

115V N-Channel Enhancement Mode MOSFET

Voltage

115 V

Rdson

7.6m ohm

Feature:

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@20A < 7.6m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@10A < 10.5m\Omega$
- High switching speed
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

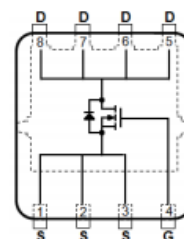
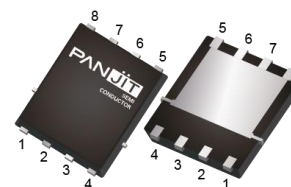
Mechanical Data

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

Application

- PD Quick Charger SSR
- Isolation converter SSR

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}	115	V
Gate-Source Voltage		V_{GS}	+20/-12	
Continue Current	$T_C=25^\circ\text{C}$	I_D	91.4	A
	$T_C=100^\circ\text{C}$		57.8	
Pulsed Drain Current (Note 1)	$T_C=25^\circ\text{C}$	I_{DM}	365	A
Single Pulse Avalanche Current (Note 6)		I_{AS}	37	A
Single Pulse Avalanche Energy (Note 6)		E_{AS}	68	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	125	W
	$T_C=100^\circ\text{C}$		50	
Operating Junction and & Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$

Thermal Characteristics

PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNITS
Maximum Thermal Resistance	Junction-to-Case (Drain)	$R_{\theta JC}$	0.9	1	$^\circ\text{C/W}$
	Junction-to-Compound (Top)	$R_{\theta JT}$	19.3	23	$^\circ\text{C/W}$
	Junction-to-Ambient	$R_{\theta JA}$	41	50	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	115			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.7	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		6.1	7.6	m Ω
		$V_{GS}=4.5V, I_D=10A$		8.4	10.5	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=115V, V_{GS}=0V$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=+20V, V_{DS}=0V$			100	nA
Dynamic (Note 7)						
Total Gate Charge	Q_g	$V_{DS}=60V, I_D=50A,$ $V_{GS}=10V$ (Note 1,2)	-	77	105	nC
Gate-Source Charge	Q_{gs}		-	25	-	
Gate-Drain Charge	Q_{gd}		-	7.7	-	
Input Capacitance	C_{iss}	$V_{DS}=60V, V_{GS}=0V,$ $f=1.0MHz$	-	4740	-	pF
Output Capacitance	C_{oss}		-	338	-	
Reverse Transfer Capacitance	C_{rss}		-	36	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=60V, I_D=50A,$ $V_{GS}=10V, R_G=6\Omega$ (Note 1,2)	-	34	-	ns
Turn-On Rise Time	t_r		-	111	-	
Turn-Off Delay Time	$t_{d(off)}$		-	116	-	
Turn-Off Fall Time	t_f		-	119	-	
Gate Resistance	R_g	$V_{DS}=Open, F=1MHz$		1.6		Ω
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	$T_C = 25\text{ }^{\circ}\text{C}$	-	-	107	A
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$	-	0.68	1	V
Reverse Recovery Time	T_{rr}	$V_R=100V, I_S=10A$		62.7		ns
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s, T_J=25\text{ }^{\circ}\text{C}$ (Note 1,2)		98		nC

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 $T_{J(MAX)}=150\text{ }^{\circ}\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25\text{ }^{\circ}\text{C}$.
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 inch² with 2oz.square pad of copper.
6. The test condition is $L=0.5mH, I_{AS}=37A, V_{DD}=70V, V_{GS}=10V, R_G=25\Omega$, Starting $T_J=25\text{ }^{\circ}\text{C}$
7. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTIC CURVES

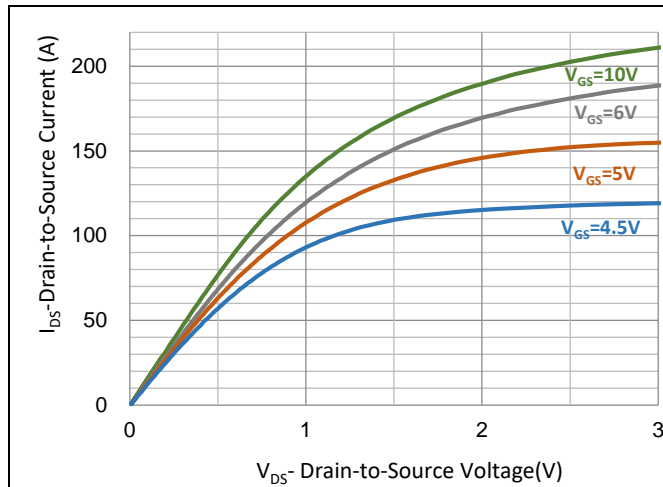


Fig.1 Output Characteristics

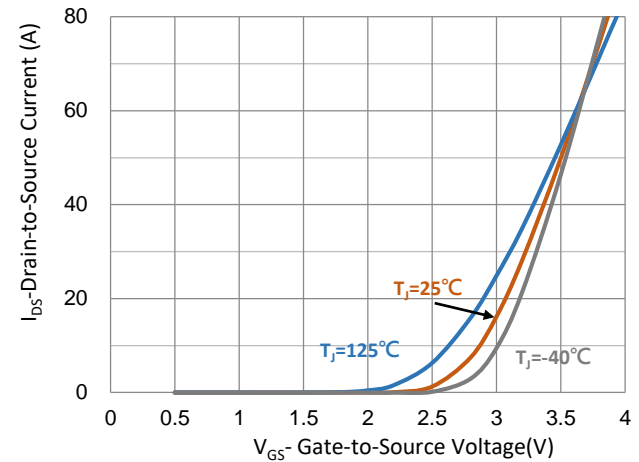


Fig.2 Transfer Characteristics

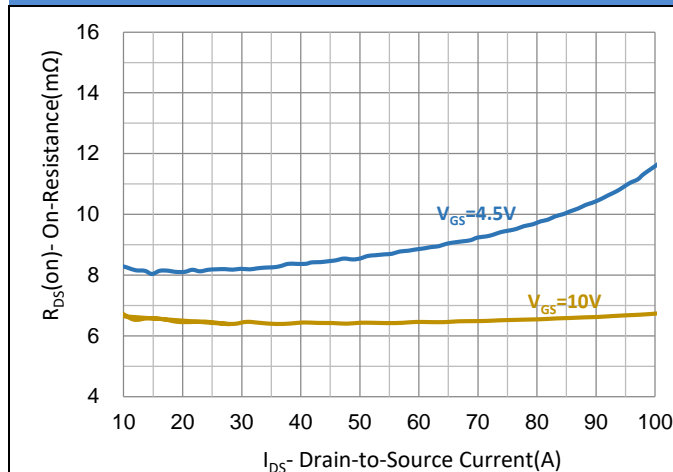


Fig.3 On-Resistance vs. Drain Current

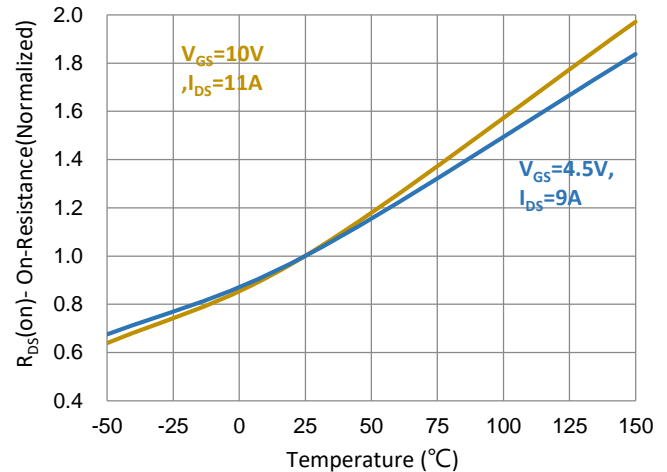


Fig.4 On-Resistance vs. Junction temperature

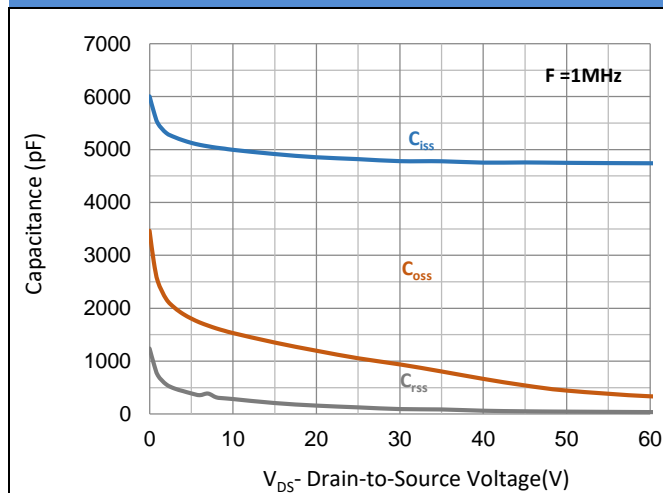


Fig.5 Capacitance vs. Drain-Source Voltage

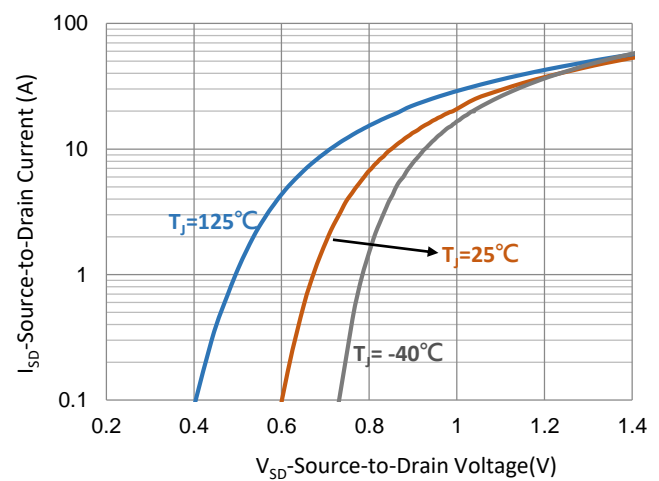


Fig.6 Source-Drain Diode Forward Voltage

TYPICAL CHARACTERISTIC CURVES

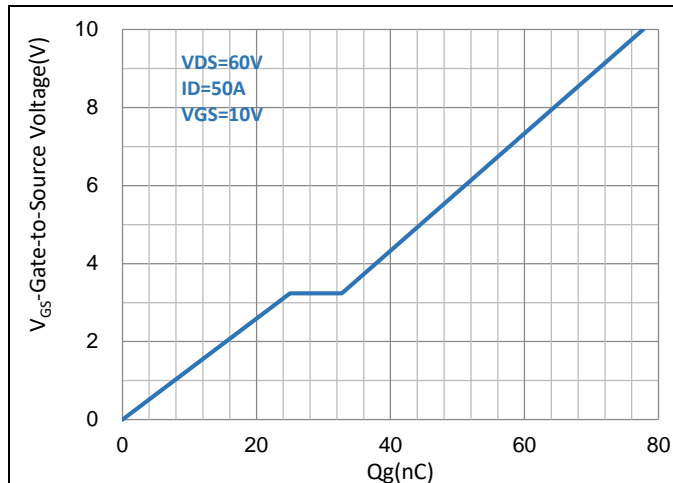


Fig.7 Gate-Charge Characteristics

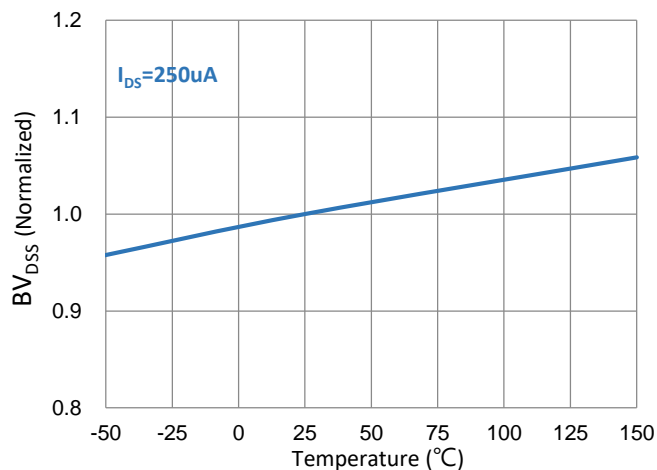


Fig.8 Breakdown Voltage Variation vs. Temperature

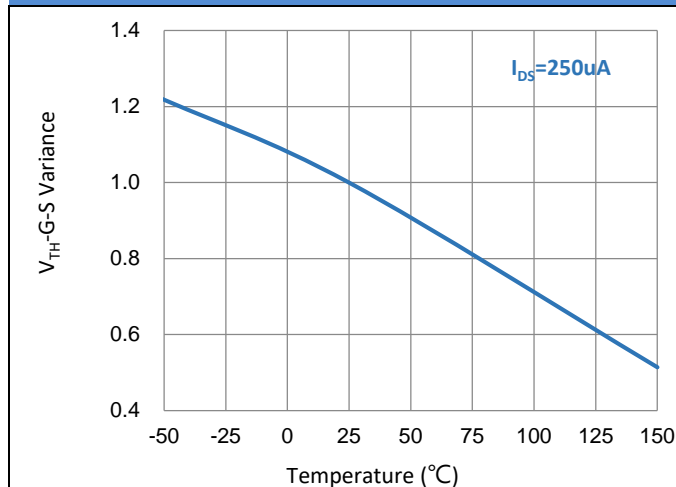


Fig.9 Threshold Voltage Variation with Temperature

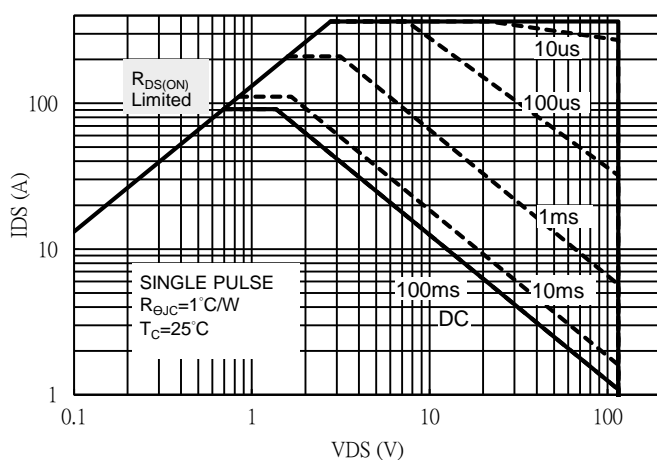


Fig.10 Maximum Safe Operating Area

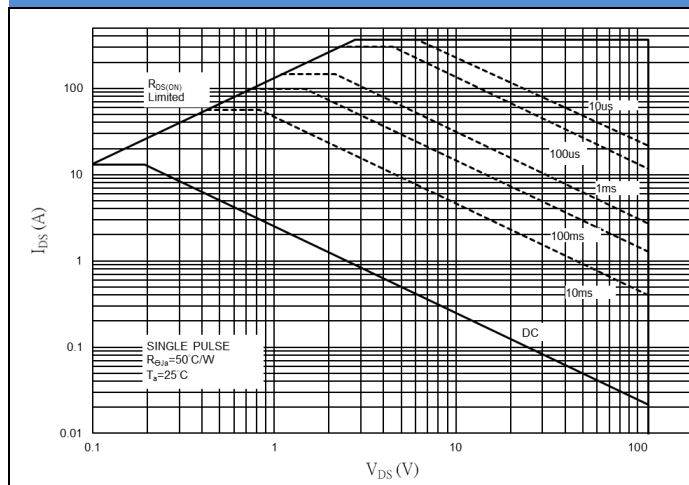


Fig.11 Maximum Safe Operating Area

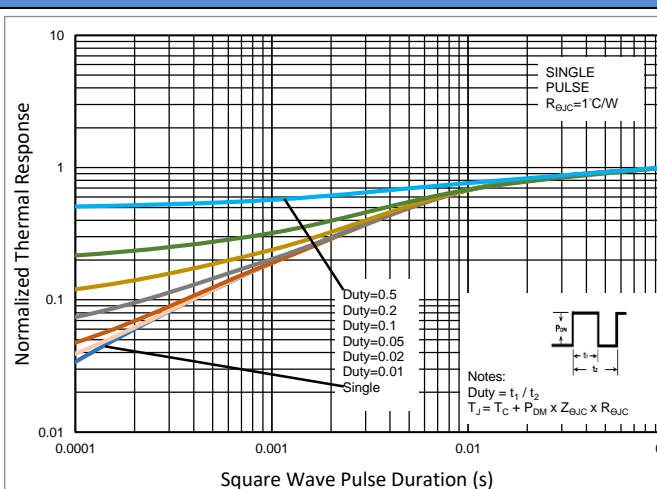
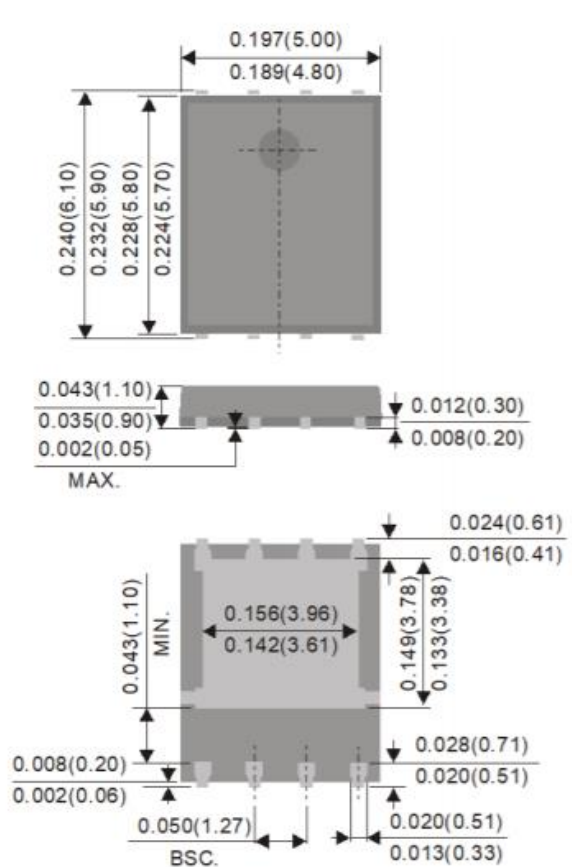
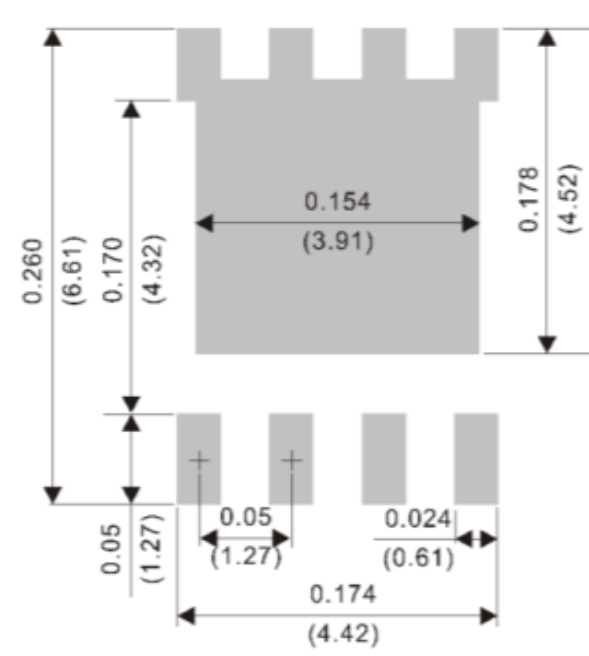


Fig.12 Normalized Transient Thermal Impedance

Ordering Information:

Ordering Code No.	Package Type	Packing Type	Marking	Version
PSMQC076N12LS1_R2_00001	DFN5060-8L	3000pcs / 13" reel	076N12LS	Halogen free

Packaging Information & Mounting Pad Layout

DFN5060-8L Dimension	Unit: inch(mm)	DFN5060-8L Pad Layout	Unit: inch(mm)
 <p>Top View Dimensions:</p> <ul style="list-style-type: none"> 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 mounting pad center: 0.228(5.80) Distance from bottom edge to mounting pad center: 0.224(5.70) <p>Side View Dimensions:</p> <ul style="list-style-type: none"> Mounting Pad Thickness: 0.043(1.10) Distance from top edge to mounting pad: 0.035(0.90) Distance from bottom edge to mounting pad: 0.002(0.05) Mounting Pad Width: 0.012(0.30) Distance from mounting pad to center: 0.008(0.20) <p>Bottom View Dimensions:</p> <ul style="list-style-type: none"> Distance from top edge to mounting pad: 0.043(1.10) MIN. Distance from mounting pad to center: 0.024(0.61) Distance from mounting pad to center: 0.016(0.41) Distance from mounting pad to center: 0.149(3.78) Distance from mounting pad to center: 0.133(3.38) Distance from mounting pad to center: 0.156(3.96) Distance from mounting pad to center: 0.142(3.61) Distance from mounting pad to center: 0.028(0.71) Distance from mounting pad to center: 0.020(0.51) Distance from mounting pad to center: 0.008(0.20) Distance from mounting pad to center: 0.002(0.06) Distance from mounting pad to center: 0.050(1.27) Distance from mounting pad to center: 0.020(0.51) Distance from mounting pad to center: 0.013(0.33) BSC. 		 <p>Top View Dimensions:</p> <ul style="list-style-type: none"> Overall Width: 0.154(3.91) Overall Height: 0.178(4.52) Distance from top edge to mounting pad: 0.260(6.61) Distance from top edge to mounting pad: 0.170(4.32) <p>Bottom View Dimensions:</p> <ul style="list-style-type: none"> Distance from top edge to mounting pad: 0.05(1.27) Distance from mounting pad to center: 0.05(1.27) Distance from mounting pad to center: 0.024(0.61) Distance from mounting pad to center: 0.174(4.42) 	

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