

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	5.7mΩ@-10V	-55A
	9.5mΩ@-4.5V	

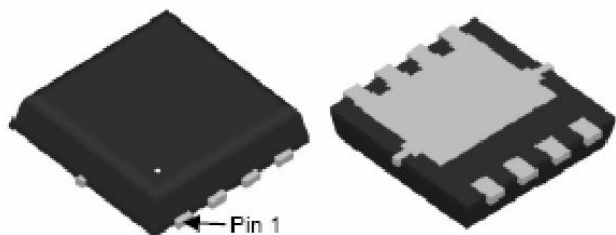
Feature

- High Speed switching
- Enhancement mode

Application

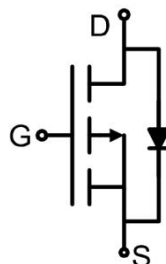
- PWM Application
- Load Switch
- Power Management

Package

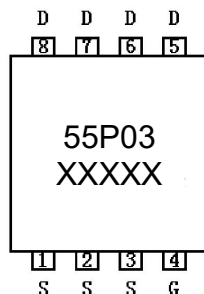


PDFN3.3X3.3-8L

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}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	-55	A
Pulsed Drain Current ¹⁾	I _{DM}	-220	A
Power Dissipation ¹⁾ (T _C =25°C)	P _D	30.5	W
Thermal Resistance, Junction-to-Case ¹⁾	R _{θJC}	4.1	°C/W
Single pulse avalanche energy ²⁾	E _{AS}	121	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_C=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} =±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.1	-1.5	-2.2	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-20A		4.4	5.7	mΩ
		V _{GS} =-4.5V, I _D =-15A		7.3	9.5	
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f =1MHz		2754		pF
Output Capacitance	C _{oss}			505		
Reverse Transfer Capacitance	C _{rss}			415		
Total Gate Charge	Q _g	V _{DS} =-15V, V _{GS} =-10V, I _D =-5A		69		nC
Gate-Source Charge	Q _{gs}			12		
Gate-Drain Charge	Q _{gd}			13		
Turn-on delay time	t _{d(on)}	V _{DD} =-15V, V _{GS} =-10V, I _D =-10A, R _L =5Ω, T _J =25℃		12		nS
Turn-on rise time	t _r			72		
Turn-off delay time	t _{d(off)}			78		
Turn-off fall time	t _f			60		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-55	A
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _{SD} =-20A, T _J =25℃			-1.2	V
Reverse Recovery Time	t _{rr}	I _F = -20A , dif/dt =100A/μs		23		nS
Reverse Recovery Charge	Q _{rr}			45		nC

Notes:

- 1) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%, Repetitive rating, pulse width limited by junction temperature T_{J(MAX)} =150°C.
- 2) Starting T_J= 25°C, L=0.1mH, I_{AS}=-62A.
- 3) Guaranteed by design, not subject to production testing.

Typical Characteristics

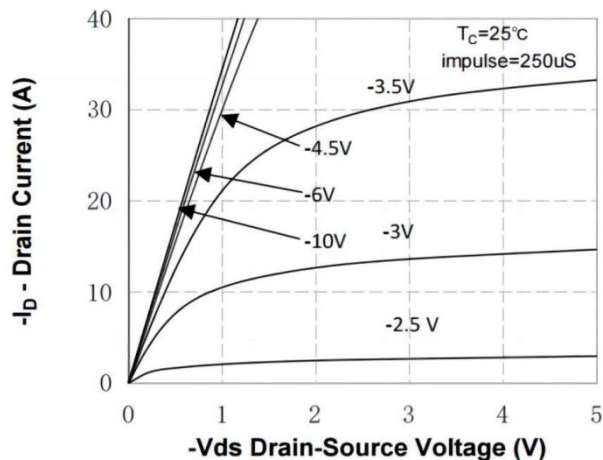


Figure 1. On-Region Characteristics

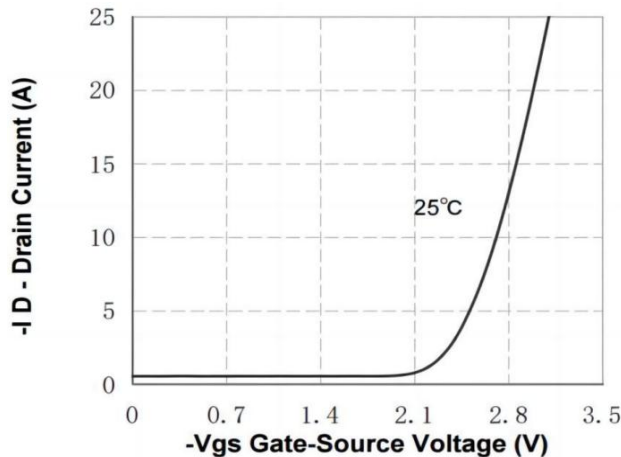


Figure 2. Transfer Characteristics

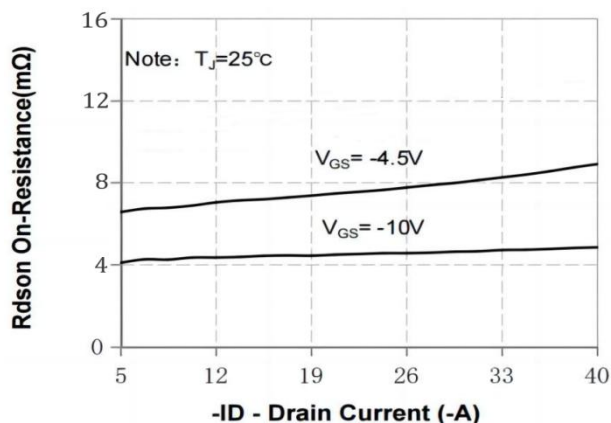


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

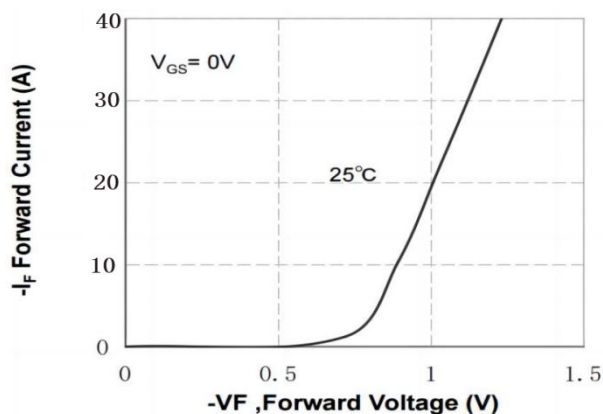


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

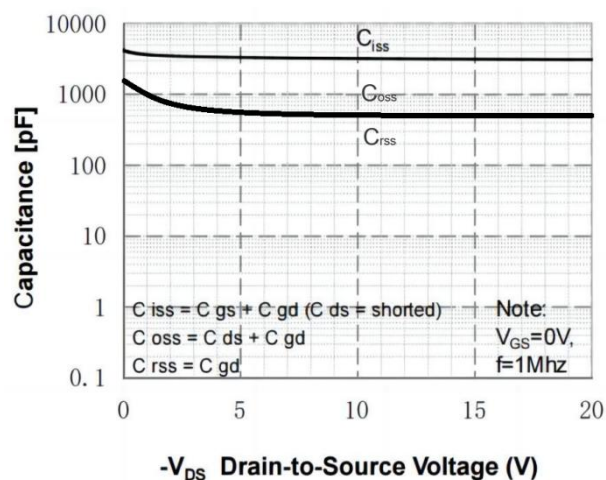


Figure 5. Capacitance Characteristics

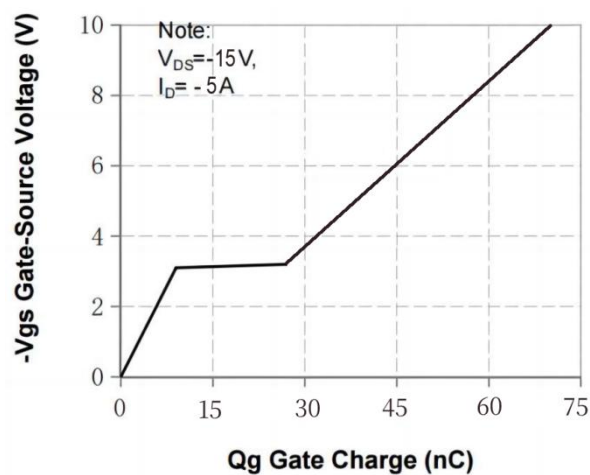


Figure 6. Gate Charge Characteristics

Typical Characteristics

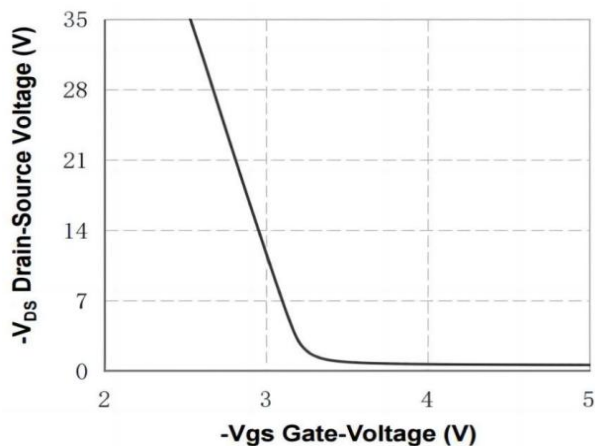


Figure 7. V_{DS} Drain-Source Voltage vs Gate Voltage

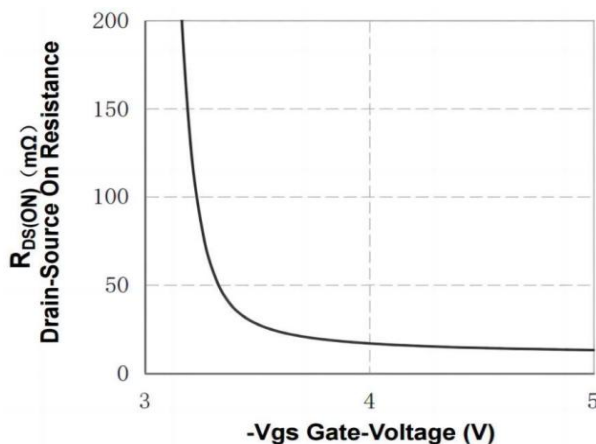


Figure 8. On-Resistance vs Gate Voltage

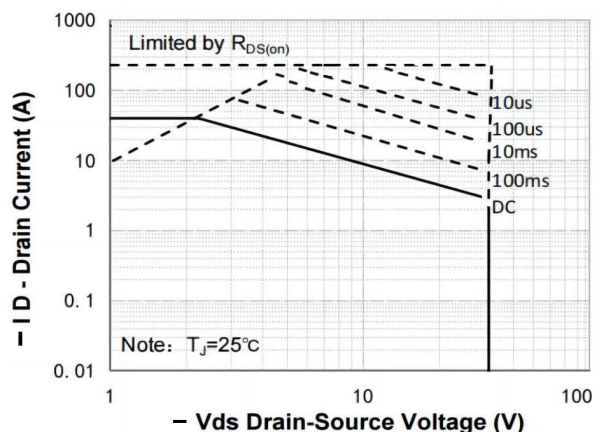


Figure 9. Maximum Safe Operating Area

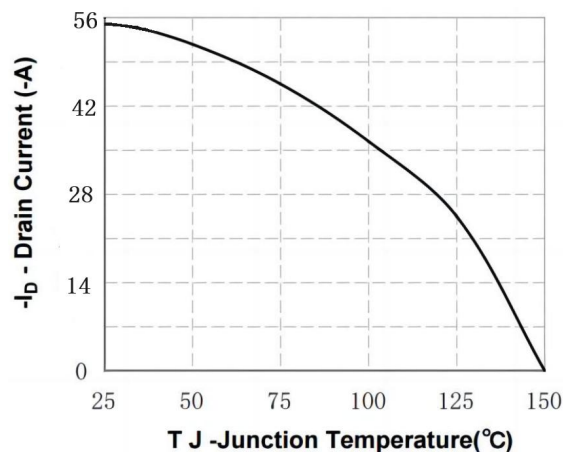


Figure 10. Maximum Continuous Drain Current vs Temperature

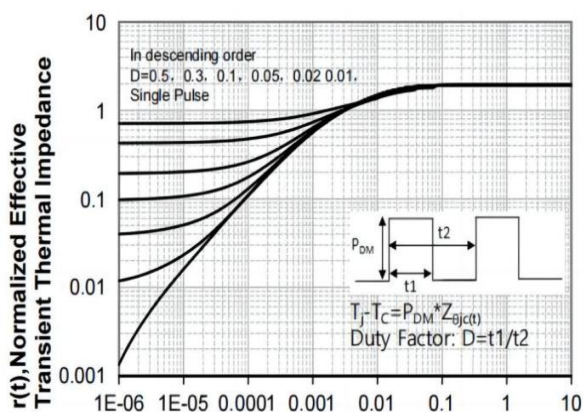
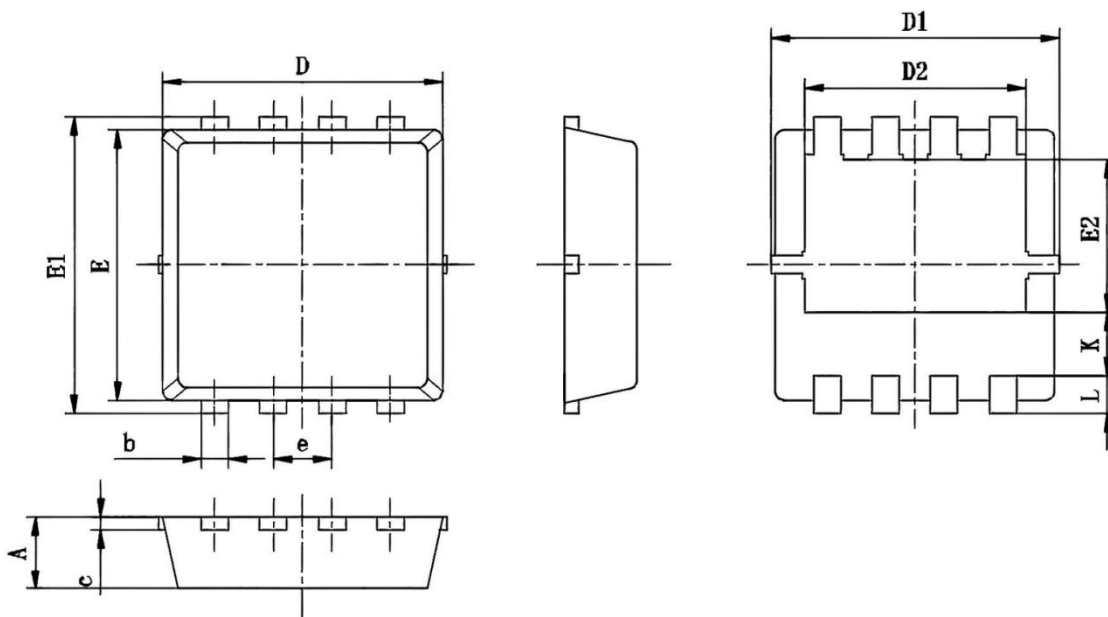


Figure 11

PDFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
D	3.000	3.200	0.118	0.126
D1	3.000	3.400	0.118	0.134
D2	2.250	2.650	0.089	0.104
E	2.900	3.100	0.114	0.122
E1	3.100	3.500	0.122	0.138
E2	1.550	1.950	0.061	0.077
K	0.65 BSC		0.026	
e	0.65 BSC		0.026	
b	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
L	0.300	0.550	0.012	0.022