

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
80V	7.5mΩ@10V	64A
	10mΩ@6V	
	15mΩ@4.5V	

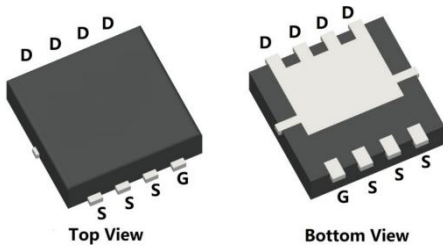
### Feature

- Advanced SGT technology
- Very low on-resistance  $R_{DS(ON)}$
- Superior thermal resistance
- Logic level gate drive

### Application

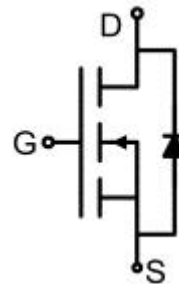
- Power switching application
- PWM application
- DC-DC converter

### Package

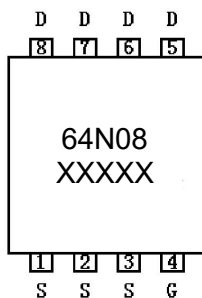


PDFN3\*3-8L

### Circuit diagram



### Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	80	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	64	A
Continuous Drain Current (T <sub>C</sub> =100°C)	I <sub>D</sub> (100 °C)	41	A
Pulsed Drain Current (t <sub>p</sub> =10μs)	I <sub>DM</sub>	256	A
Single Pulse Avalanche Energy <sup>1)</sup>	E <sub>AS</sub>	75	mJ
Power Dissipation	P <sub>D</sub>	57	W
Thermal Resistance Junction to Case	R <sub>θJC</sub>	2.2	°C/W
Operating Junction Temperature	T <sub>J</sub>	-55 ~ +150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

### Electrical characteristics (T<sub>A</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	80			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	1.9	2.5	V
Drain-source on-resistance <sup>2)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 15A		6.8	7.5	mΩ
		V <sub>GS</sub> = 6V, I <sub>D</sub> = 10A		8	10	
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5A		10	15	
<b>Dynamic characteristics<sup>3)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V, f = 1MHz		1551		pF
Output Capacitance	C <sub>oss</sub>			294		
Reverse Transfer Capacitance	C <sub>rss</sub>			7		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A		35		nC
Gate-Source Charge	Q <sub>gs</sub>			4.4		
Gate-Drain Charge	Q <sub>gd</sub>			10.6		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 15V, I <sub>D</sub> = 20A R <sub>G</sub> = 3.3Ω		7.5		nS
Turn-on rise time	t <sub>r</sub>			39		
Turn-off delay time	t <sub>d(off)</sub>			38		
Turn-off fall time	t <sub>f</sub>			50		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current	I <sub>S</sub>				64	A
Diode Forward voltage <sup>1)</sup>	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 10A			1.2	V
Reverse Recovery Time	T <sub>rr</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 10A		40		nS
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = -100A/μs		42		nC

Notes:

- 1) The EAS data shows Max. rating. The test condition is V<sub>DD</sub> = 40V, V<sub>GS</sub> = 10V, L = 0.5mH.
- 2) The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
- 3) Guaranteed by design, not subject to production.

## Typical Characteristics

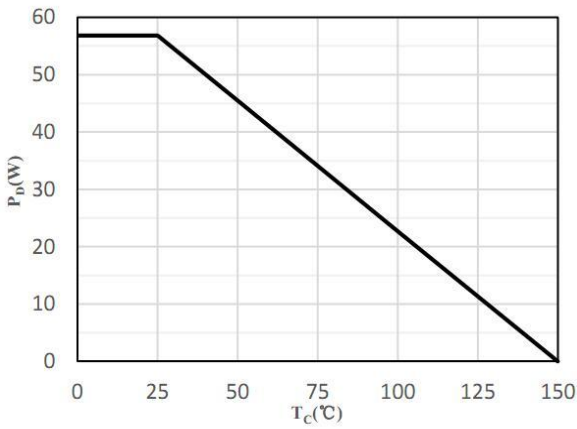


Fig 1 Power Dissipation

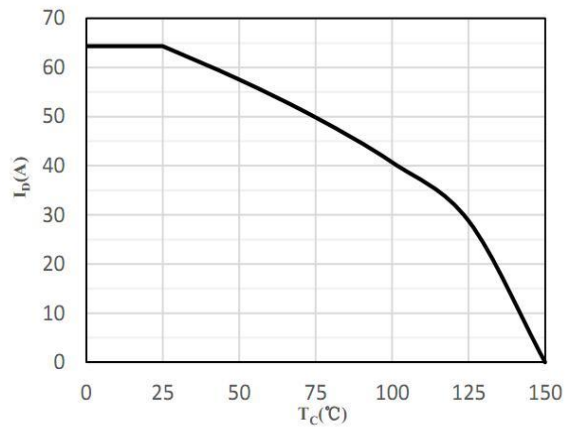


Fig 2 Drain Current

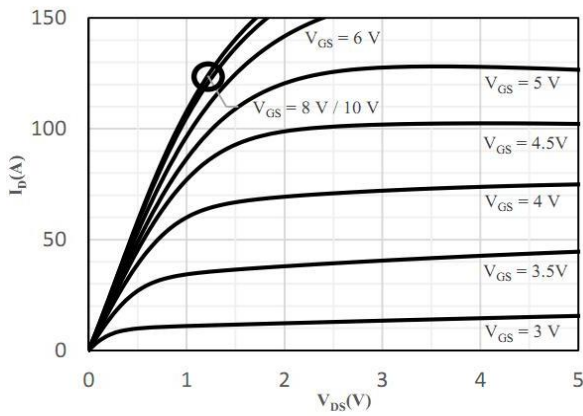


Fig 3 Typical Output Characteristics

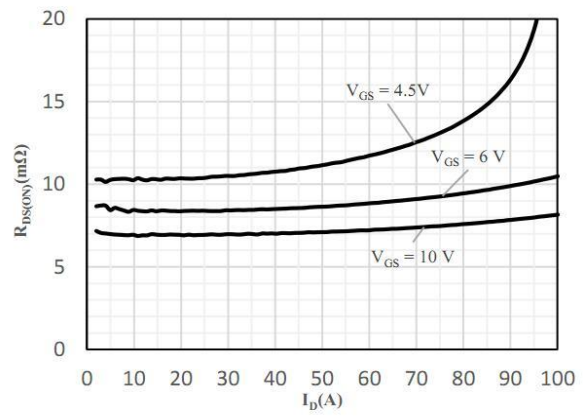


Fig 4 On-Resistance vs. Drain Current

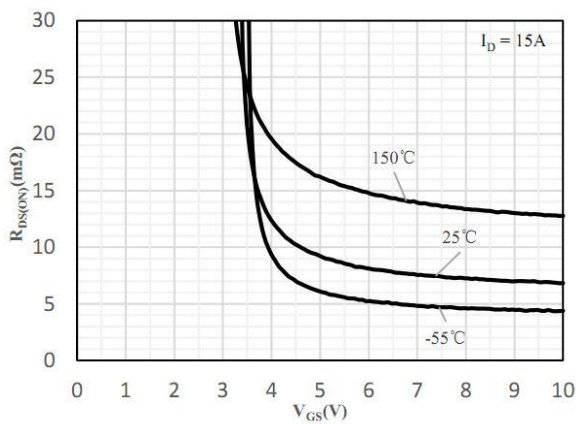


Fig 5 On-Resistance vs. Gate-Source Voltage

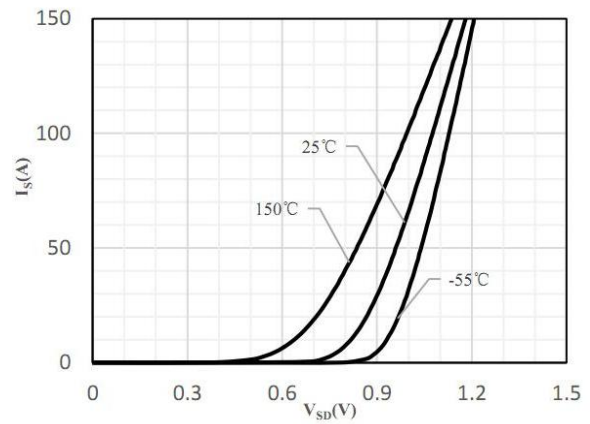
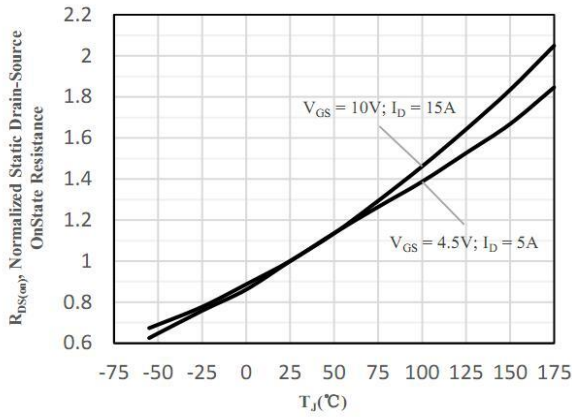
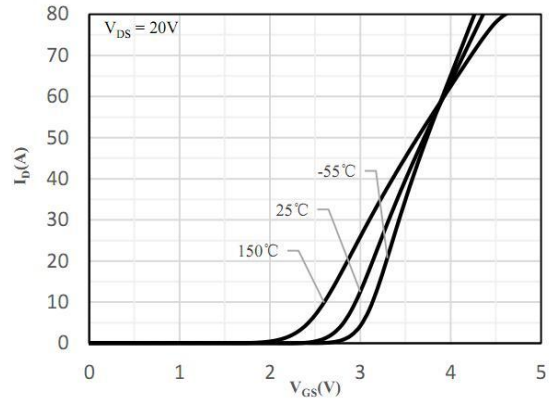


Fig 6 Body-Diode Characteristics

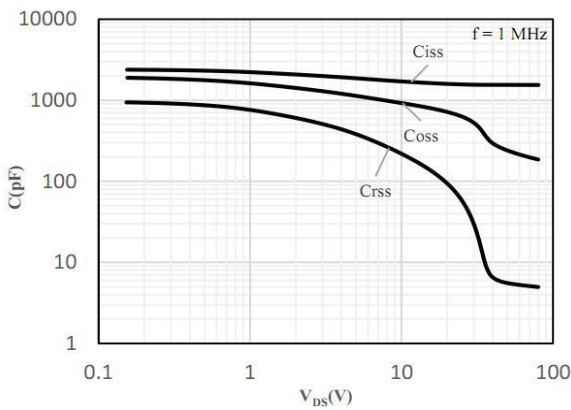
## Typical Characteristics



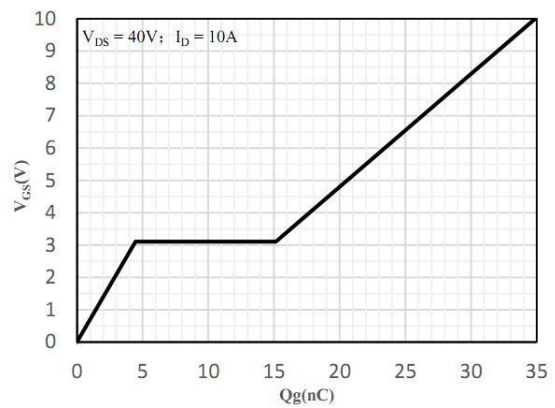
**Fig 7 Normalized On-Resistance vs. Junction Temperature**



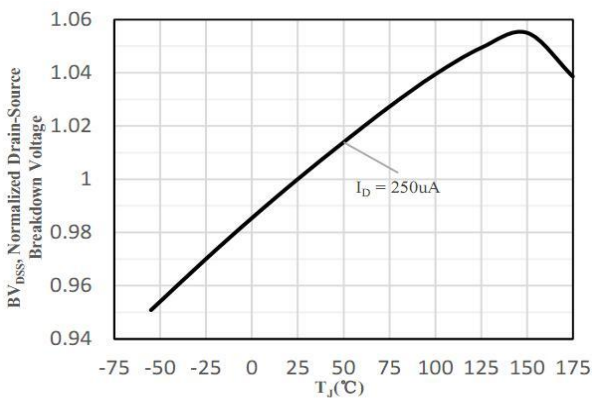
**Fig 8 Transfer Characteristics**



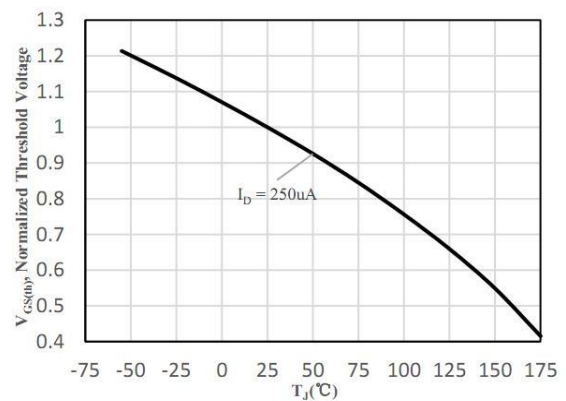
**Fig 9 Capacitance Characteristics**



**Fig 10 Gate-Charge Characteristics**



**Fig 11 Normalized Breakdown Voltage vs. Junction Temperature**



**Fig 12 Normalized  $V_{GS(th)}$  vs. Junction Temperature**

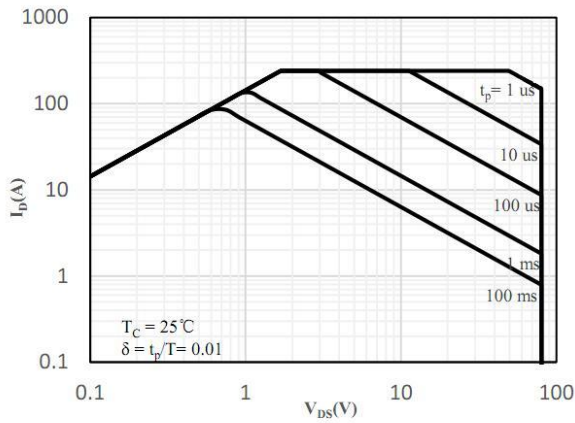


Fig 13 Safe Operation Area

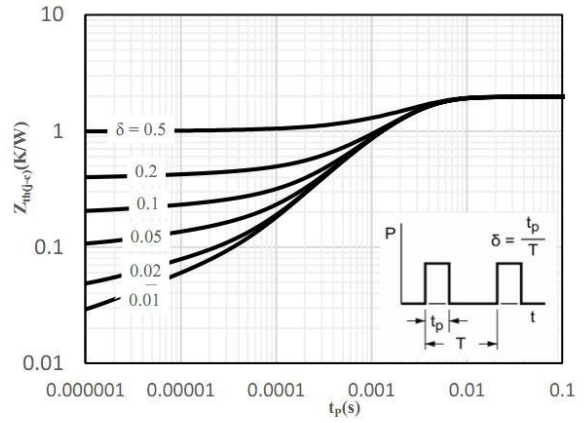
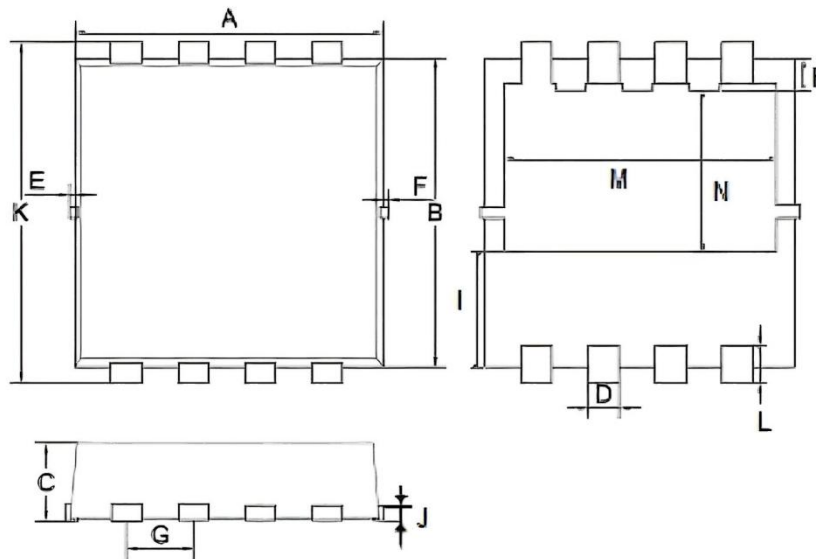


Fig 14 Maximum transient thermal impedance

### PDFN3\*3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.900	3.100	0.114	0.122
B	2.900	3.100	0.114	0.122
C	0.650	0.850	0.026	0.033
D	0.200	0.400	0.008	0.016
E	0.000	0.100	0.000	0.004
F	0.000	0.100	0.000	0.004
G	0.550	0.750	0.022	0.030
H	0.200	0.400	0.008	0.016
I	0.700	1.100	0.028	0.043
J	0.100	0.200	0.004	0.008
K	3.150	3.450	0.124	0.136
L	0.200	0.400	0.008	0.016
M	2.350	2.550	0.093	0.100
N	1.500	1.900	0.059	0.075