

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	9.5mΩ@-20V	-50A
	11mΩ@-10V	
	19mΩ@-4.5V	

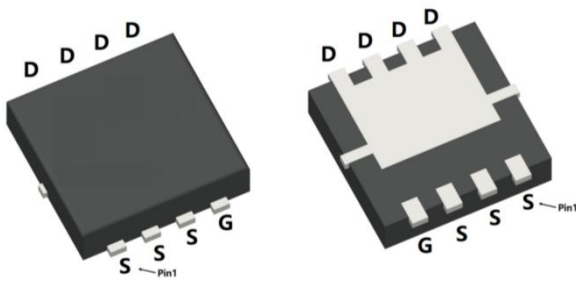
Feature

- Trench Power LV MOSFET technology
- High density cell design for Low RDS(ON)
- High Speed switching

Application

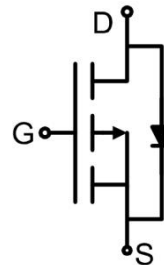
- Battery protection
- Load switch
- Power management

Package



PDFN3.3*3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±25	V
Continuous Drain Current(T _C =25°C)	I _D	-50	A
Continuous Drain Current(T _C =100°C)	I _D (100 °C)	-31	A
Pulsed Drain Current ¹⁾	I _{DM}	-200	A
Power Dissipation ³⁾ (T _C =25°C)	P _D	46	W
Single pulse avalanche energy ²⁾	E _{AS}	95.2	mJ
Thermal Resistance,Junction-to-Ambient ⁴⁾	R _{θJA}	65	°C/W
Thermal Resistance,Junction-to-Case	R _{θJC}	2.7	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=25 °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 = -250μA	-30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -30V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±25V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.2	-1.8	-2.8	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -20V, I _D = -25A		7.2	9.5	mΩ
		V _{GS} = -10V, I _D = -25A		8.3	11	
		V _{GS} = -4.5V, I _D = -10A		14	19	
Gate resistance	R _G	f = 1.0MHz		15		Ω
Dynamic characteristics⁵⁾						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		1745		pF
Output Capacitance	C _{oss}			300		
Reverse Transfer Capacitance	C _{rss}			265		
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -20A		38		nC
Gate-Source Charge	Q _{gs}			6		
Gate-Drain Charge	Q _{gd}			10		
Turn-on delay time	t _{d(on)}	V _{DD} = -15V, V _{GS} = -10V, I _D = -20A, R _{GEN} = 2.3Ω		8		nS
Turn-on rise time	t _r			6		
Turn-off delay time	t _{d(off)}			108		
Turn-off fall time	t _f			69		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-50	A
Diode Forward voltage	V _{SD}	V _{GS} = 0V, I _S = -25A			-1.2	V
Reverse Recovery Time	t _{rr}	I _F = -20A		43		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs		22		nC

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) T_J = 25°C, V_{DD} = -25V, V_G = -10V, R_G = 25Ω, L = 1mH, I_{AS} = -13.8A.
- 3) P_d is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.
- 4) The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in the still air environment with T_A = 25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
- 5) Guaranteed by design, not subject to production testing.

Typical Characteristics

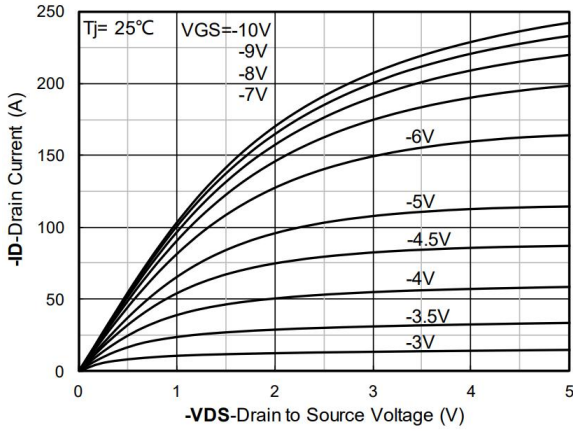


Figure 1. Output Characteristics

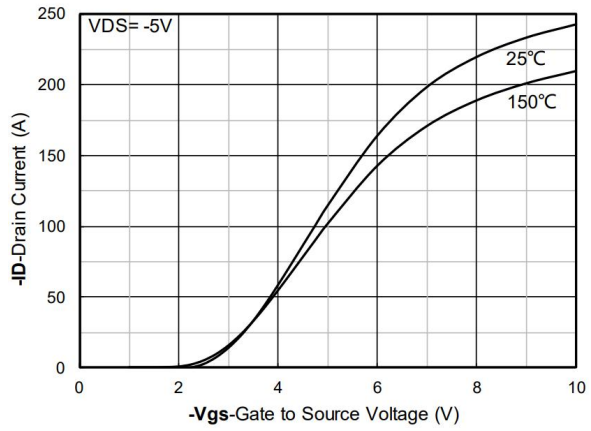


Figure 2. Transfer Characteristics

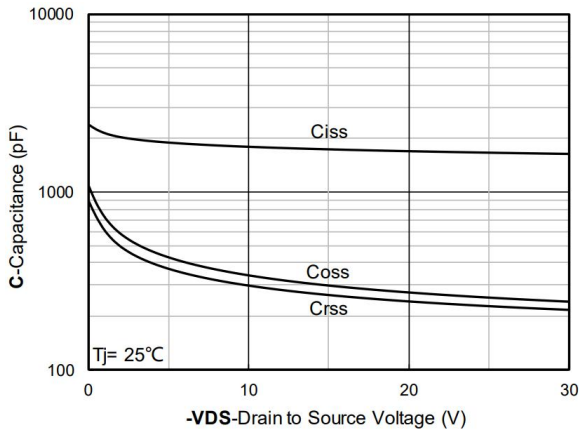


Figure 3. Capacitance Characteristics

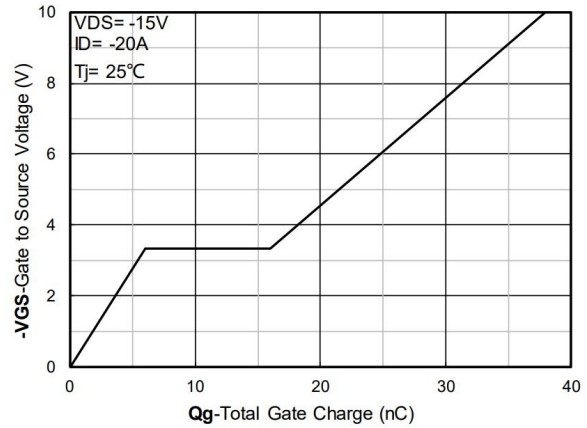


Figure 4. Gate Charge

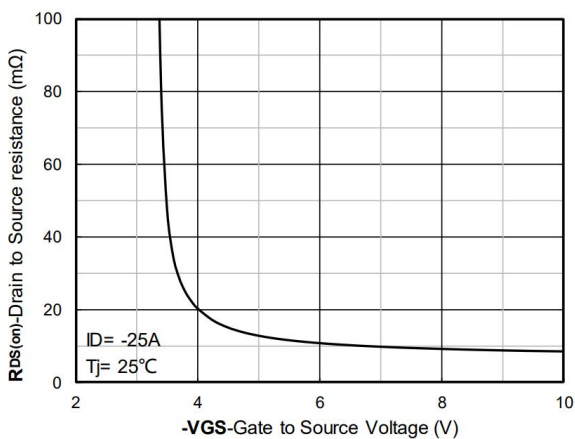


Figure 5. On-Resistance vs Gate to Source Voltage

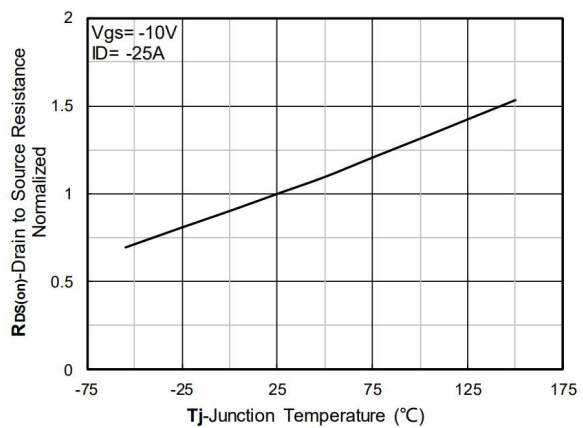


Figure 6. Normalized On-Resistance

Typical Characteristics

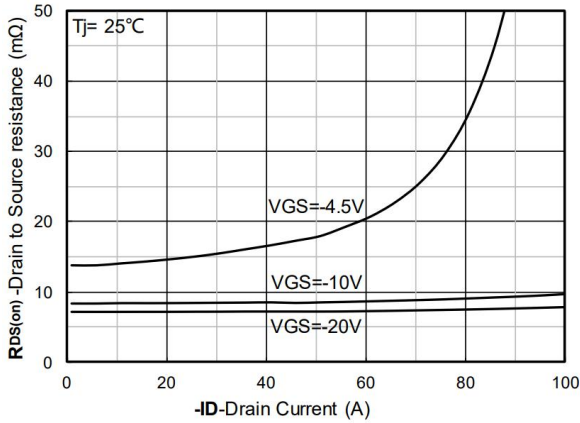


Figure 7. $R_{DS(on)}$ VS Drain Current

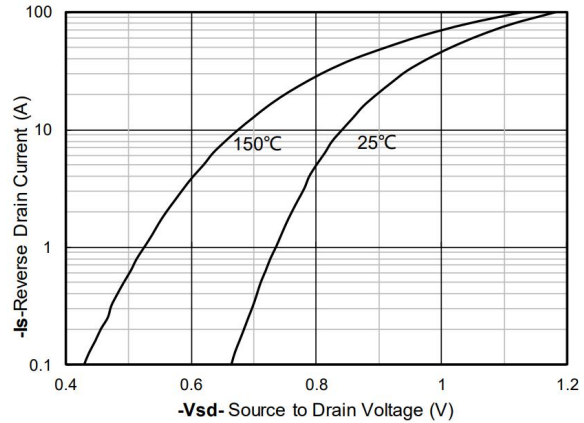


Figure 8. Forward characteristics of reverse diode

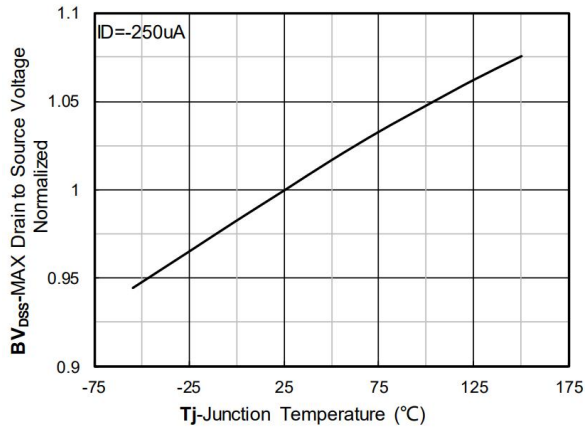


Figure 9. Normalized breakdown voltage

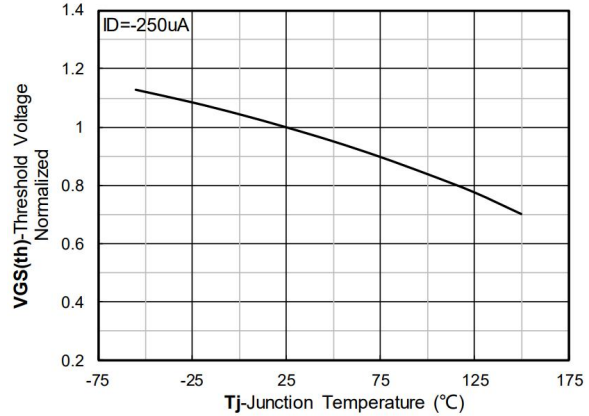


Figure 10. Normalized Threshold voltage

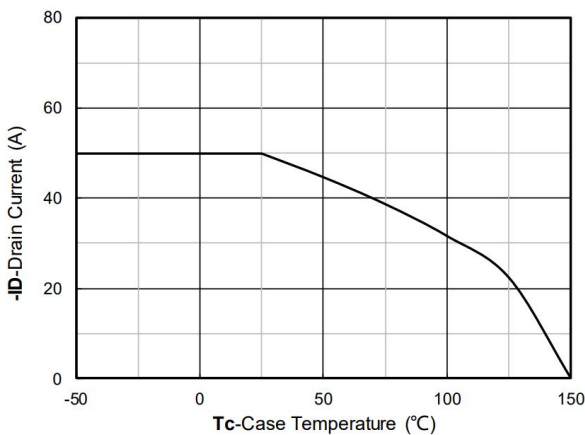


Figure 11. Current dissipation

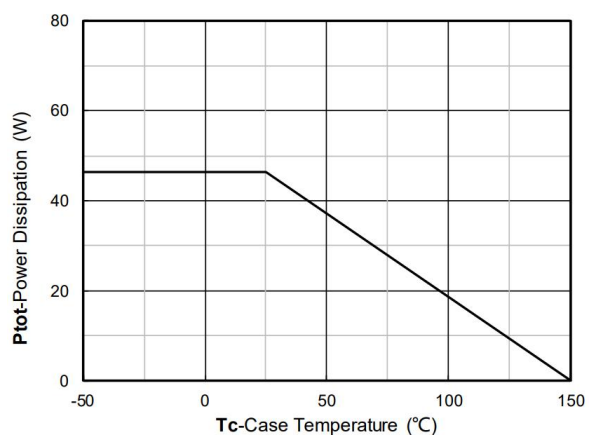


Figure 12. Power dissipation

Typical Characteristics

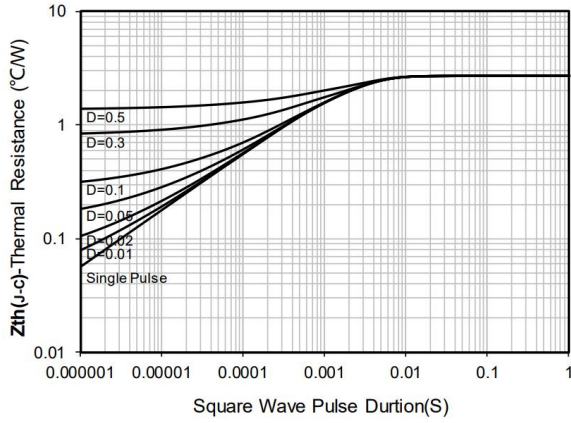


Figure 13. Maximum Transient Thermal Impedance

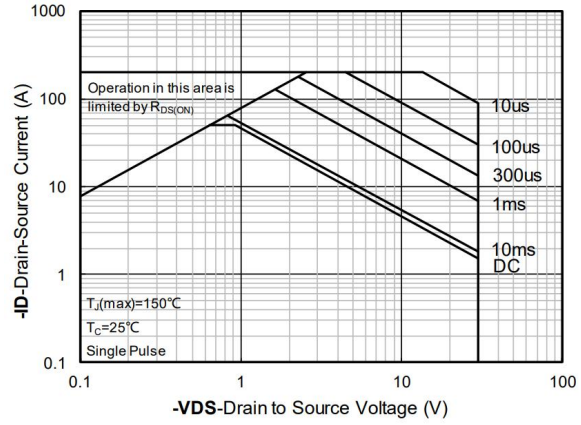
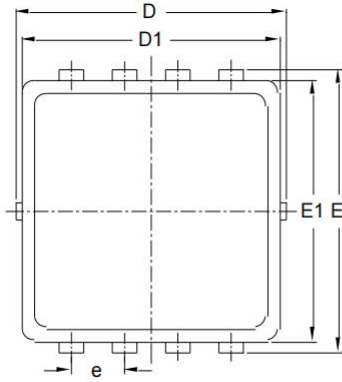
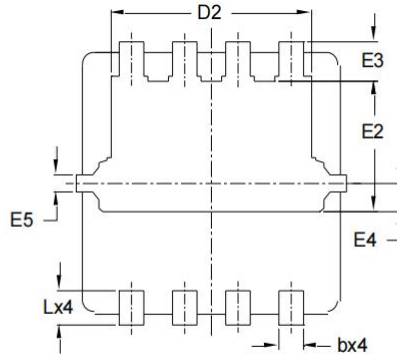


Figure 14. Safe Operation Area

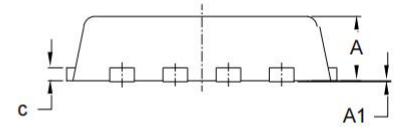
PDFN3.3*3.3-8L Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.850	0.028	0.033
A1	0.000	0.050	0.000	0.002
b	0.200	0.400	0.008	0.016
c	0.100	0.250	0.004	0.010
D	3.150	3.450	0.124	0.136
D1	3.000	3.300	0.118	0.130
D2	2.250	2.650	0.089	0.104
E	3.150	3.450	0.124	0.136
E1	2.900	3.200	0.114	0.126
E2	1.320	1.720	0.052	0.068
E3	0.280	0.650	0.011	0.026
E4	0.330 REF		0.013 REF	
E5	0.200 REF		0.008 REF	
e	0.650 BSC		0.026 BSC	
L	0.300	0.500	0.012	0.020