

# PJQ5476AL

## 100V N-Channel Enhancement Mode MOSFET

**Voltage**

**100 V**

**Current**

**42A**

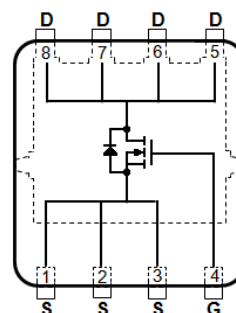
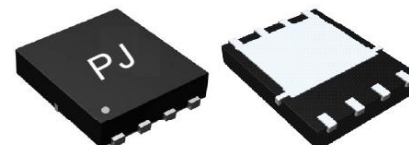
### Features

- $R_{DS(ON)}$  ,  $V_{GS}@10V$  ,  $I_D@20A<25m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@4.5V$  ,  $I_D@15A<28.5m\Omega$
- Advanced Trench Process Technology
- High density cell design for ultra low on-resistance
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std.  
(Halogen Free)

### Mechanical Data

- Case: DFN5060-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0028 ounces, 0.08 grams
- Marking: Q5476AL

DFN5060-8L



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	100	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_C=25^{\circ}C$	$I_D$	42	A
	$T_C=100^{\circ}C$		26.6	
Pulsed Drain Current (Note 1)	$T_C=25^{\circ}C$	$I_{DM}$	150	
Power Dissipation	$T_C=25^{\circ}C$	$P_D$	83	W
	$T_C=100^{\circ}C$		33	
Continuous Drain Current	$T_A=25^{\circ}C$	$I_D$	6.5	A
	$T_A=70^{\circ}C$		5.2	A
Power Dissipation	$T_A=25^{\circ}C$	$P_D$	2.0	W
	$T_A=70^{\circ}C$		1.3	
Single Pulse Avalanche Energy (Note 6)		$E_{AS}$	63.4	mJ
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150	$^{\circ}C$
Typical Thermal Resistance (Note 4,5)	Junction to Case	$R_{\theta JC}$	1.5	$^{\circ}C/W$
	Junction to Ambient	$R_{\theta JA}$	62.5	

- Limited only By Maximum Junction Temperature



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## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

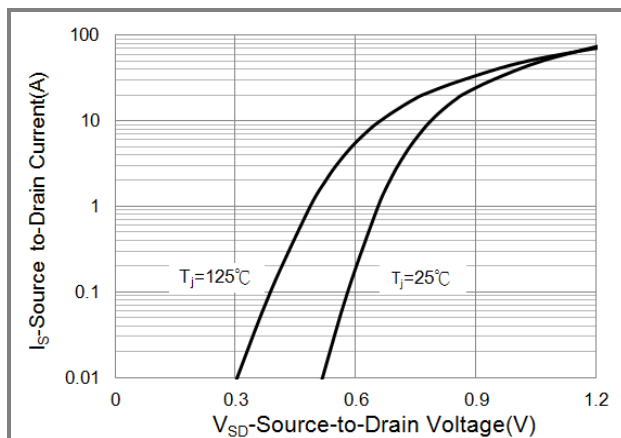
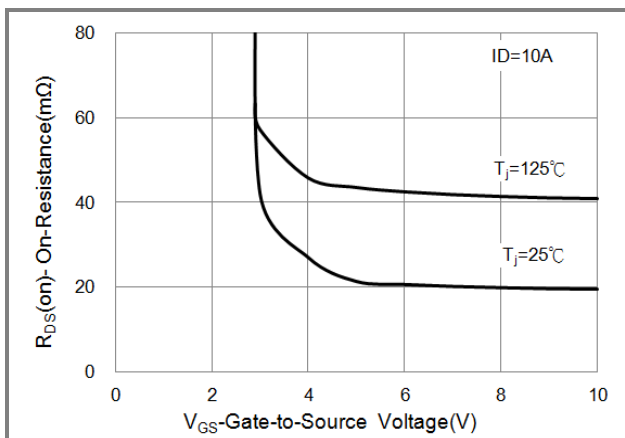
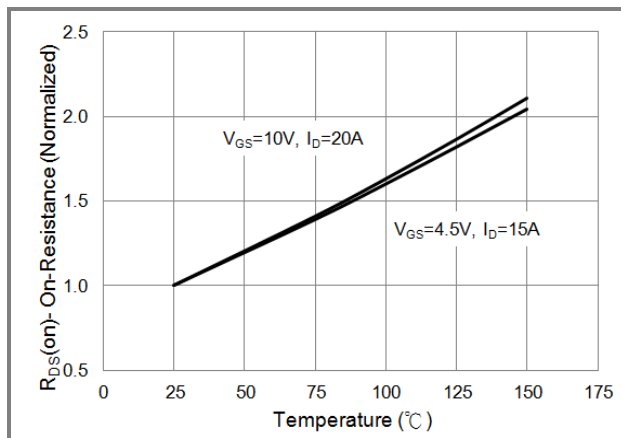
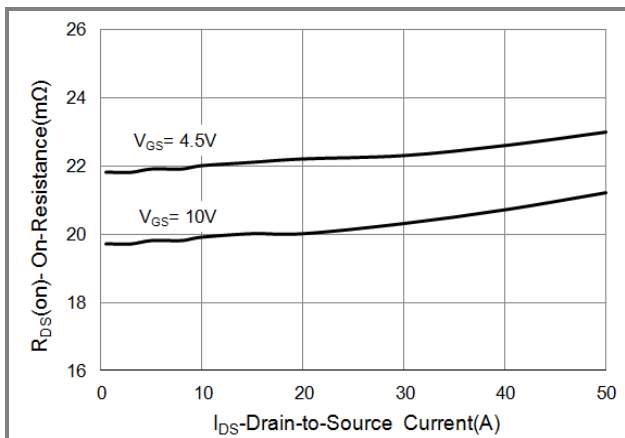
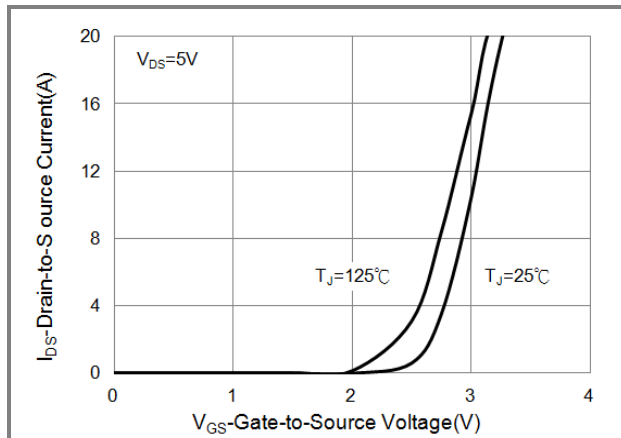
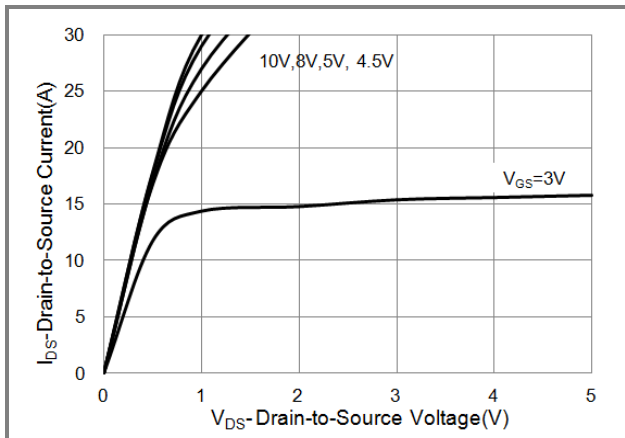
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	100	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.8	2.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	20	25	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A	-	22	28.5	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V	-	-	1.0	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Dynamic (Note 7)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V (Note 1,2)	-	31	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	5.1	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	7.3	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1.0MHZ	-	1519	-	pF
Output Capacitance	C <sub>oss</sub>		-	132	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	66	-	
Turn-On Delay Time	td(on)	V <sub>DD</sub> =50V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω (Note 1,2)	-	11	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	42	-	
Turn-Off Delay Time	td(off)		-	40	-	
Turn-Off Fall Time	t <sub>f</sub>		-	19	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	42	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V	-	0.7	1.2	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  $T_J(\text{MAX})=150^{\circ}\text{C}$ . Ratings are based on low frequency and duty cycles to keep initial  $T_J=25^{\circ}\text{C}$ .
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<sup>2</sup> with 2oz.square pad of copper.
6. The test condition is  $L=3\text{mH}$ ,  $I_{AS}=6.5A$ ,  $V_{DD}=50V$ ,  $V_{GS}=10V$
7. Guaranteed by design, not subject to production testing.

# PJQ5476AL

## TYPICAL CHARACTERISTIC CURVES





# PJQ5476AL

## TYPICAL CHARACTERISTIC CURVES

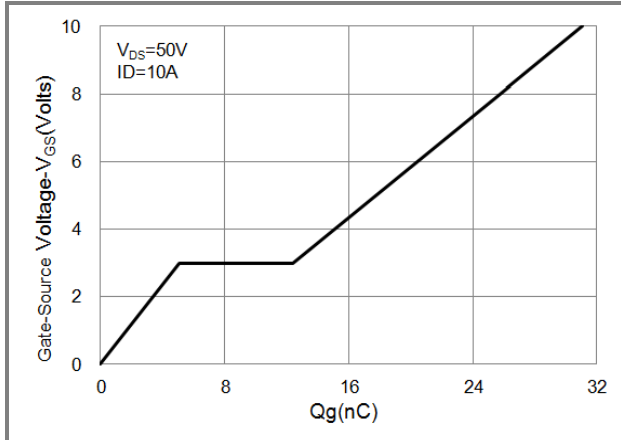


Fig.7 Gate-Charge Characteristics

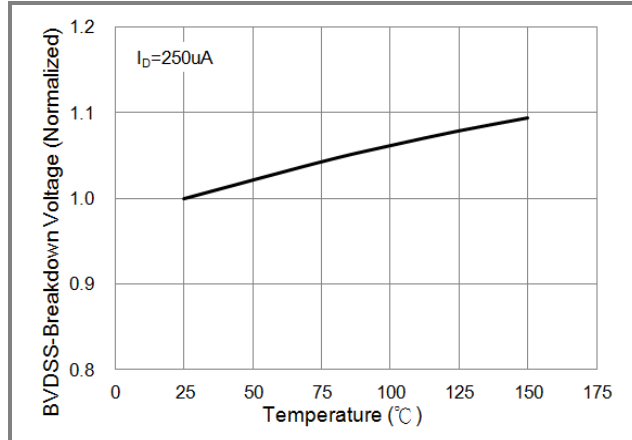


Fig.8 Breakdown Voltage Variation vs. Temperature

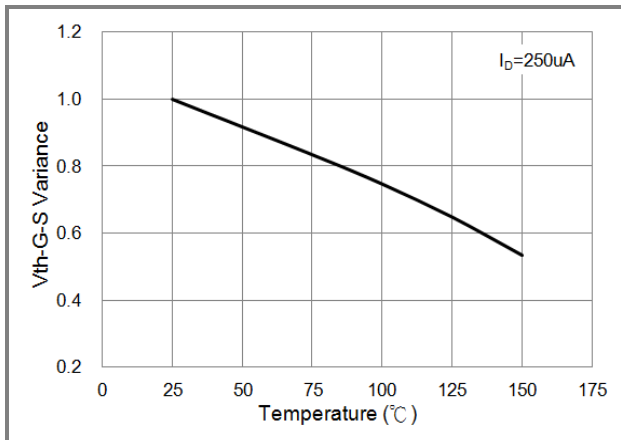


Fig.9 Threshold Voltage Variation with Temperature

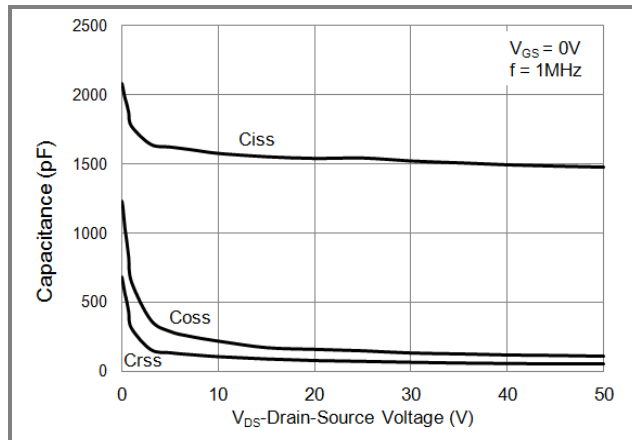


Fig.10 Capacitance vs. Drain-Source Voltage

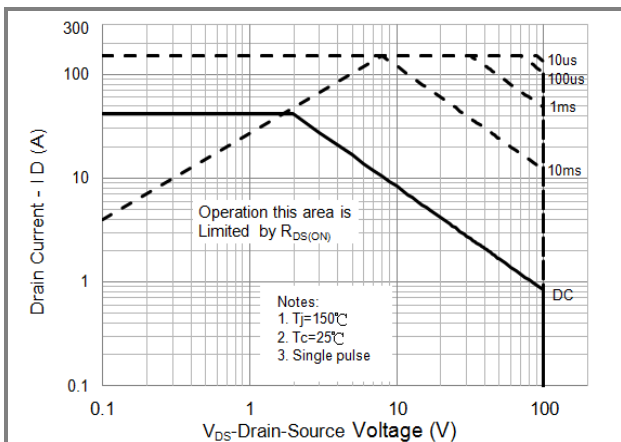
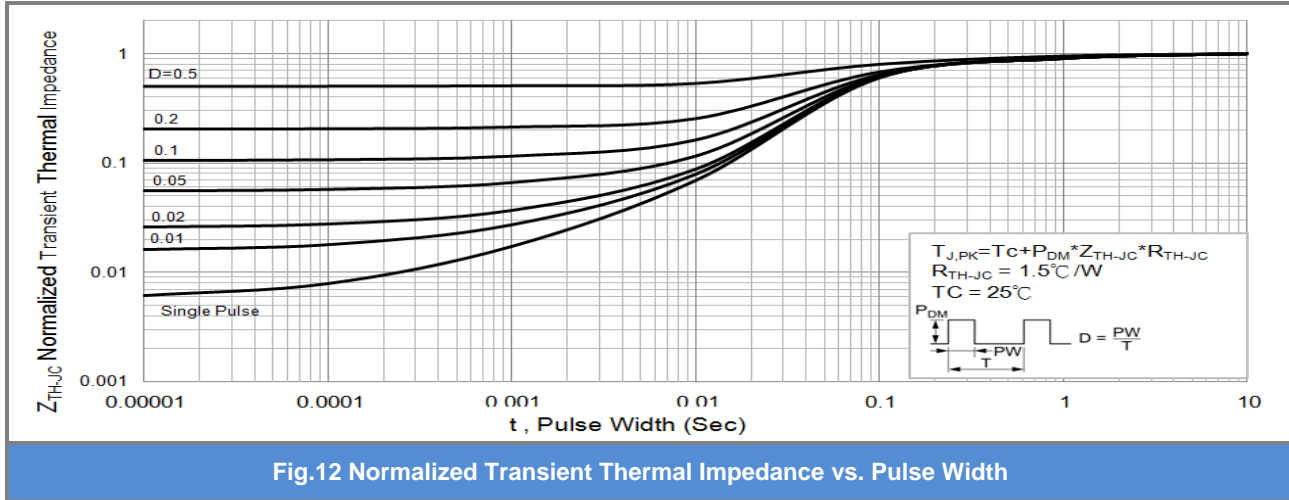


Fig.11 Maximum Safe Operating Area



## PJQ5476AL

### TYPICAL CHARACTERISTIC CURVES

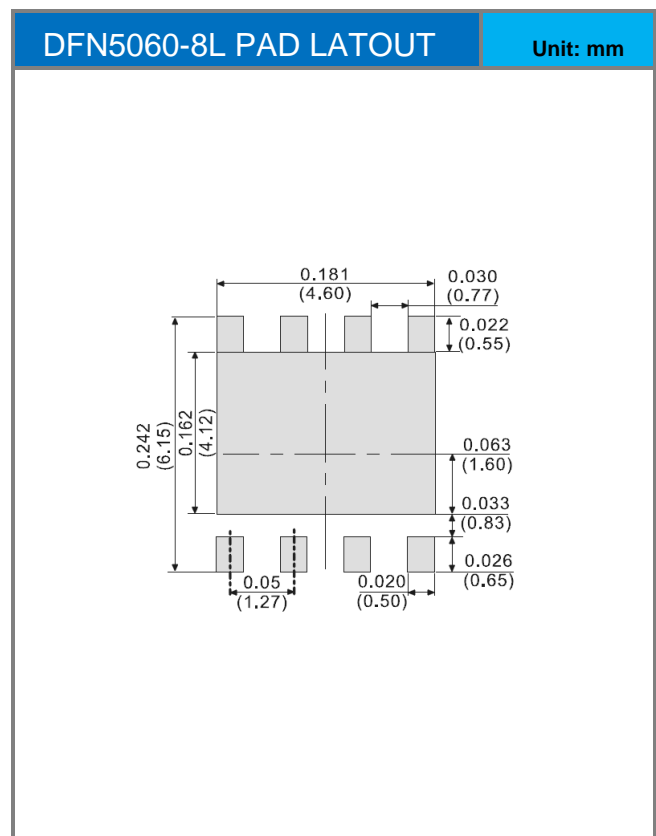
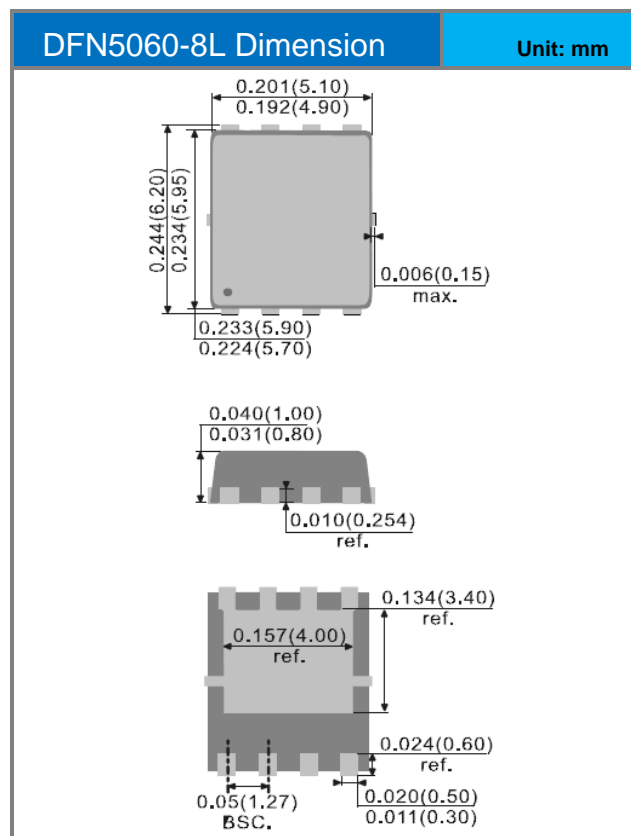


# PJQ5476AL

## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJQ5476AL_R2_00001	DFN5060-8L	3000pcs / 13" reel	Q5476AL	Halogen free

## Packaging Information & Mounting Pad Layout





## PJQ5476AL

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