

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
30V	2.7mΩ@10V	130A
	5.2mΩ@4.5V	

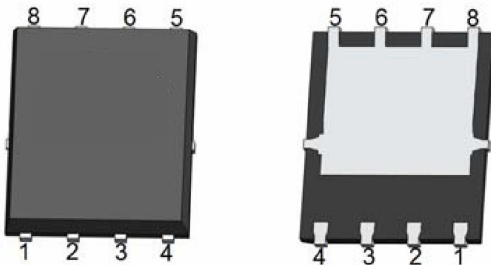
### Feature

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low  $R_{DS(ON)}$

### Application

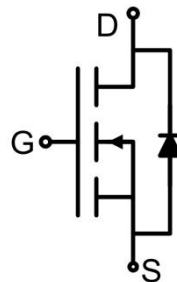
- DC-DC converter
- Power switching application
- Uninterruptible power supply

### Package

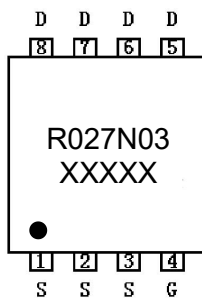


PDFN5\*6-8L

### Circuit diagram



### Marking



### Absolute maximum ratings (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current(T <sub>C</sub> =25°C, V <sub>GS</sub> = 10V) <sup>1)3)</sup>	I <sub>D</sub>	130	A
Continuous Drain Current(T <sub>C</sub> =100°C, V <sub>GS</sub> = 10V) <sup>1)3)</sup>	I <sub>D</sub> (100°C)	82	A
Pulsed Drain Current(T <sub>C</sub> =25°C, tp=100us)	I <sub>DM</sub>	520	A
Power Dissipation(T <sub>C</sub> =25°C) <sup>1)3)</sup>	P <sub>D</sub>	73	W
Thermal Resistance,Junction-to-Ambient <sup>2)</sup>	R <sub>θJA</sub>	55	°C/W
Thermal Resistance,Junction-to-Case	R <sub>θJC</sub>	1.7	°C/W
Single pulse avalanche energy (V <sub>G</sub> =10V, R <sub>G</sub> =25Ω, L=1mH, I <sub>AS</sub> =13A)	E <sub>AS</sub>	98	mJ
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +150	°C

### Electrical characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> =30V, V <sub>GS</sub> = 0V, T <sub>J</sub> =150°C			100	
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.7	2.5	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =50A		2.2	2.7	mΩ
Drain-source on-resistance		V <sub>GS</sub> =4.5V, I <sub>D</sub> =25A		4.0	5.2	
<b>Dynamic characteristics<sup>4)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f =1MHz		1250		pF
Output Capacitance	C <sub>oss</sub>			910		
Reverse Transfer Capacitance	C <sub>rss</sub>			130		
Gate resistance	R <sub>G</sub>	f =1MHz		2		Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =50A		28.8		nC
Gate-Source Charge	Q <sub>gs</sub>			4.8		
Gate-Drain Charge	Q <sub>gd</sub>			8.1		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =50A, R <sub>GEN</sub> =2.7Ω		11.7		nS
Turn-on rise time	t <sub>r</sub>			164.8		
Turn-off delay time	t <sub>d(off)</sub>			25		
Turn-off fall time	t <sub>f</sub>			12.6		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current	I <sub>S</sub>				130	A
Diode Forward voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =50A			1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =50A, di/dt =100A/μs		19.6		nS
Reverse Recovery Charge	Q <sub>rr</sub>				12.3	

Notes:

- 1) The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
- 2) The value of R<sub>θJA</sub> measured the device mounted on the 40mm\*40mm\*1.1mm single layer FR-4 PCB board with 1in<sup>2</sup> pad of 2oz. Copper, in a still air environment with T<sub>A</sub> =25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
- 3) Thermal resistance from junction to soldering point (on the exposed drain pad).
- 4) Guaranteed by design, not subject to production testing.

## Typical Characteristics

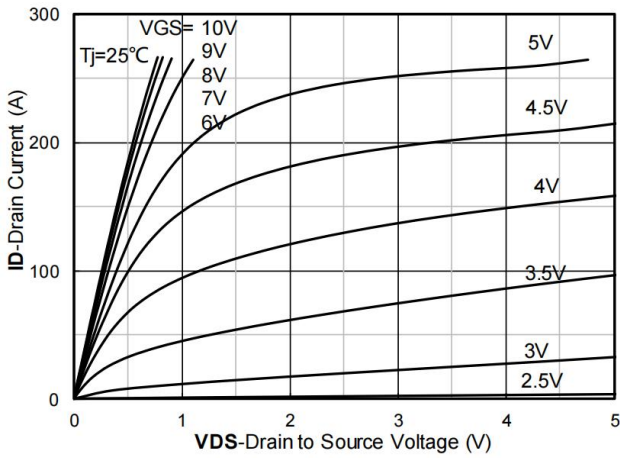


Figure 1. Output Characteristics

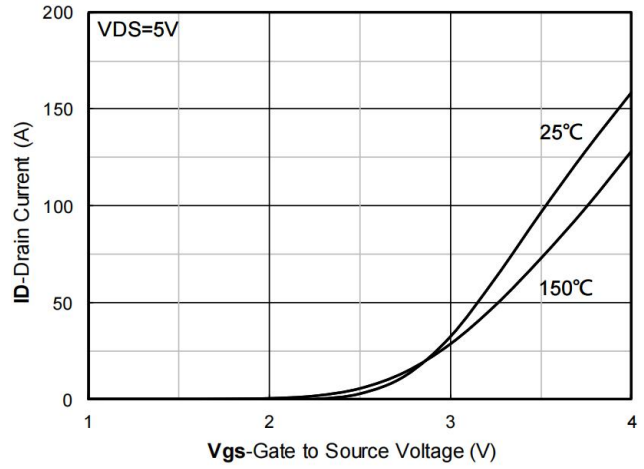


Figure 2. Transfer Characteristics

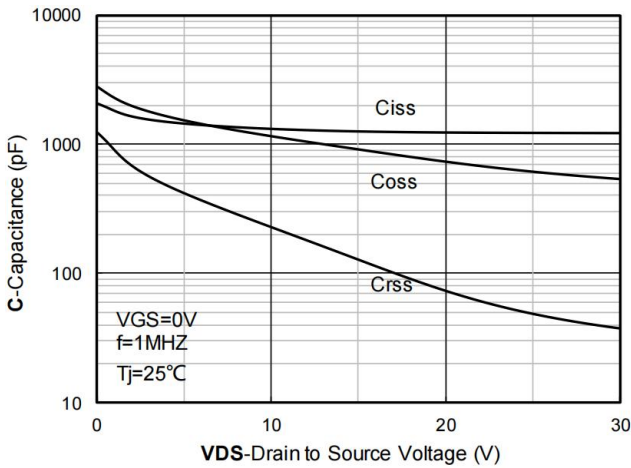


Figure 3. Capacitance Characteristics

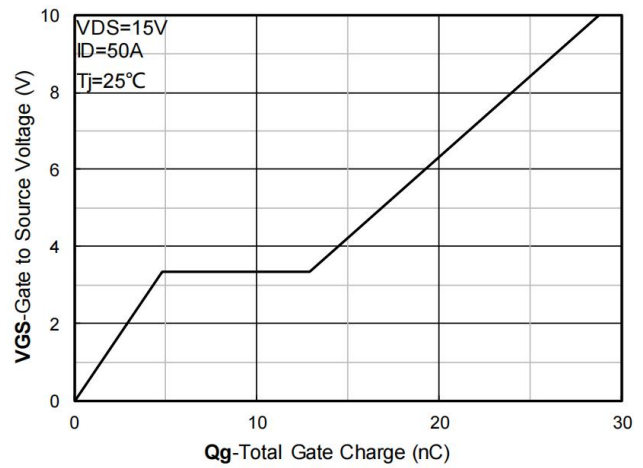


Figure 4. Gate Charge

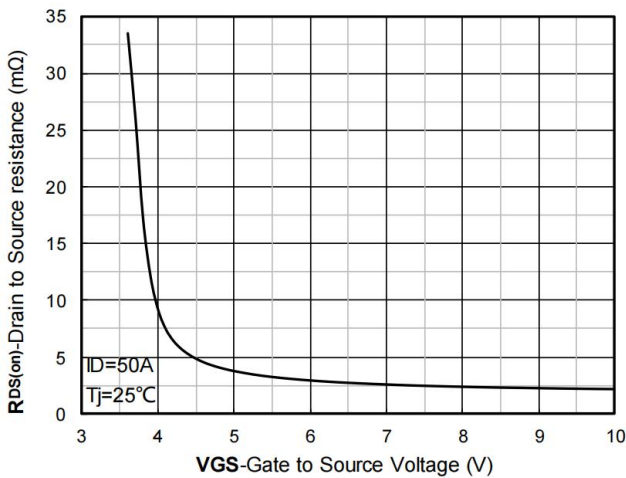


Figure 5. On-Resistance vs Gate to Source Voltage

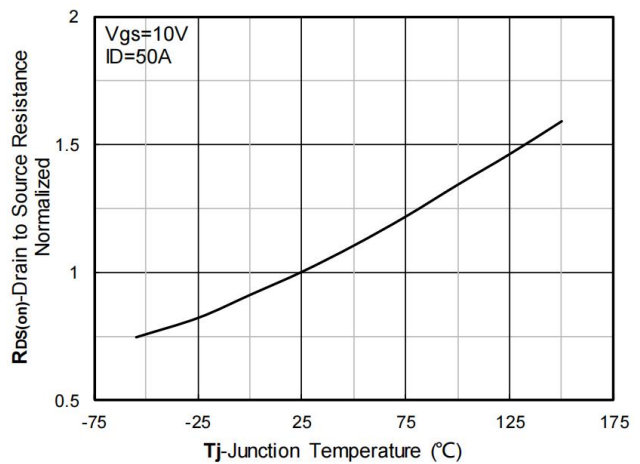


Figure 6. Normalized On-Resistance

## Typical Characteristics

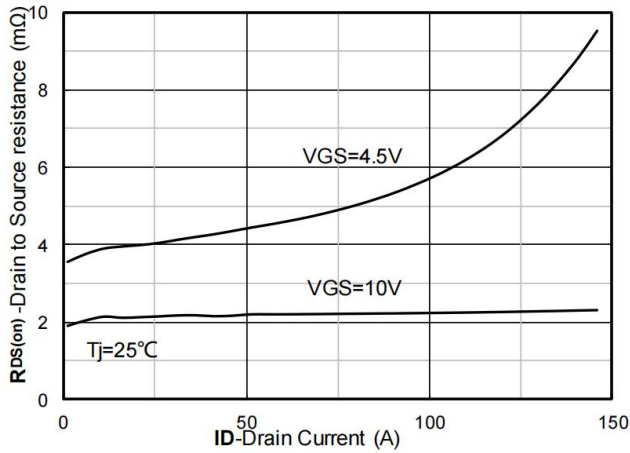


Figure 7. RDS(on) VS Drain Current

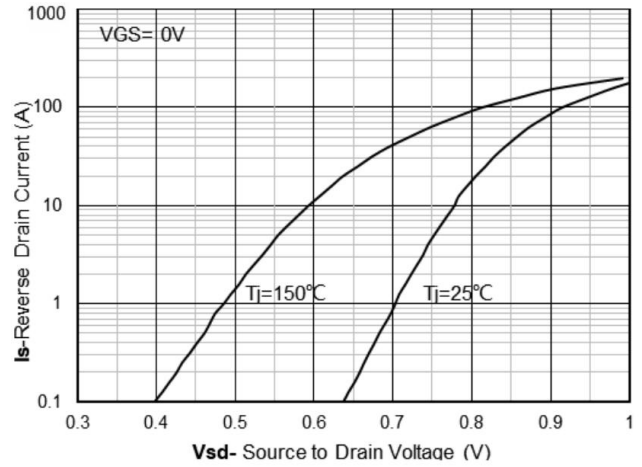


Figure 8. Forward characteristics of reverse diode

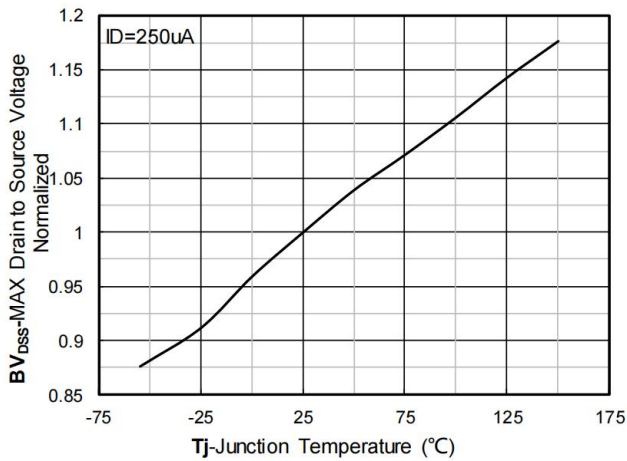


Figure 9. Normalized breakdown voltage

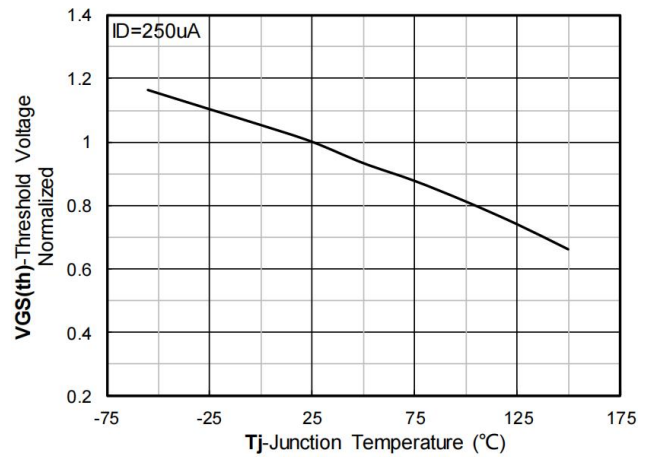


Figure 10. Normalized Threshold voltage

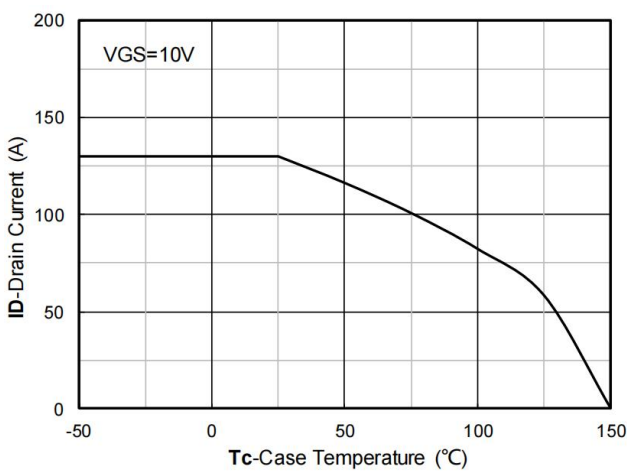


Figure 11. Current dissipation

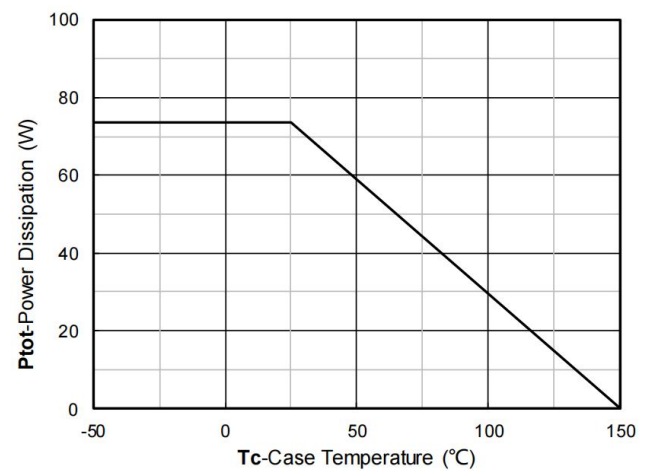


Figure 12. Power dissipation

## Typical Characteristics

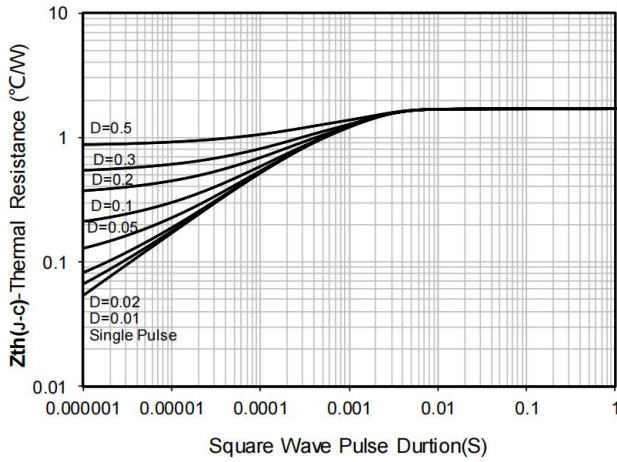


Figure 13. Maximum Transient Thermal Impedance

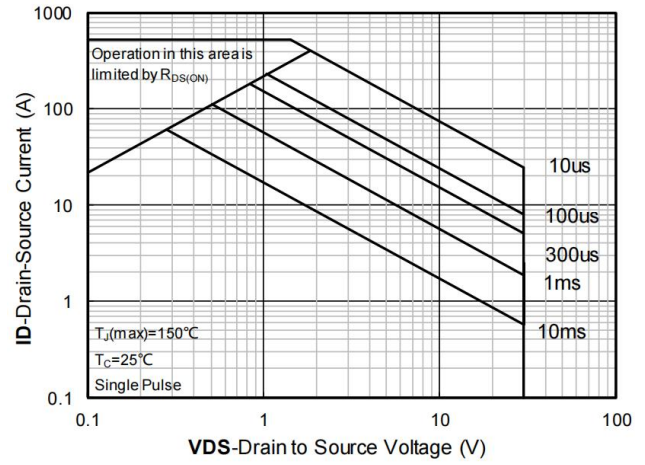
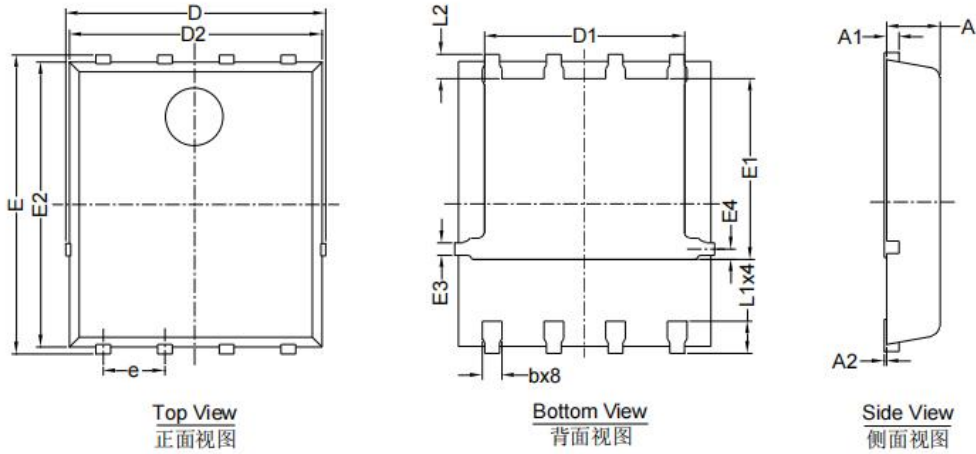


Figure 14. Safe Operation Area

### PDFN5\*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	5.150	5.550	0.203	0.219
E	5.950	6.350	0.234	0.250
A	1.000	1.200	0.039	0.047
A1	0.254 BSC		0.100 BSC	
A2	0.000	0.100	0.000	0.004
D1	3.920	4.320	0.154	0.170
E1	3.520	3.920	0.139	0.154
D2	5.000	5.400	0.197	0.213
E2	5.660	6.060	0.223	0.239
E3	0.254 REF		0.010 REF	
E4	0.210 REF		0.008 REF	
L1	0.560	0.760	0.022	0.030
L2	0.500 BSC		0.015 BSC	
b	0.310	0.510	0.012	0.020
e	1.270 BSC		0.050 BSC	