

PJQ4423DP

20V P-Channel Enhancement Mode MOSFET

Voltage

-20 V

Current

-40 A

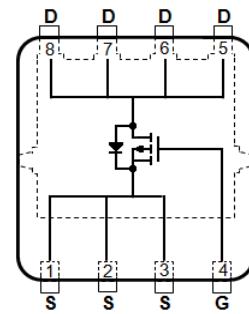
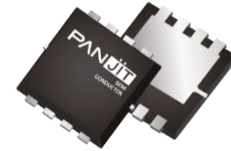
Features

- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-5.5A < 12m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-2.5V$, $I_D@-3.0A < 17.5m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-1.8V$, $I_D@-1.5A < 26m\Omega$
- 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

DFN3333-8L



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ C$ 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)	$T_A=25^\circ C$	I_D	-13	A
	$T_A=70^\circ C$		-10	
Pulsed Drain Current ^(Note 1)	$T_A=25^\circ C$	I_{DM}	-65	
Power Dissipation	$T_A=25^\circ C$	P_D	2.8	W
	$T_A=70^\circ C$		1.8	
Continuous Drain Current ^(Note 4)	$T_C=25^\circ C$	I_D	-40	A
	$T_C=100^\circ C$		-25	
Power Dissipation	$T_C=25^\circ C$	P_D	28	W
	$T_C=100^\circ C$		11	
Single Pulse Avalanche Energy ^(Note 6)		E_{AS}	34	mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ C$
Typical Thermal Resistance ^(Note 5)	Junction to Case	$R_{\theta JC}$	4.5	$^\circ C/W$
	Junction to Ambient	$R_{\theta JA}$	45	

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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	-20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.5	-0.64	-1.1	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-5.5A	-	10	12	mΩ
		V _{GS} =-2.5V, I _D =-3.0A	-	13	17.5	
		V _{GS} =-1.8V, I _D =-1.5A	-	18	26	
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 =-5.5A, V _{GS} =-4.5V (Note 2,3)	-	22	-	nC
Gate-Source Charge	Q _{gs}		-	2.5	-	
Gate-Drain Charge	Q _{gd}		-	5.5	-	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1.0MHZ	-	2115	-	pF
Output Capacitance	C _{oss}		-	196	-	
Reverse Transfer Capacitance	C _{rss}		-	142	-	
Gate resistance	R _g	f=1.0MHZ	-	7.7	-	Ω
Turn-On Delay Time	td(on)	V _{DD} =-10V, I _D =-5.5A, V _{GS} =-4.5V, R _G =25Ω (Note 2,3)	-	18	-	ns
Turn-On Rise Time	tr		-	47	-	
Turn-Off Delay Time	td(off)		-	247	-	
Turn-Off Fall Time	tf		-	125	-	
Drain-Source Diode						
Diode Forward Current	I _s	---	-	-	-40	A
Diode Forward Voltage	V _{SD}	I _S =-1A, V _{GS} =0V	-	-0.6	-1.0	V
Reverse Recovery Time	T _{rr}	V _{GS} =0V, I _S =-5.5A	-	9.2	-	ns
Reverse Recovery Charge	Q _{rr}	di/dt=100A/us	-	0.6	-	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°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_{θJA} 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 inch² with 2oz. square pad of copper.
6. The test condition is L=0.1mH, I_{AS}=-26A, V_{DD}=-15V, R_G=25 ohm, Starting T_J=25°C.
7. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

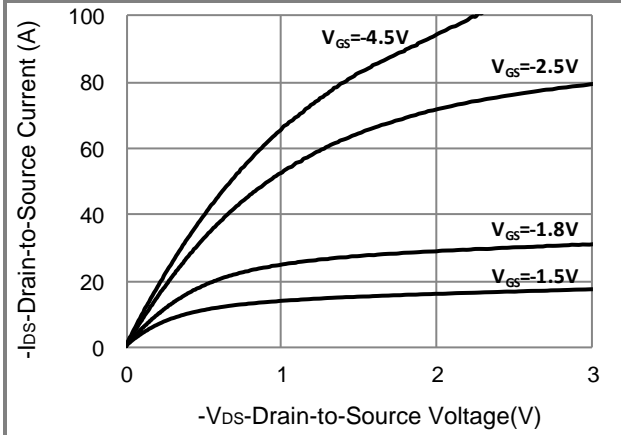


Fig.1 Output Characteristics

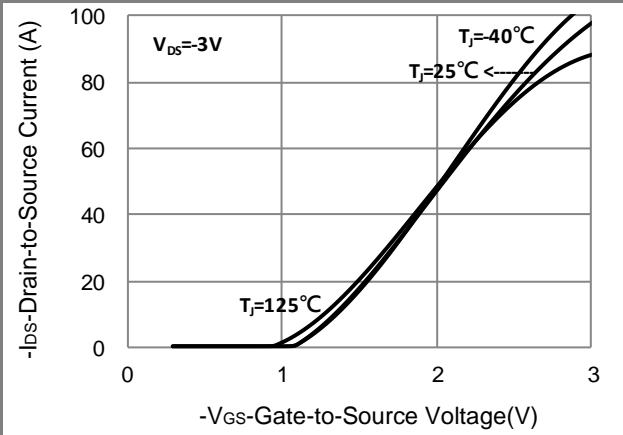


Fig.2 Transfer Characteristics

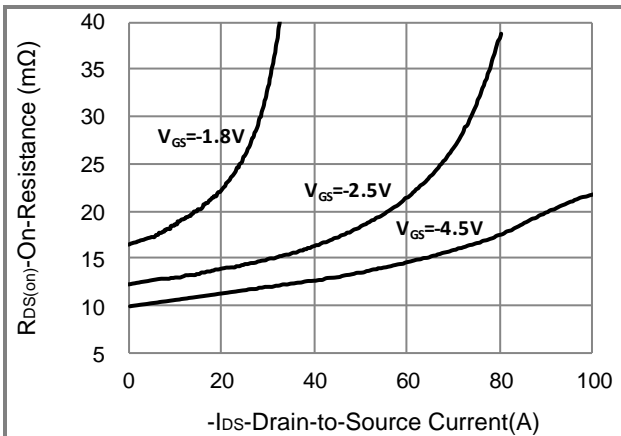


Fig.3 On-Resistance vs. Drain Current

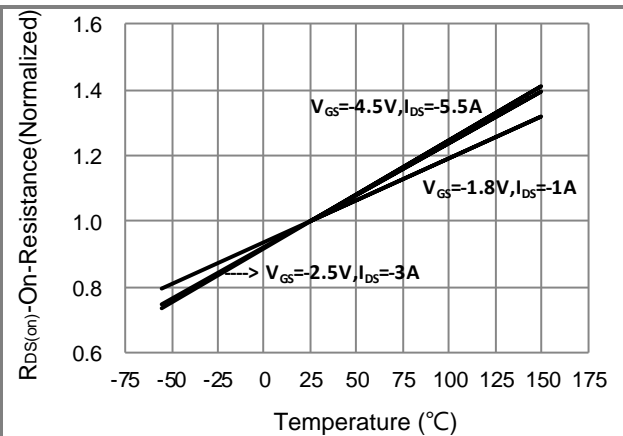


Fig.4 On-Resistance vs. Junction temperature

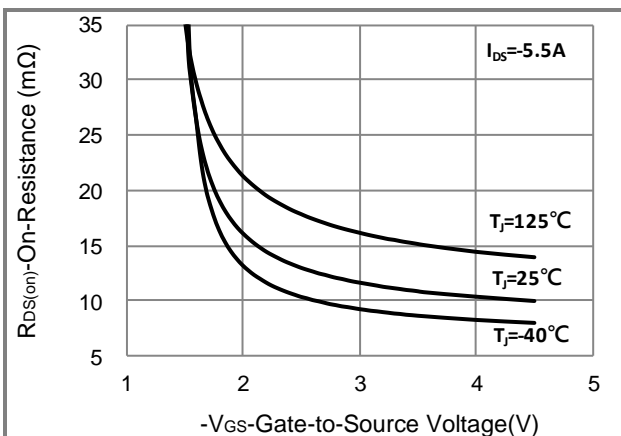


Fig.5 On-Resistance Variation with V_{GS}

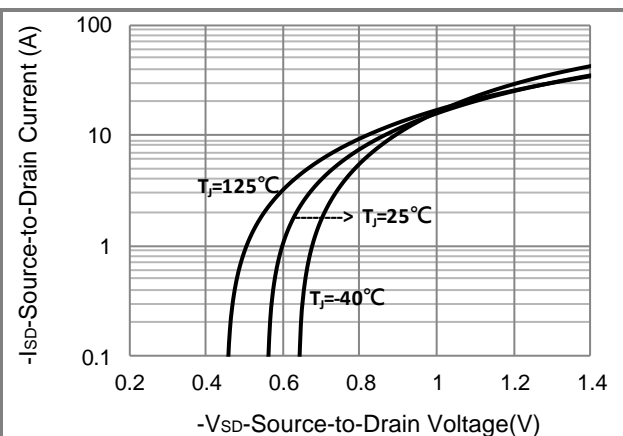


Fig.6 Source-Drain Diode Forward Voltage

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TYPICAL CHARACTERISTIC CURVES

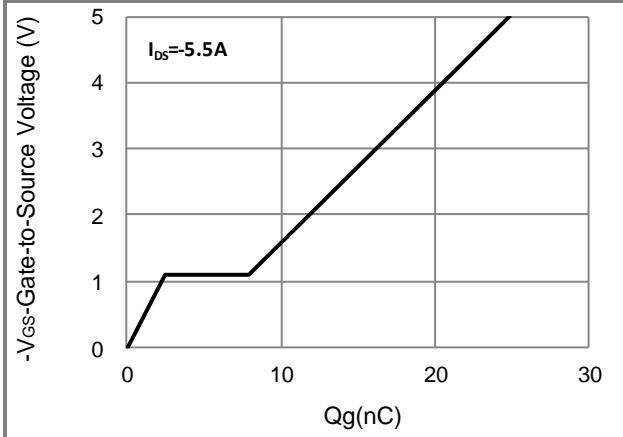


Fig.7 Gate-Charge Characteristics

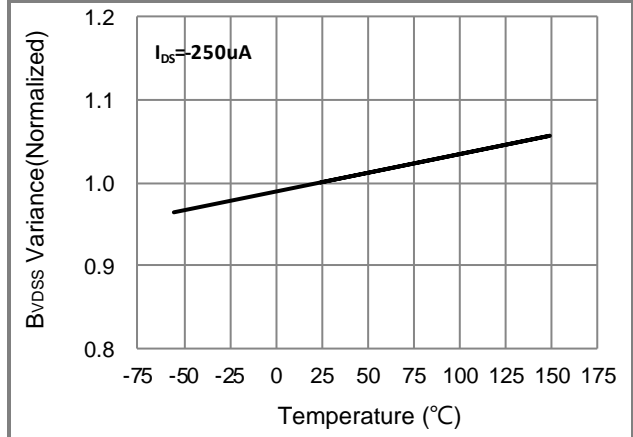


Fig.8 Breakdown Voltage Variation vs. Temperature

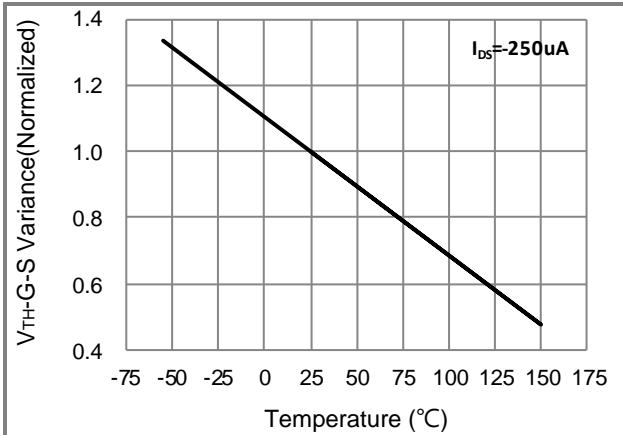


Fig.9 Threshold Voltage Variation with Temperature

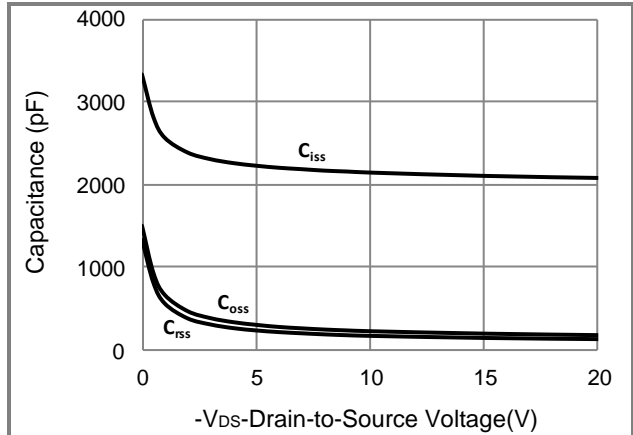


Fig.10 Capacitance vs. Drain-Source Voltage

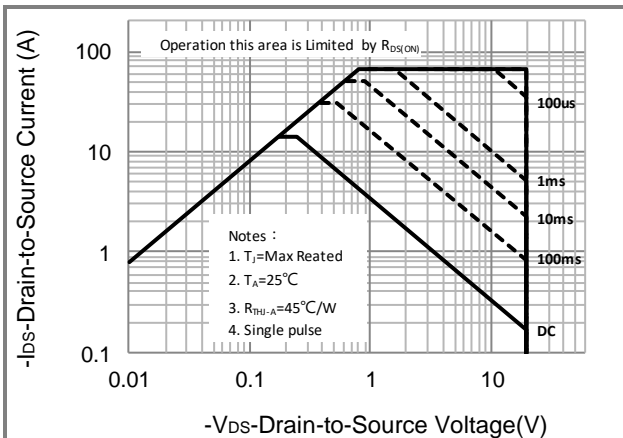


Fig.11 Maximum Safe Operating Area

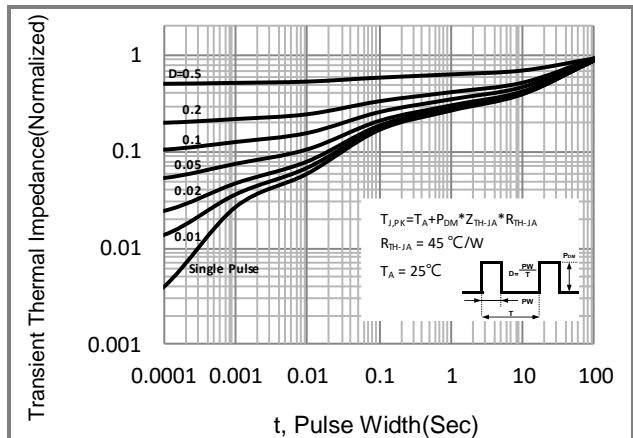


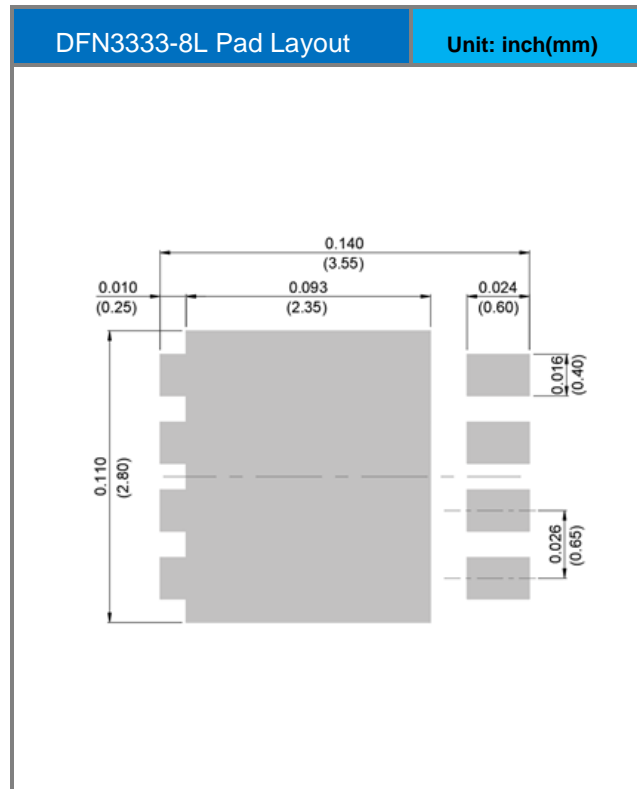
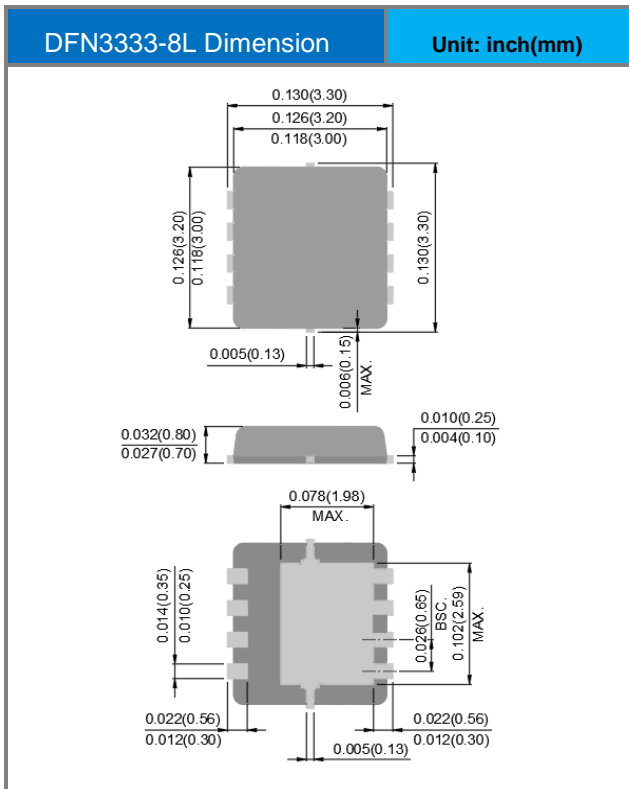
Fig.12 Normalized Transient Thermal Impedance

PJQ4423DP

Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJQ4423DP_R2_00001	DFN3333-8L	5K pcs / 13" reel	4423	Halogen free RoHS compliant

Packaging Information & Mounting Pad Layout



PJQ4423DP

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