

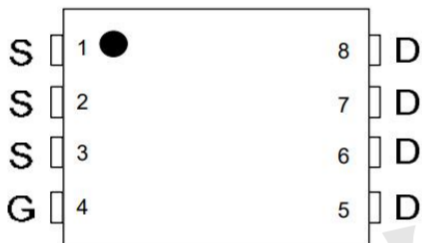
### Product Summary

- $V_{DS}$  30 V
- $I_{DS}$  (at  $V_{GS}=10V$ ) 160A
- $R_{DS(ON)}$  (at  $V_{GS}=10V$ )  $\leq 1.4m\Omega$  (TYP)

### Application

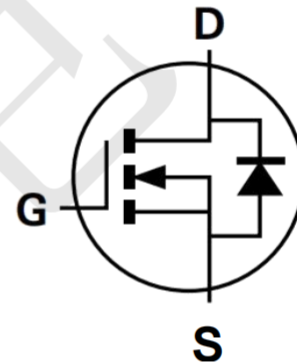
- Load switch
- High Frequency Switching and Synchronous Rectification
- Active Clamp in Intermediate
- DC/DC Power Supplies

### Package and Pin Configuration



PDFN5X6-8

### Circuit diagram



### Absolute Maximum Ratings

( $T_A=25^\circ C$  unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	160
		$T_C=100^\circ C$	100
Pulsed Drain Current	$I_{DM}$	640	A
Single Pulse Avalanche Energy	EAS	870	mJ
Total Power Dissipation	$P_{TOT}$	57	W
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ C$

### Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	62	$^\circ C/W$
Thermal Resistance Junction-Case	$R_{\theta JC}$	2.2	$^\circ C/W$

Note : The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.

### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	BV <sub>DSS</sub>	30	--	--	V
Gate-Source Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	V <sub>GS(th)</sub>	1.0	1.5	2.2	V
Gate-Source Leakage	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	I <sub>GSS</sub>	--	--	±100	nA
Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	I <sub>DSS</sub>	--	0.1	1.0	μA
	V <sub>DS</sub> =30V, T <sub>J</sub> =55°C		--	1.0	5.0	μA
Drain-Source On-State Resistance (Note 1)	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	R <sub>DS(on)</sub>	--	1.4	2.2	mΩ
	V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A		--	2.1	3.2	
Forward Transconductance (Note 2)	V <sub>DS</sub> =5V, I <sub>D</sub> =20A	g <sub>fs</sub>	--	75	--	S
<b>Dynamic (Note 2)</b>						
Total Gate Charge (Note 3)	V <sub>DS</sub> =30V, I <sub>D</sub> =30A, V <sub>GS</sub> =10V	Q <sub>g</sub>	--	142	--	nC
Gate-Source Charge (Note 3)		Q <sub>gs</sub>	--	92	--	
Gate-Drain Charge (Note 3)		Q <sub>gd</sub>	--	18	--	
Input Capacitance	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, F=1.0MHz	C <sub>iss</sub>	--	7428	--	pF
Output Capacitance		C <sub>oss</sub>	--	664	--	
Reverse Transfer Capacitance		C <sub>rss</sub>	--	544	--	
<b>Switching</b>						
Turn-On Delay Time (Note 3)	V <sub>DD</sub> =20V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V, R <sub>G</sub> =10Ω	t <sub>d(on)</sub>	--	18	--	nS
Rise Time (Note 3)		t <sub>r</sub>	--	10	--	
Turn-Off Delay Time (Note 3)		t <sub>d(off)</sub>	--	64	--	
Fall Time (Note 3)		t <sub>f</sub>	--	16	--	
<b>Source-Drain Diode Ratings and Characteristics (Note 2)</b>						
Forward Voltage	V <sub>GS</sub> =0V, I <sub>F</sub> =10A	V <sub>SD</sub>	--	0.7	1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I <sub>S</sub>	--	--	160	A
Pulsed Current (Note 1)		I <sub>SM</sub>	--	--	640	A

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

### Typical Electrical and Thermal Characteristics

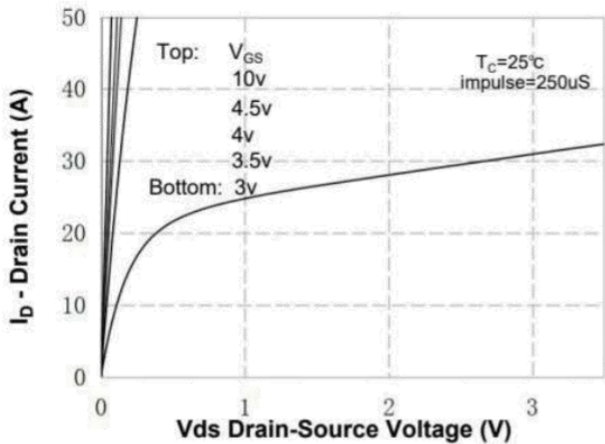


Figure 1. On-Region Characteristics

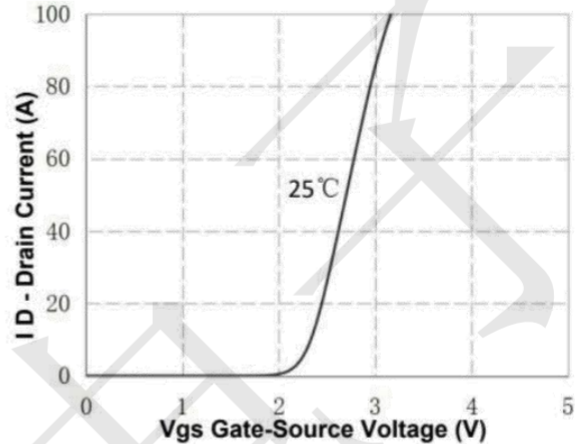


Figure 2. Transfer Characteristics

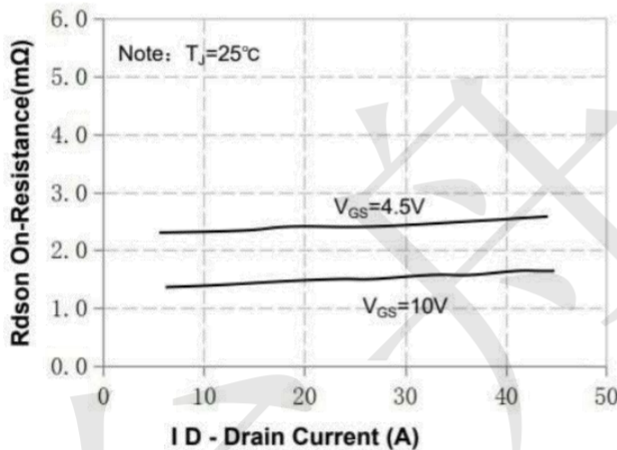


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

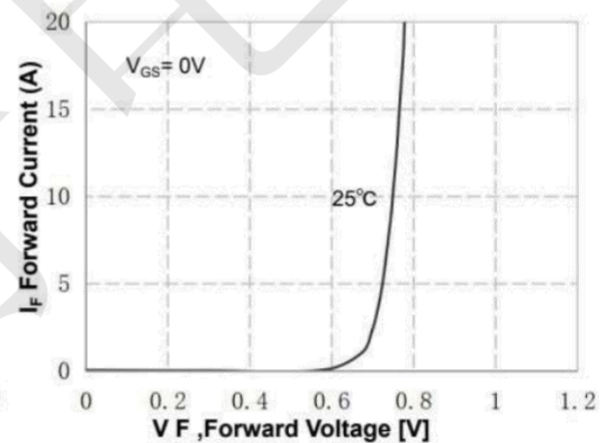


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

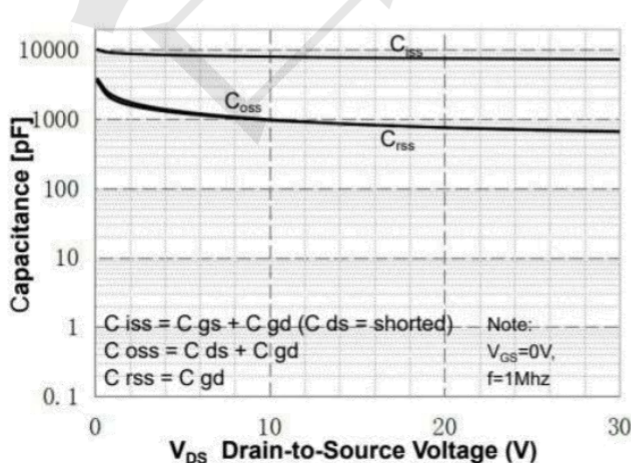


Figure 5. Capacitance Characteristics

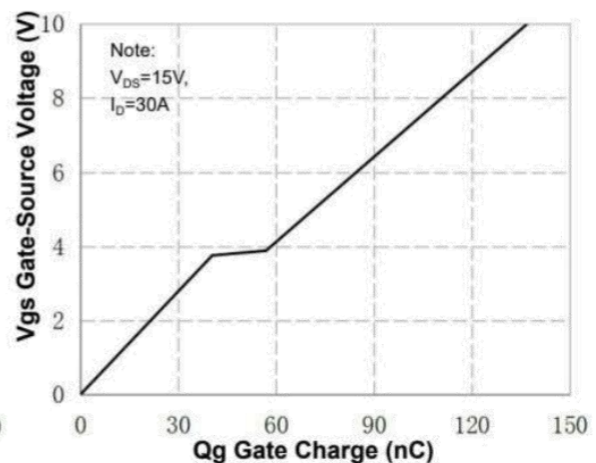
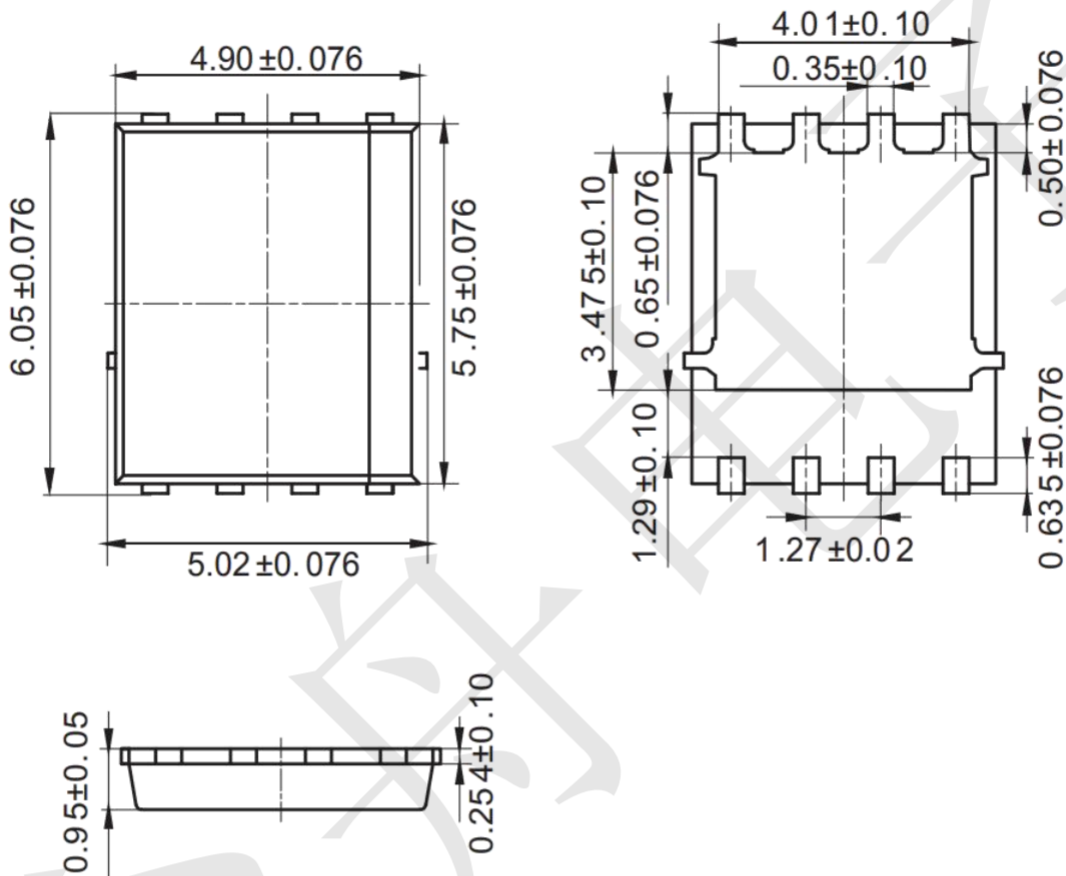


Figure 6. Gate Charge Characteristics

**Package Information**

PDFN5X6-8



**Mounting Pad Layout (unit: mm)**

