

100V N-Channel Enhancement Mode MOSFET

Voltage	100 V	Rdson	7.5 mΩ
Current	68 A	Qg	37 nC

Feature:

- $R_{DS(ON)} < 7.5\text{m}\Omega$ @ $V_{GS}=10\text{V}, I_D=30\text{A}$
- $R_{DS(ON)} < 9\text{ m}\Omega$ @ $V_{GS}=4.5\text{V}, I_D=20\text{A}$
- High Speed Switching and Low $R_{DS(ON)}$
- Low reverse transfer capacitance
- 100% UIS / Rg test in mass production
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

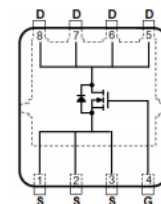
Mechanical Data

- Case: DFN5060-8L package
- Terminals: Solder able per MIL-STD-750, Method 2026
- Approx. Weight: 0.08 grams

Application

- PD Charger/ Adapter/SR Solution of Power supply

DFN5060-8L



Top side view

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	100	
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (note 3)	$T_C=25^\circ\text{C}$	I_D	68	A
	$T_C=100^\circ\text{C}$		47	
Pulsed Drain Current (note 1)	$T_C=25^\circ\text{C}$	I_{DM}	260	A
Single Pulse Avalanche Energy (note 5)		E_{AS}	132	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	69	W
	$T_C=100^\circ\text{C}$		27	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$

Thermal Characteristics

PARAMETER		SYMBOL	VALUES			UNITS
			MIN.	TYP.	MAX.	
Thermal Resistance	Junction-to-Case (Bottom)	$R_{\theta JC}$	-	1.3	1.8	$^\circ\text{C/W}$
	Junction-to-Ambient (Note 4)	$R_{\theta JA}$	-	-	50	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	100	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0	1.6	2.2	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A	-	6.0	7.5	mΩ
		V _{GS} =4.5V, I _D =20A	-	7.2	9.0	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1.0	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q _g	V _{DS} =50V, I _D =30A , V _{GS} =10V	-	37	-	nC
Gate-Source Charge	Q _{gs}		-	5.8	-	
Gate-Drain Charge	Q _{gd}		-	6	-	
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=250KHz	-	2083	-	pF
Output Capacitance	C _{oss}		-	686	-	
Reverse Transfer Capacitance	C _{rss}		-	13.9	-	
Turn-On Delay Time	td(on)	V _{DD} =50V, I _D =30A , V _{GS} =10V, R _g =3Ω (Note 2)	-	9.3	-	ns
Turn-On Rise Time	tr		-	2.3	-	
Turn-Off Delay Time	td(off)		-	27.2	-	
Turn-Off Fall Time	tf		-	4.3	-	
Gate Resistance	Rg	f=1.0MHz	-	0.7	-	Ω
Drain-Source Diode						
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	0.84	1.2	V
Reverse Recovery Charge	Q _{rr}	I _S =30A di/dt=100A/μs	-	34	-	uC
Reverse Recovery Time	T _{rr}		-	35	-	ns
NOTES :						
1. Pulse width ≤ 200 μs, Duty cycle ≤ 2 %.						
2. Essentially independent of operating temperature typical characteristics.						
3. The maximum drain current calculated by maximum junction temperature and thermal impedance. It can be varied by application and environment.						
4. 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 inch² with 2oz.square pad of copper.						
5. EAS is calculated based on the condition of L = 0.5 mH, IAS = 23A, VDD = 50 V, VGS = 10 V , Rg=25Ω.						
6. Guaranteed by design, not subject to production testing.						

TYPICAL CHARACTERISTIC CURVES

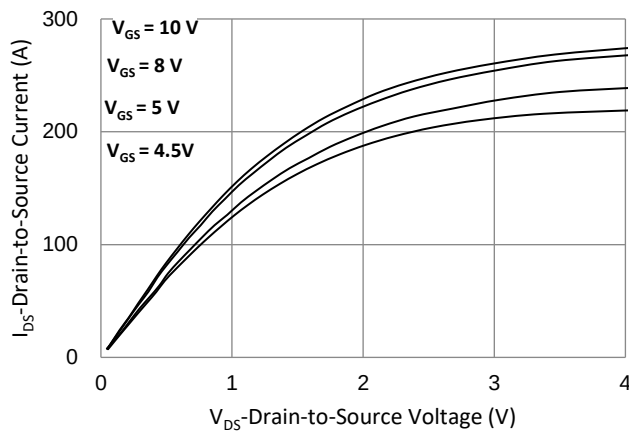


Fig.1 Output Characteristics

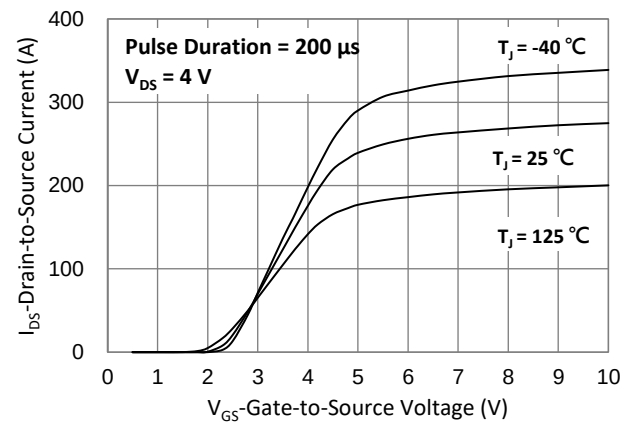


Fig.2 Transfer Characteristics

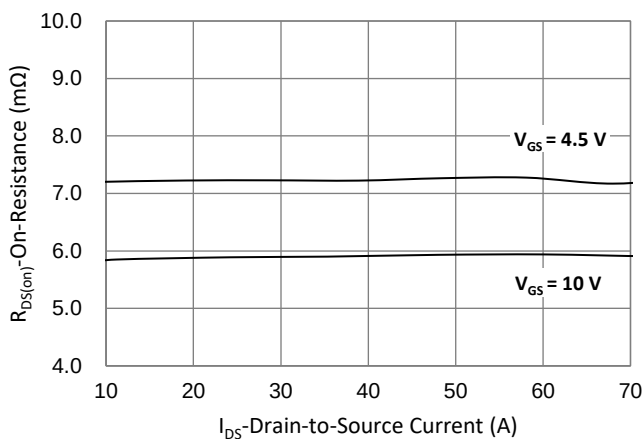


Fig.3 On-Resistance vs. Drain Current

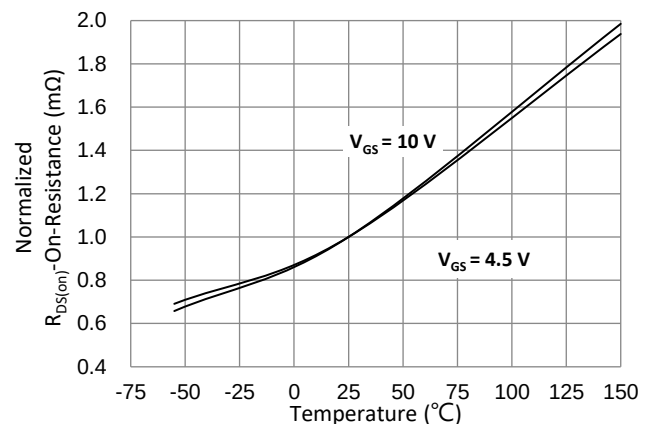


Fig.4 On-Resistance vs. Junction Temperature

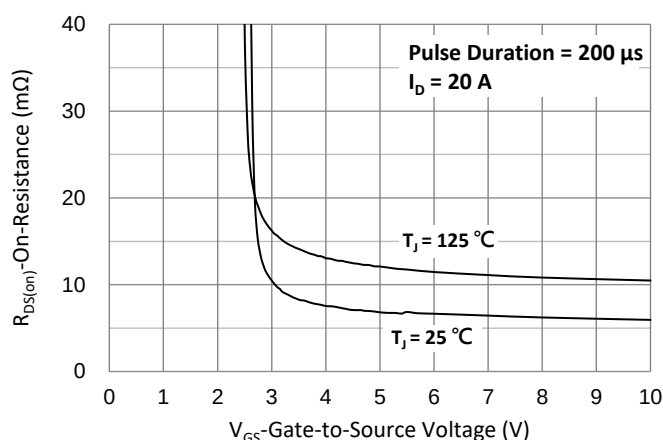


Fig.5 On-Resistance Variation with V_{GS}

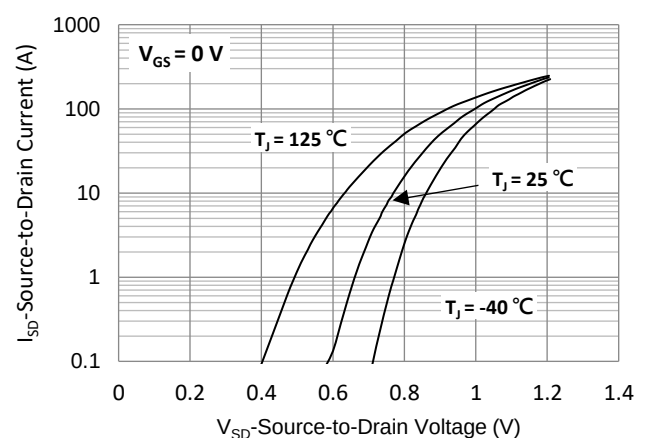


Fig.6 Body Diode Characteristics

TYPICAL CHARACTERISTIC CURVES

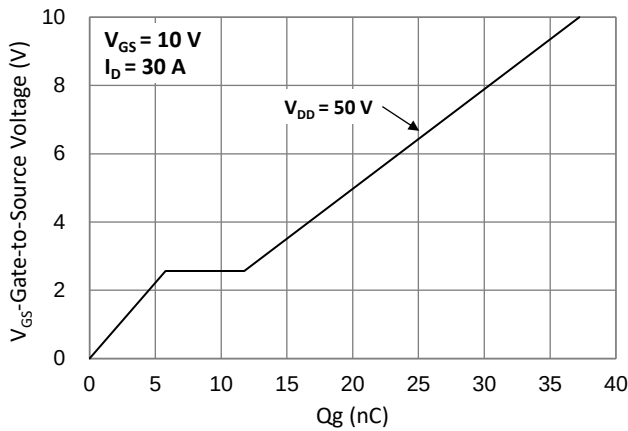


Fig.7 Gate-Charge Characteristics

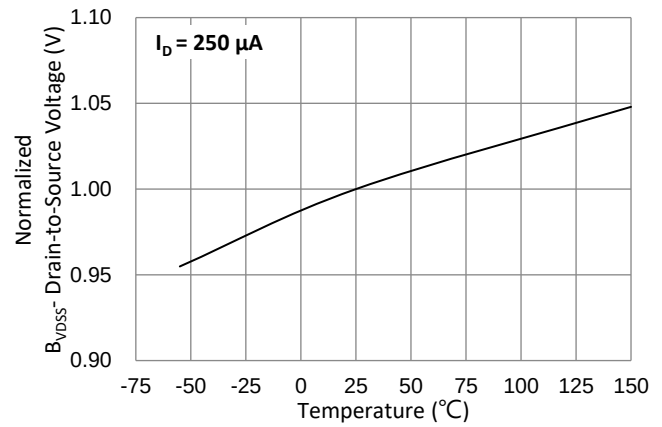


Fig.8 Breakdown Voltage Variation vs. Temperature

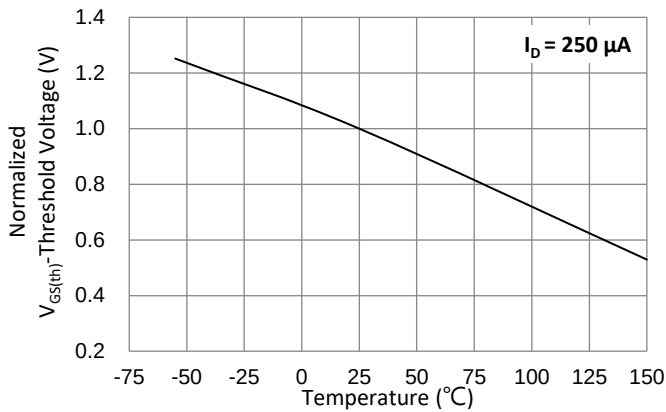


Fig.9 Threshold Voltage Variation with Temperature

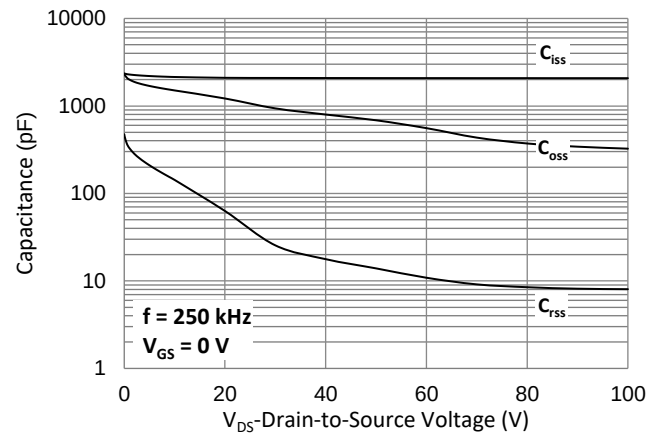


Fig.10 Drain Current vs. Case Temperature

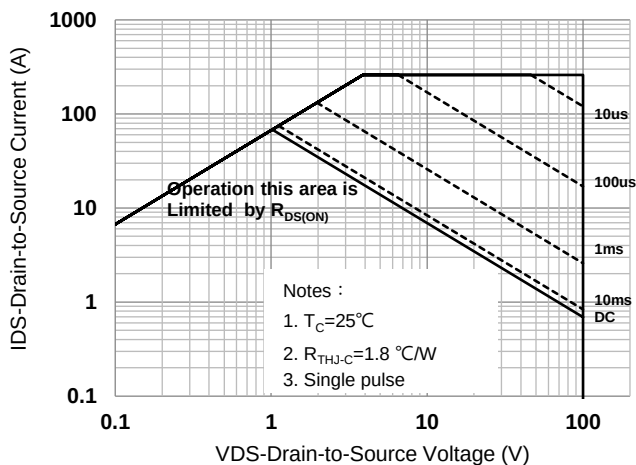


Fig.11 Maximum Safe Operating Area

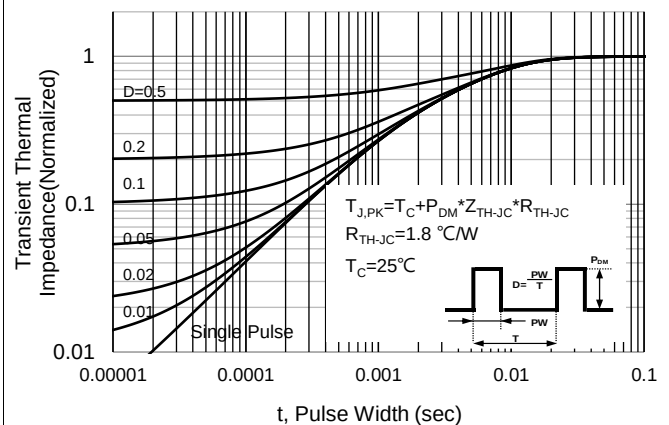
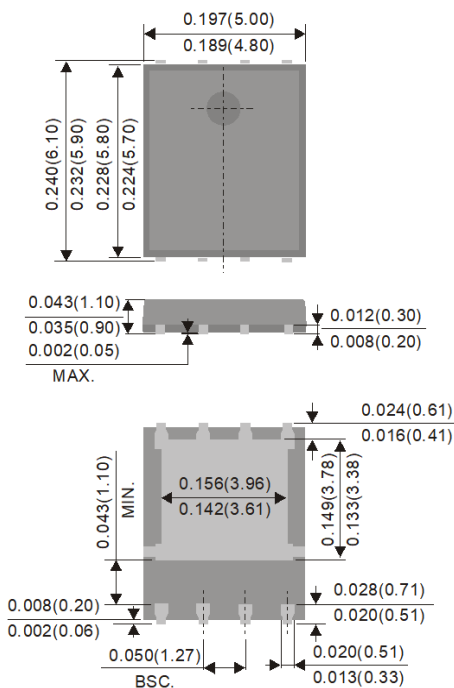
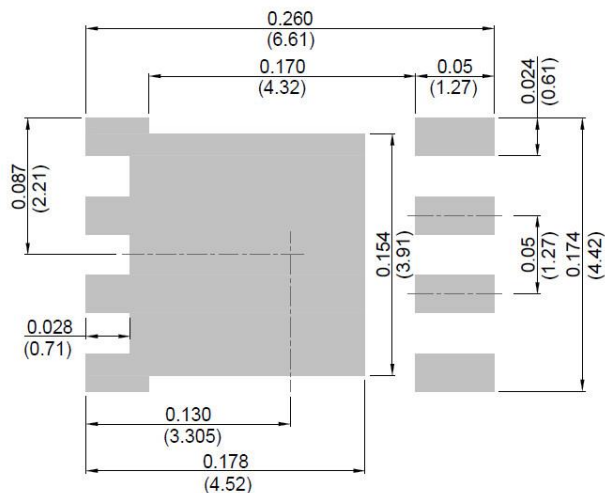


Fig.12 Normalized Transient Thermal Impedance

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PSMQC075N10LSC1	DFN5060-8L	3K pcs / 13" reel	075N10LC

Packaging Information

DFN5060-8L Dimension	Unit: inch(mm)	DFN5060-8L Pad Layout	Unit: inch(mm)
 Top View Dimensions: - Overall Width: 0.197(5.00) - Inner Width: 0.189(4.80) - Overall Height: 0.240(6.10) - Inner Height: 0.232(5.90) - Distance from top edge to center: 0.228(5.80) - Distance from bottom edge to center: 0.224(5.70) Side View Dimensions: - Top thickness: 0.043(1.10) - Inner thickness: 0.035(0.90) - Bottom thickness: 0.002(0.05) - MAX. (Maximum thickness) - Distance from top edge to center: 0.012(0.30) - Distance from bottom edge to center: 0.008(0.20) Bottom View Dimensions: - Overall Width: 0.156(3.96) - Inner Width: 0.142(3.61) - Overall Height: 0.149(3.78) - Inner Height: 0.133(3.38) - Distance from top edge to center: 0.024(0.61) - Distance from bottom edge to center: 0.016(0.41) - MIN. (Minimum thickness) - Distance from top edge to center: 0.043(1.10) - Distance from bottom edge to center: 0.028(0.71) - Distance from bottom edge to center: 0.020(0.51) - Distance from bottom edge to center: 0.050(1.27) - Distance from bottom edge to center: 0.020(0.51) - Distance from bottom edge to center: 0.013(0.33) - BSC. (Basic)		 Pad Layout Dimensions: - Overall Width: 0.260(6.61) - Inner Width: 0.170(4.32) - Distance from top edge to center: 0.05(1.27) - Distance from top edge to center: 0.024(0.61) - Distance from top edge to center: 0.087(2.21) - Distance from top edge to center: 0.154(3.91) - Distance from top edge to center: 0.05(1.27) - Distance from top edge to center: 0.174(4.42) - Distance from top edge to center: 0.028(0.71) - Distance from top edge to center: 0.130(3.305) - Distance from top edge to center: 0.178(4.52)	

Marking Diagram

PJ	Y = Year Code
075N10LC	W = Week Code (A~Z)
YWLL x	LL = Lot Code (00~99)
	x = Production Line Code

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