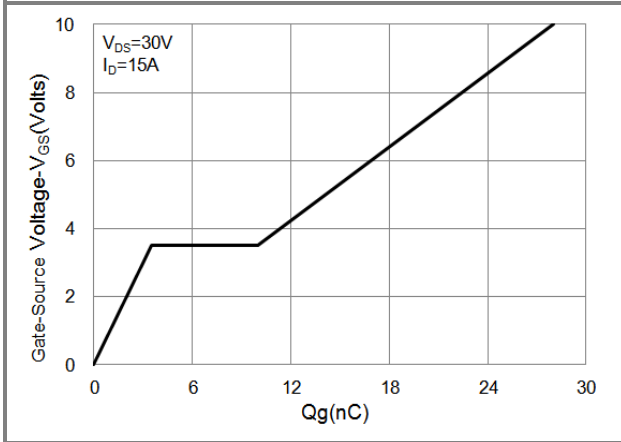
PJQ5466A-AU

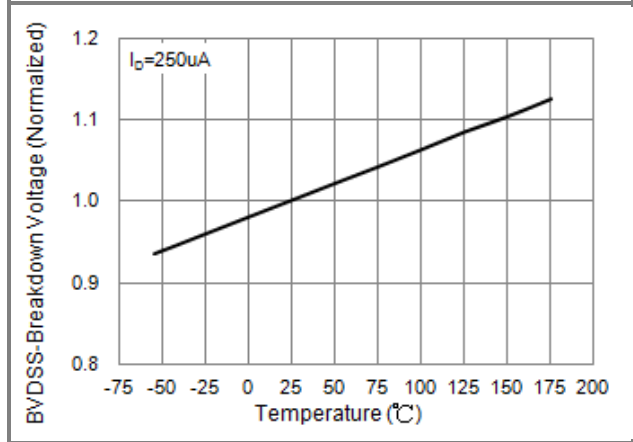## TYPICAL CHARACTERISTIC CURVES

Fig.7 Gate-Charge Characteristics

$V_{DS}=30V$
$I_D=15A$

Fig.8 Breakdown Voltage Variation vs. Temperature

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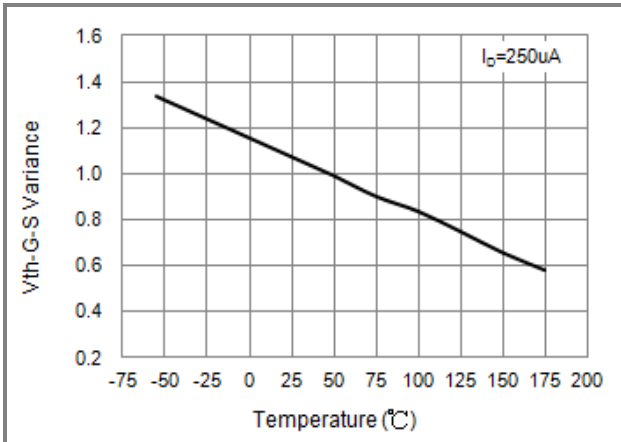
Fig.9 Threshold Voltage Variation with Temperature

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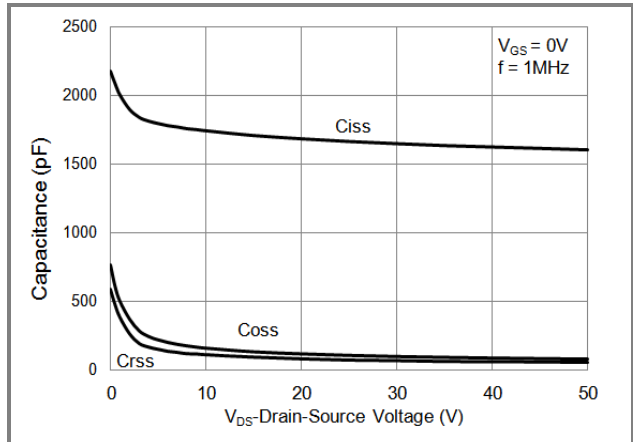
Fig.10 Capacitance vs. Drain-Source Voltage

$V_{GS} = 0V$
$f = 1MHz$

Ciss

Coss

Crss
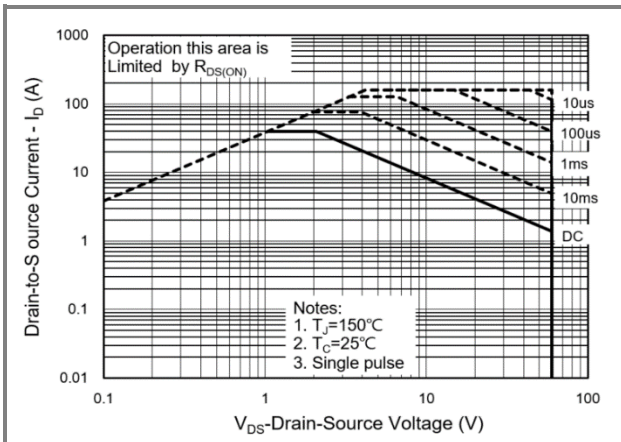
Fig.11 Maximum Safe Operating Area

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

10us
100us
1ms
10ms
DC

Notes:
1. $T_J=150℃$
2. $T_C=25℃$
3. Single pulse
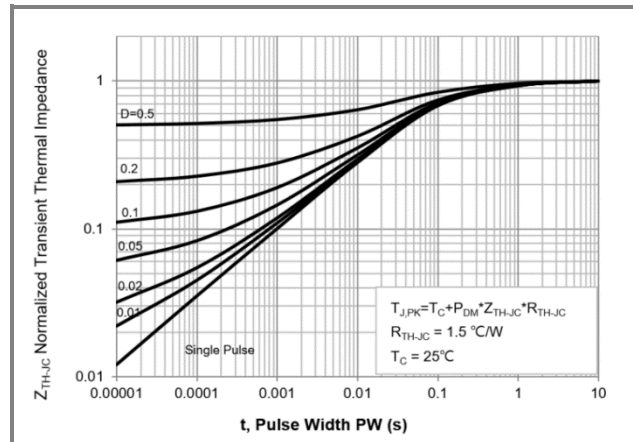
Fig.12 Normalized Transient Thermal Impedance

D=0.5
0.2
0.1
0.05
0.02
0.01

Single Pulse

$T_{J,PK}=T_C+P_{DM}*Z_{TH-JC}*R_{TH-JC}$
$R_{TH-JC} = 1.5 ℃/W$
$T_C = 25℃$

TYPICAL CHARACTERISTIC CURVES

Fig.13 Gate-Total Power Dissipation

PJQ5466A-AU

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJQ5466A-AU_R2_000A1	DFN5060-8L	3000pcs / 13" reel	Q5466A	Halogen free

Packaging Information & Mounting Pad Layout
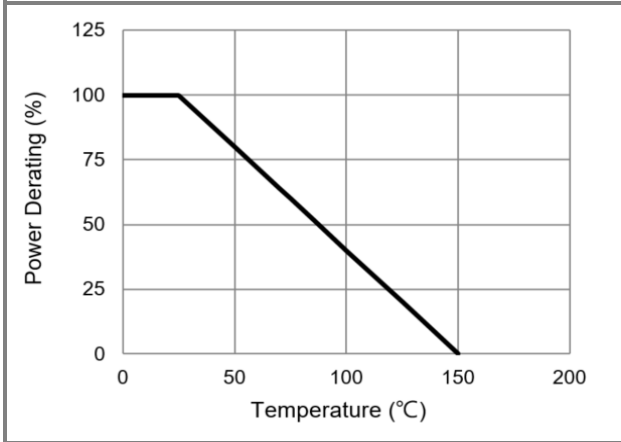
DFN5060-8L Dimension	Unit: inch(mm)

0.197(5.00)
0.189(4.80)
0.240(6.10)
0.232(5.90)
0.228(5.80)
0.224(5.70)
0.043(1.10)
0.035(0.90)
0.002(0.05)
MAX.
0.012(0.30)
0.008(0.20)
0.024(0.61)
0.016(0.41)
0.156(3.96)
0.142(3.61)
0.149(3.78)
0.133(3.38)
0.043(1.10)
MIN.
0.008(0.20)
0.002(0.06)
0.028(0.71)
0.020(0.51)
0.050(1.27)
BSC.
0.020(0.51)
0.013(0.33)

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

0.154
(3.91)
0.178
(4.52)
0.260
(6.61)
0.170
(4.32)
0.05
(1.27)
0.05
(1.27)
0.024
(0.61)
0.174
(4.42)
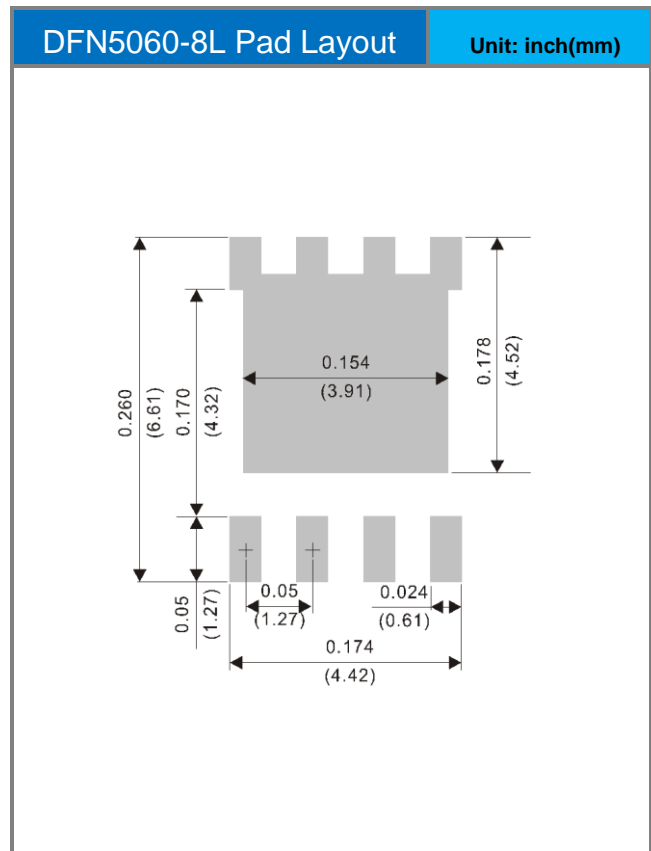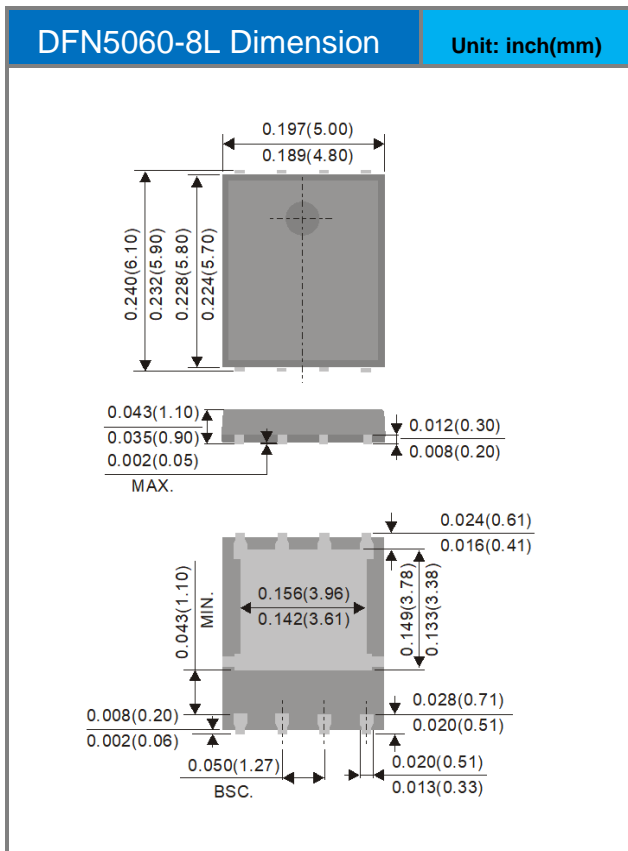
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