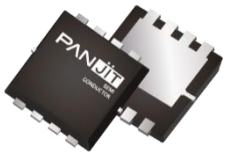
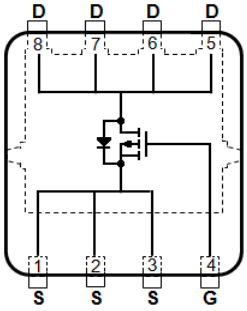
PJQ4427DP

20V P-Channel Enhancement Mode MOSFET

Voltage	-20 V	Current	-70A

DFN3333-8L





Features

- $R_{DS(ON)}$, V_{GS}@-4.5V, I_D@-8A<7mΩ
- $R_{DS(ON)}$, V_{GS}@-2.5V, I_D@-5A<10mΩ
- $R_{DS(ON)}$, V_{GS}@-1.8V, I_D@-3A<15mΩ
- Low $R_{DS(ON)}$
- High current rating
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : DFN3333-8L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.03 grams

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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	
Continuous Drain Current(Note 4)	T_A=25°C	I_D	-16	A
	T_A=70°C		-13	
Pulsed Drain Current(Note 1)	T_A=25°C	I_{DM}	-120	
Power Dissipation	T_A=25°C	P_D	2.8	W
	T_A=70°C		1.8	
Continuous Drain Current(Note 4)	T_C=25°C	I_D	-70	A
	T_C=100°C		-44	
Power Dissipation	T_C=25°C	P_D	50	W
	T_C=100°C		20	
Single Pulse Avalanche Energy(Note 6)		E_{AS}	56	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance(Note 5)	Junction to Case	$R_{\theta JC}$	2.5	°C/W
	Junction to Ambient	$R_{\theta JA}$	45	

PJQ4427DP

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	-20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.5	-0.68	-1.1	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-8A	-	5.8	7	mΩ
		V_{GS}=-2.5V, I_D=-5A	-	7.4	10	
		V_{GS}=-1.8V, I_D=-3A	-	10.6	15	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V	-	-	-1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	-	-	±100	nA
Dynamic(Note 7)						
Total Gate Charge	Q_g	V_{DS}=-10V, I_D=-8A, V_{GS}=-4.5V(Note 2,3)	-	45	-	nC
Gate-Source Charge	Q_{gs}		-	5	-	
Gate-Drain Charge	Q_{gd}		-	11	-	
Input Capacitance	Ciss	V_{DS}=-15V, V_{GS}=0V, f=1MHZ	-	4389	-	pF
Output Capacitance	Coss		-	360	-	
Reverse Transfer Capacitance	Crss		-	270	-	
Gate resistance	R_g	f=1MHZ	-	5.5	-	Ω
Turn-On Delay Time	$td_{(on)}$	V_{DD}=-10V, I_D=-8A, V_{GS}=-4.5V, R_G=25Ω (Note 2,3)	-	38	-	ns
Turn-On Rise Time	t_r		-	147	-	
Turn-Off Delay Time	$td_{(off)}$		-	382	-	
Turn-Off Fall Time	t_f		-	224	-	
Drain-Source Diode						
Diode Forward Current	I_S	---	-	-	-70	A
Diode Forward Voltage	V_{SD}	I_S=-1A,V_{GS}=0V	-	-0.6	-1.0	V
Reverse Recovery Time	Trr	V_{GS}=0V, I_S=-8A	-	17.6	-	ns
Reverse Recovery Charge	Qrr	dI_S/dt=100A/us	-	4.1	-	nC

Notes：

1.Pulse width<300us, Duty cycle<2%.

2.Essentially independent of operating temperature typical characteristics.

3.Repetitive rating, pulse width limited by junction temperature T_J(MAX)=150℃.Ratings are based on low frequency and duty cycles to keep initial T_J =25℃.

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}=-33A, V_{DD}=-15V, R_G=25 ohm, Starting T_J=25℃.

7.Guaranteed by design, not subject to production testing.

PJQ4427DP

TYPICAL CHARACTERISTIC CURVES

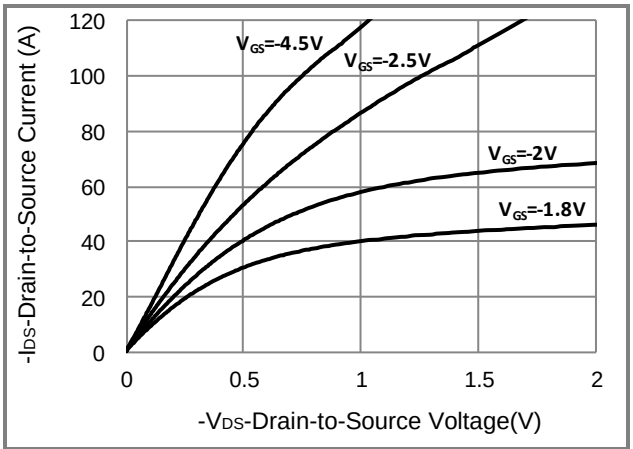


Fig.1 Output Characteristics

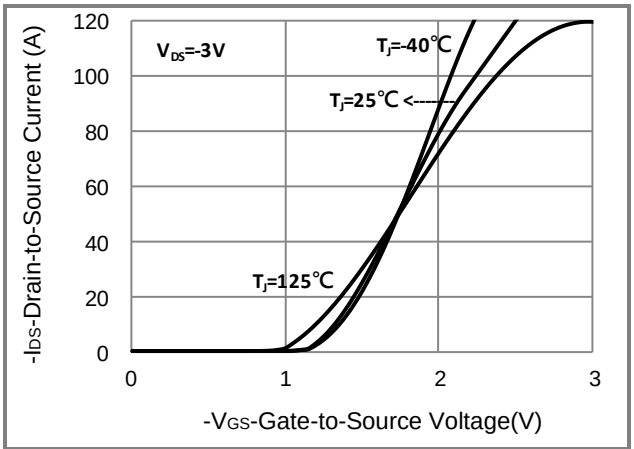


Fig.2 Transfer Characteristics

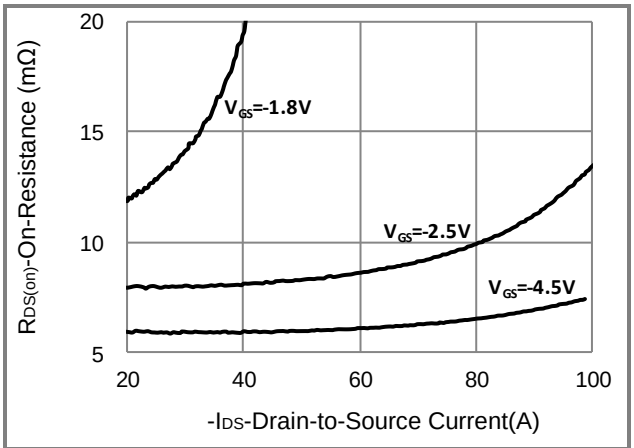


Fig.3 On-Resistance vs. Drain Current

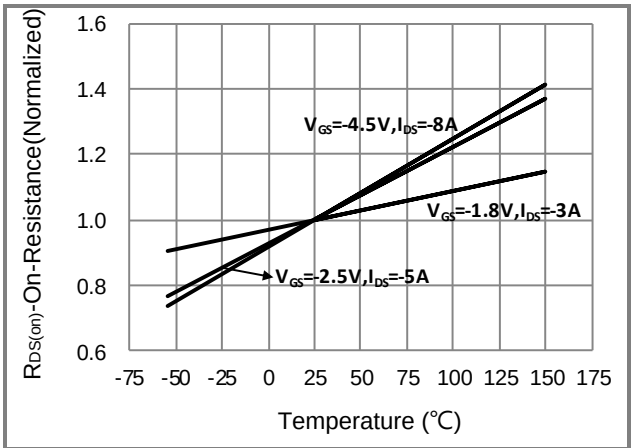


Fig.4 On-Resistance vs. Junction temperature

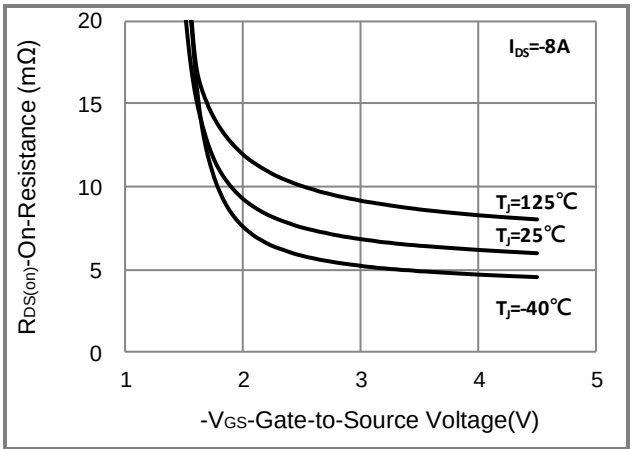


Fig.5 On-Resistance Variation with V_{GS}

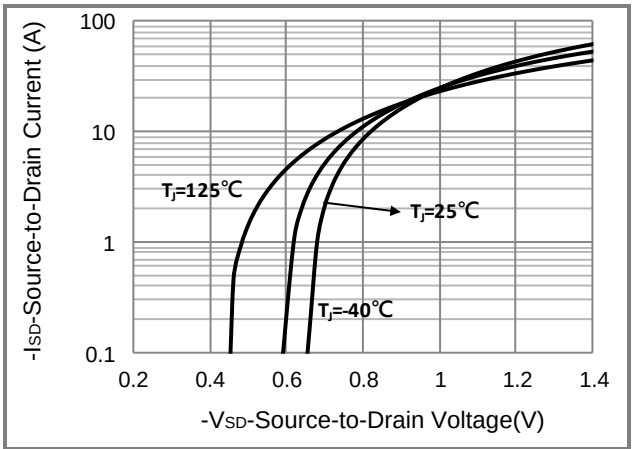


Fig.6 Source-Drain Diode Forward Voltage

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TYPICAL CHARACTERISTIC CURVES

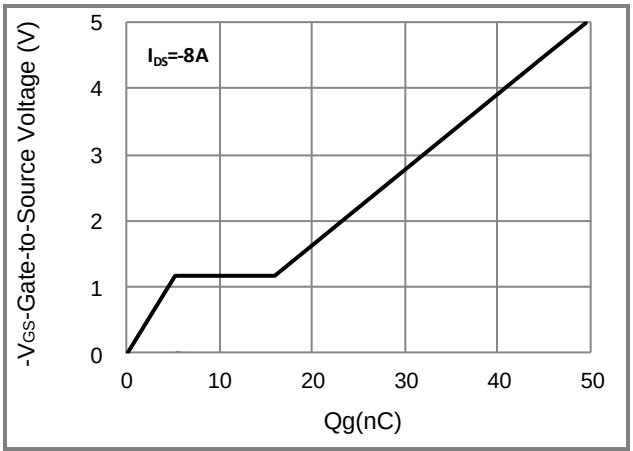


Fig.7 Gate-Charge Characteristics

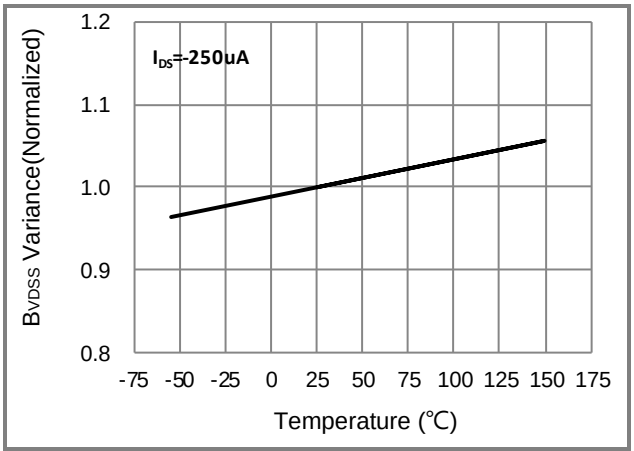


Fig.8 Breakdown Voltage Variation vs. Temperature

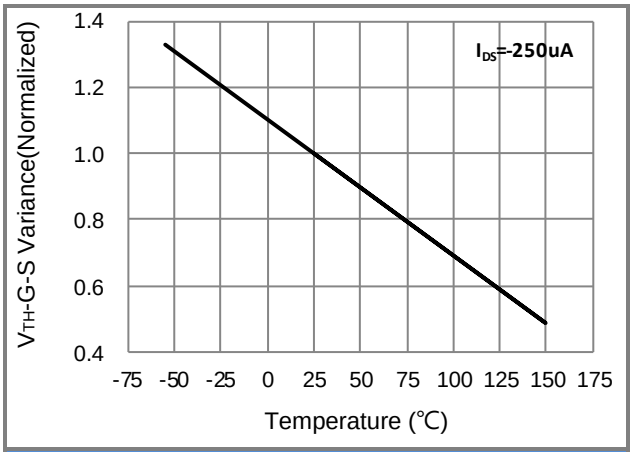


Fig.9 Threshold Voltage Variation with Temperature

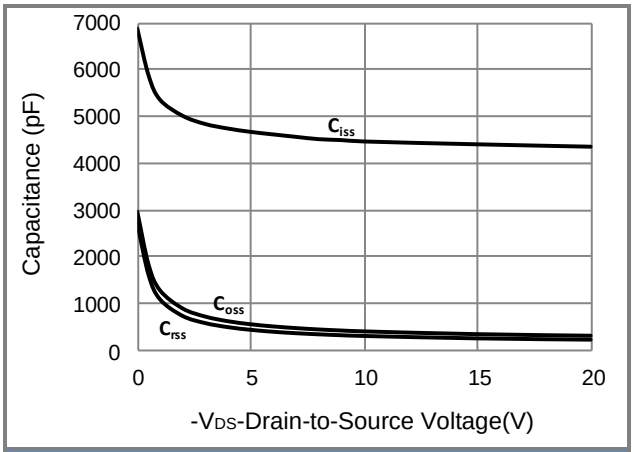


Fig.10 Capacitance vs. Drain-Source Voltage

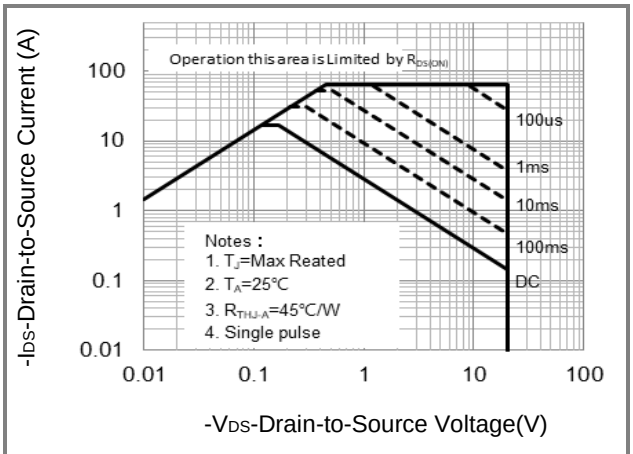


Fig.11 Maximum Safe Operating Area

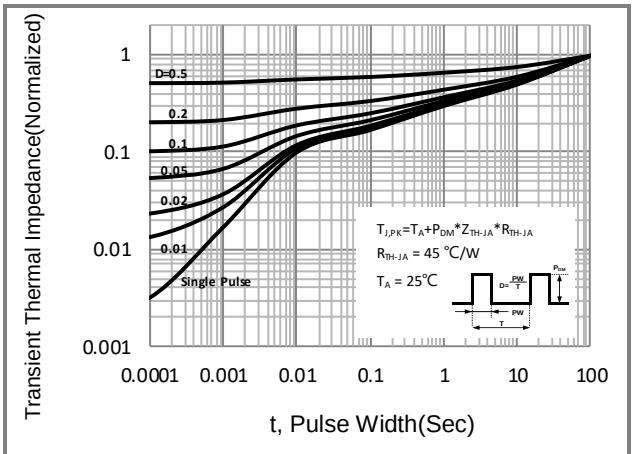


Fig.12 Normalized Transient Thermal Impedance

PJQ4427DP

TYPICAL CHARACTERISTIC CURVES

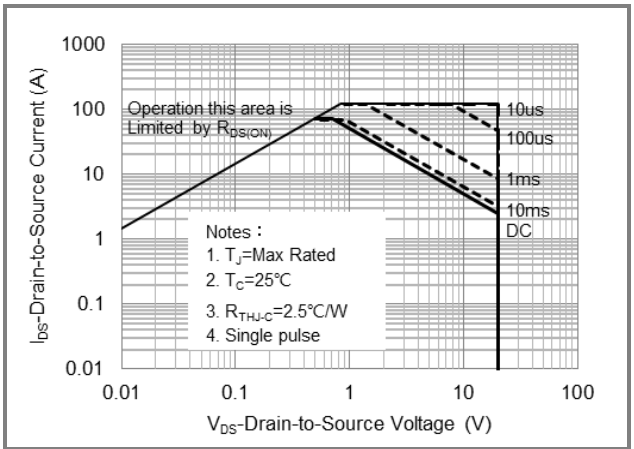


Fig.13 Maximum Safe Operating Area

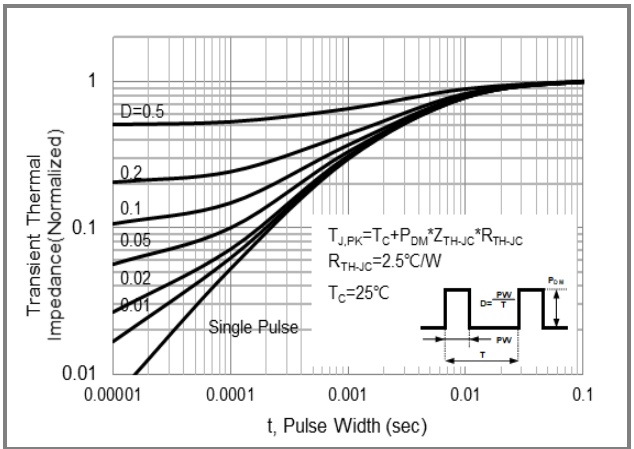


Fig.14 Normalized Transient Thermal Impedance

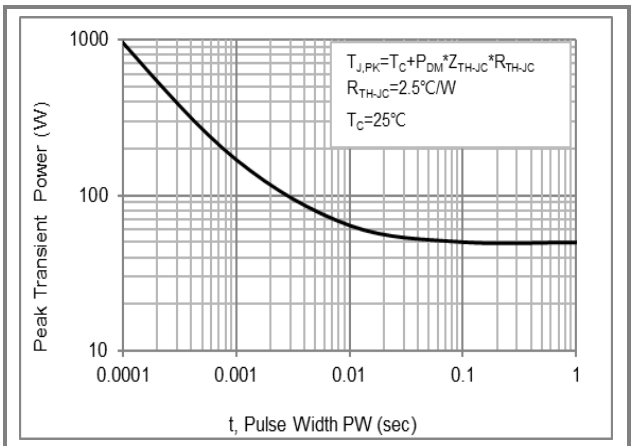


Fig.15 Single Pulse Maximum Power Dissipation

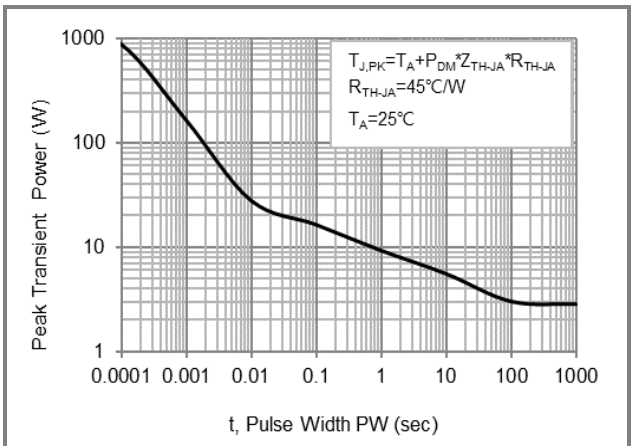


Fig.16 Single Pulse Maximum Power Dissipation

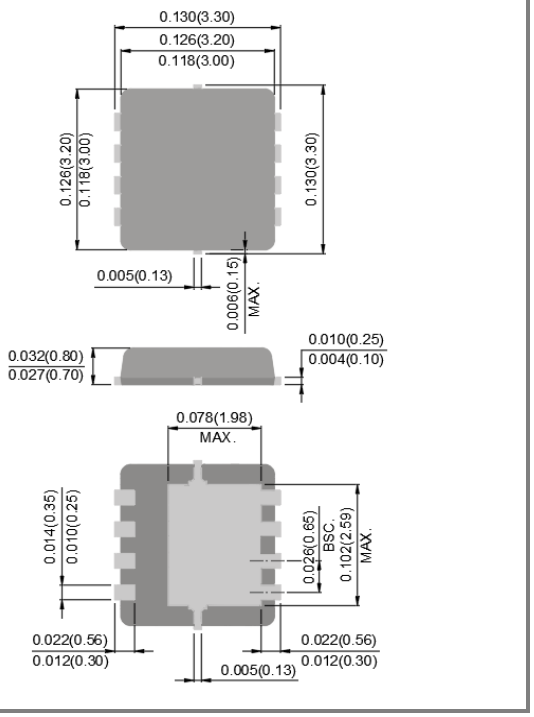
PJQ4427DP

Product and Packing Information

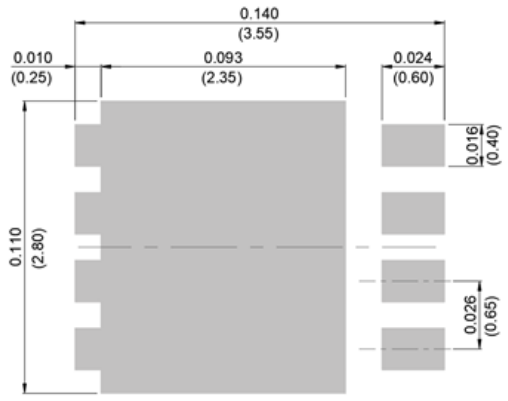
Part No.	Package Type	Packing Type	Marking
PJQ4427DP	DFN3333-8L	5K pcs / 13” reel	4427

Packaging Information & Mounting Pad Layout

DFN3333-8L Dimension — Unit: inch(mm)



DFN3333-8L Pad Layout — Unit: inch(mm)



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