

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	7.5mΩ@10V	30A
	12mΩ@4.5V	

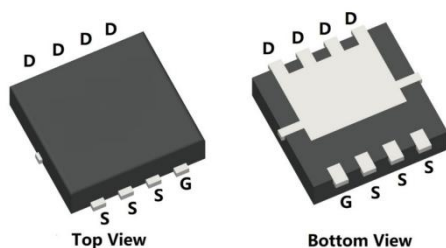
Feature

- Fast switching
- Low gate charge and $R_{DS(ON)}$
- Advanced split gate trench technology

Application

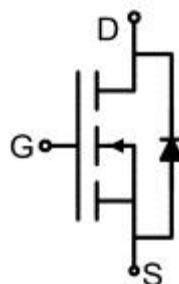
- Power switching application
- PWM application
- DC-DC converter

Package

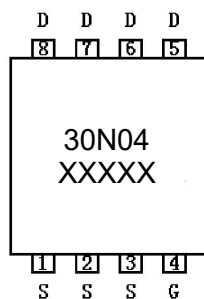


PDFN3*3-8L

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	30	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	20	A
Pulsed Drain Current	I_{DM}	120	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	81	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	26	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	4.8	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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

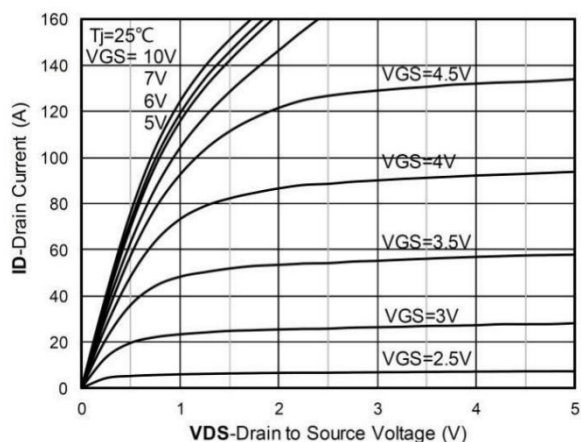
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=32V, V_{GS}=0V, T_J=25^{\circ}C$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		6	7.5	m Ω
		$V_{GS}=4.5V, I_D=10A$		8.5	12	
Dynamic characteristics ²⁾						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		623		pF
Output Capacitance	C_{oss}			311		
Reverse Transfer Capacitance	C_{rss}			21		
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=85A$		21		nC
Gate-Source Charge	Q_{gs}			4		
Gate-Drain Charge	Q_{gd}			5		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=20V, V_{GS}=10V, I_D=85A$ $R_G=1.6\Omega$		7		nS
Turn-on rise time	t_r			2.5		
Turn-off delay time	$t_{d(off)}$			21		
Turn-off fall time	t_f			3.5		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				30	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=1A$			1.2	V
Reverse Recovery Time	T_{rr}	$I_S=20A, di/dt=100A/\mu s$		28		nS
Reverse Recovery Charge	Q_{rr}	$T_J=25^{\circ}C$		16		nC

Notes:

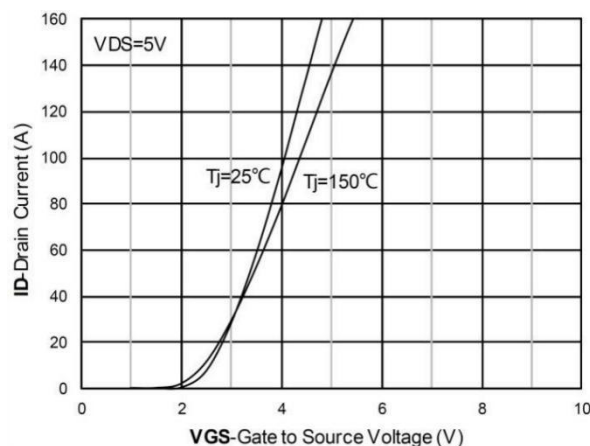
1) The test condition is $V_{DD}=20\text{V}, V_{GS}=10\text{V}, L=0.5\text{mH}, R_G=25\Omega$.

2) Guaranteed by design, not subject to production.

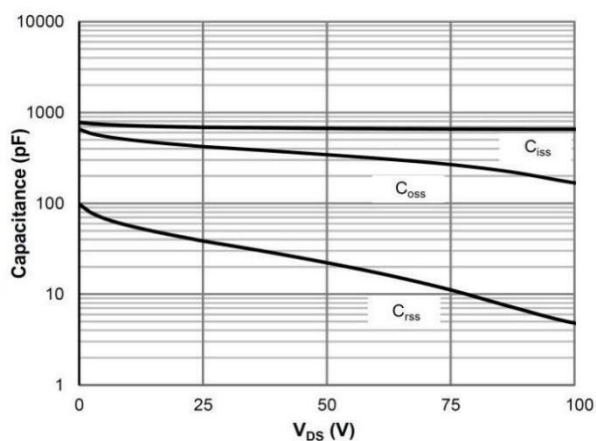
Typical Characteristics



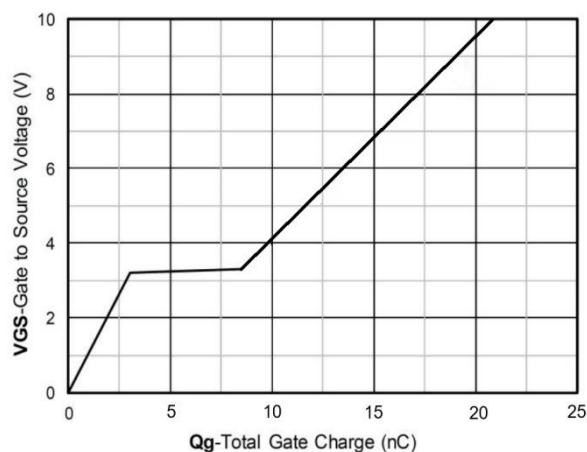
Output Characteristics



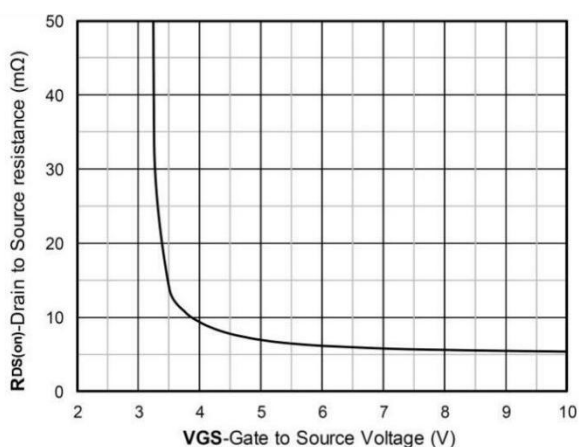
Transfer Characteristics



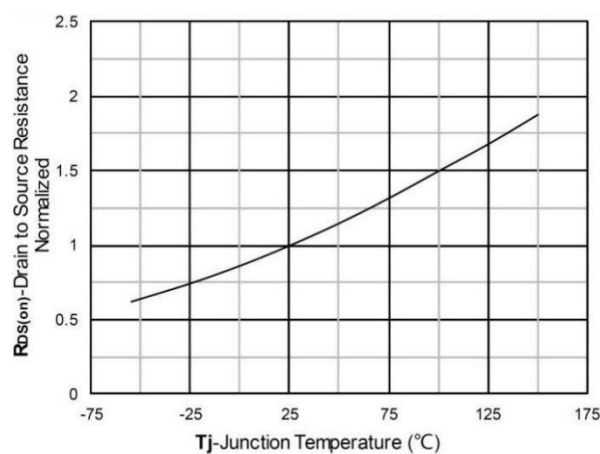
Capacitance Characteristics



Gate Charge

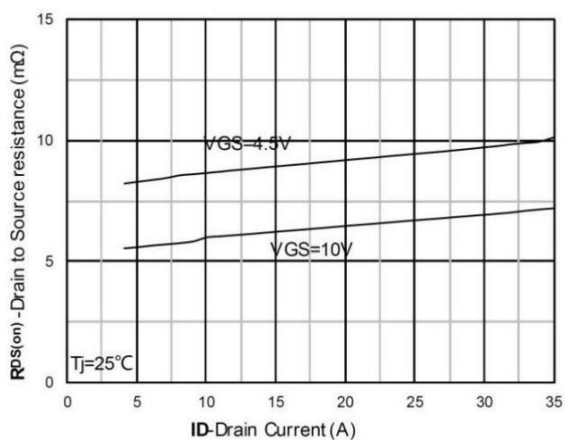


On-Resistance vs Gate to Source Voltage

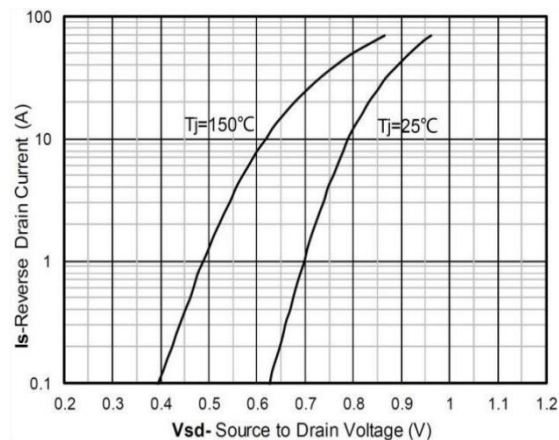


Normalized On-Resistance

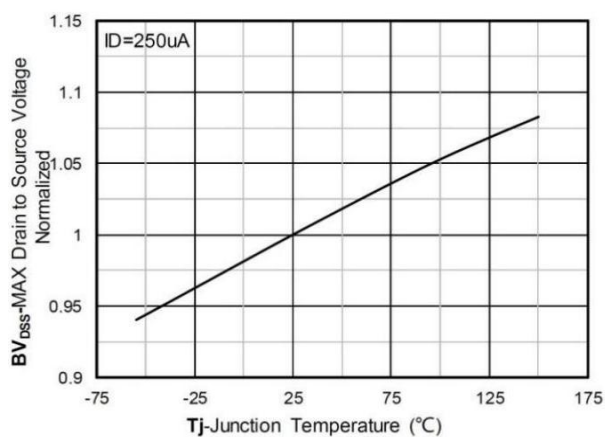
Typical Characteristics



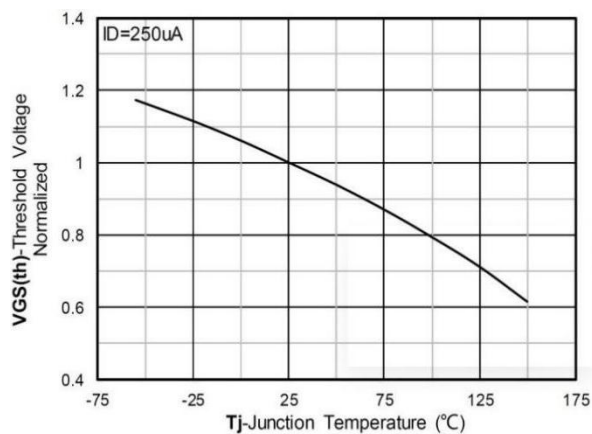
$R_{DS(on)}$ VS Drain Current



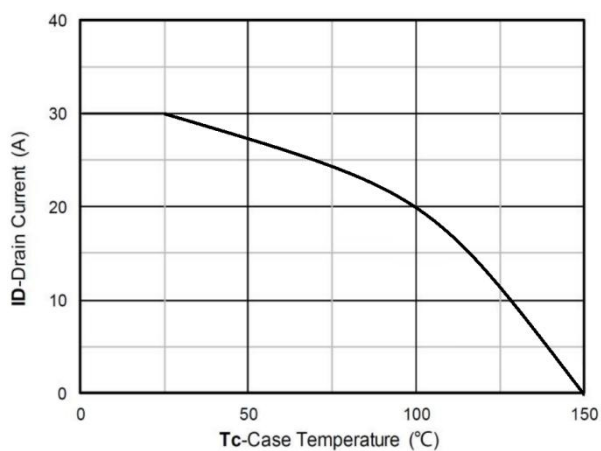
Forward characteristics of reverse diode



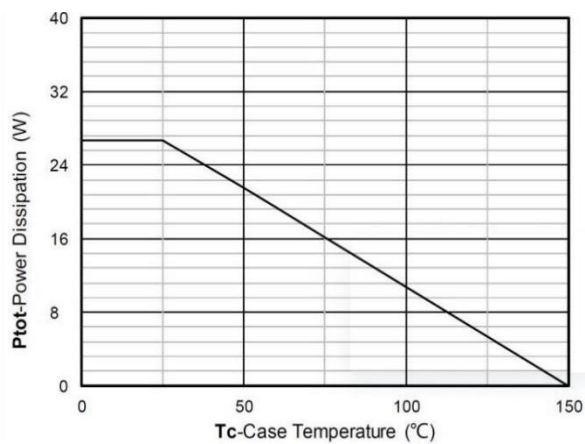
Normalized breakdown voltage



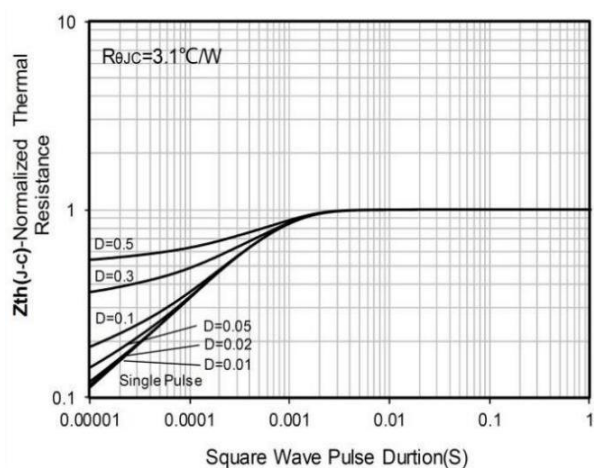
Normalized Threshold voltage



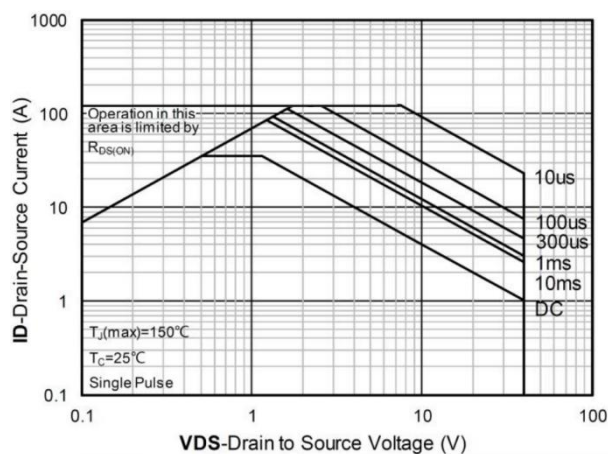
Current dissipation



Power dissipation

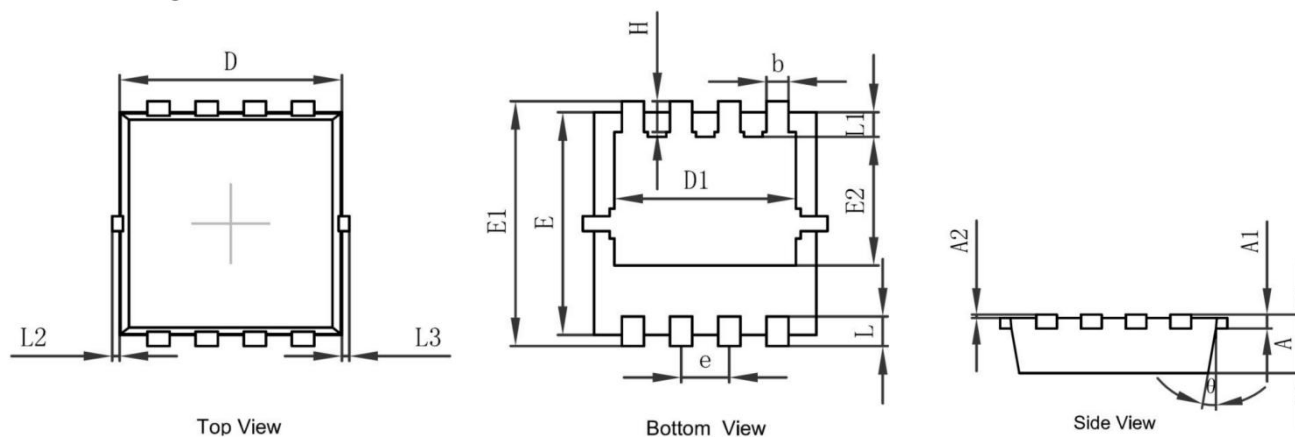


Maximum Transient Thermal Impedance



Safe Operation Area

PDFN3*3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0.000	0.050	0.000	0.002
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°