

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	15mΩ@-10V	-24A
	25.5mΩ@-4.5V	

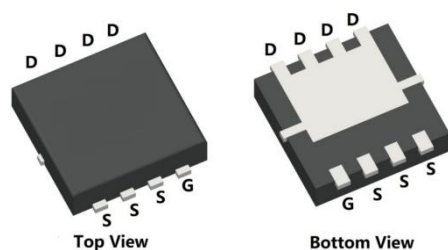
Feature

- Advanced Trench Technology
- Excellent $R_{DS(on)}$ and Low Gate Charge

Application

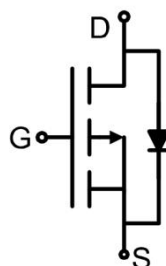
- Power management
- PWM Application
- Load switch

Package

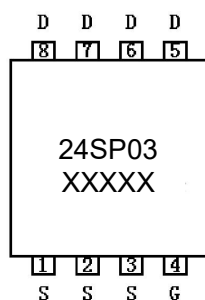


PDFN3.3*3.3-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	-24	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	-14.4	A
Pulsed Drain Current ¹⁾	I_{DM}	-96	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	39	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	14.7	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	8.5	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			-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	-1.6	-2.5	V
Drain-source on-resistance ³⁾	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$		11.5	15	mΩ
		$V_{GS}=-4.5V, I_D=-8A$		19.5	25.5	
Dynamic characteristics ⁴⁾						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		900		pF
Output Capacitance	C_{oss}			172		
Reverse Transfer Capacitance	C_{rss}			146		
Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-10V$ $I_D=-5A$		22		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			6		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=-15V, V_{GS}=-10V$ $I_D=-5A, R_G=2.5\Omega$		10		nS
Turn-on rise time	t_r			14		
Turn-off delay time	$t_{d(off)}$			50		
Turn-off fall time	t_f			20		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				-24	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=-10A$			-1.2	V
Reverse recovery time	T_{rr}	$I_F=-5A, di/dt=-100A/\mu s$		64		nS
Reverse recovery charge	Q_{rr}			25		nC

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) $T_J=25^{\circ}\text{C}$, $V_{DS}=-15\text{V}$, $V_G=-10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$, $I_{AS}=-12.5\text{A}$.
- 3) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1: Output Characteristics

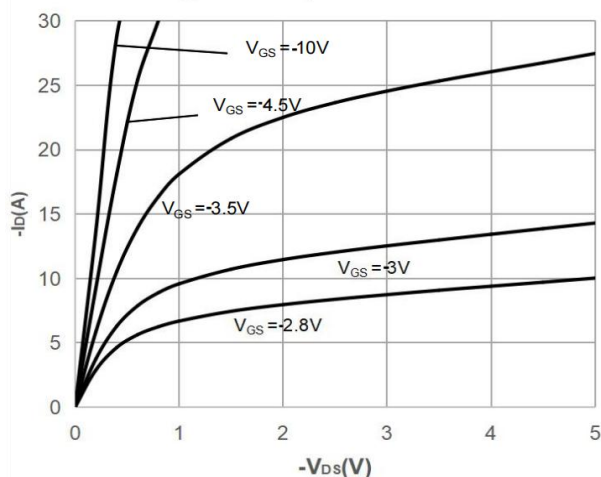


Figure 2: Typical Transfer Characteristics

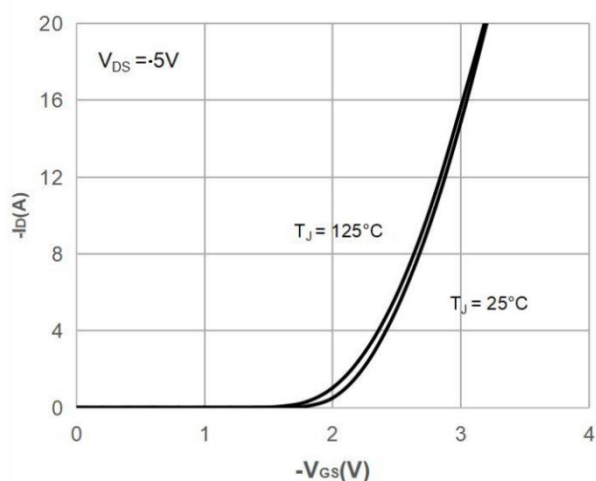


Figure 3: On-resistance vs. Drain Current

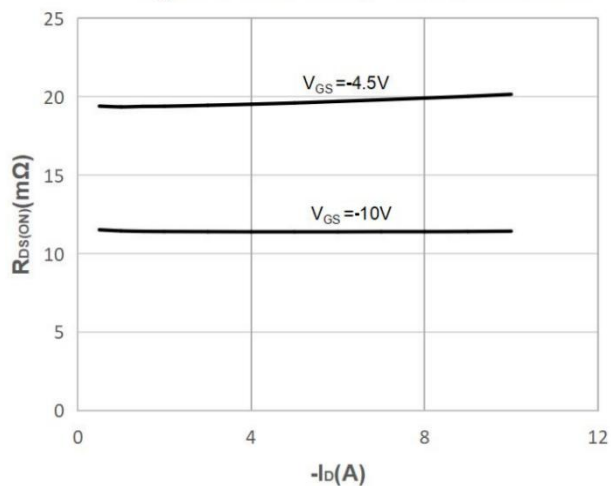


Figure 4: Body Diode Characteristics

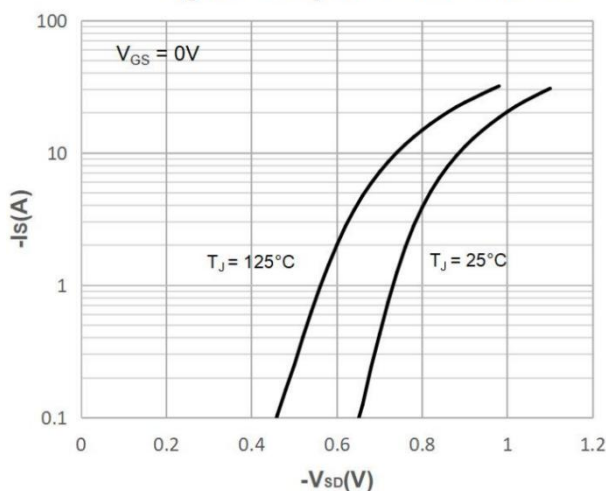


Figure 5: Gate Charge Characteristics

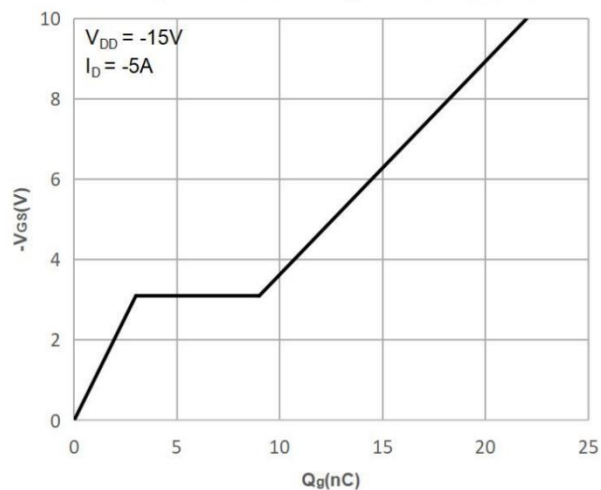
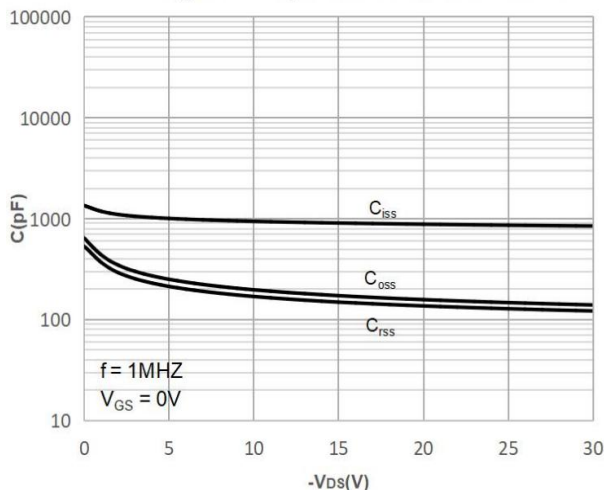


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

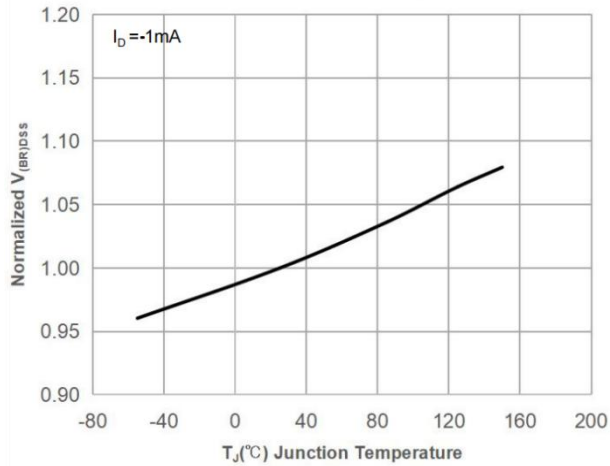


Figure 8: Normalized on Resistance vs. Junction Temperature

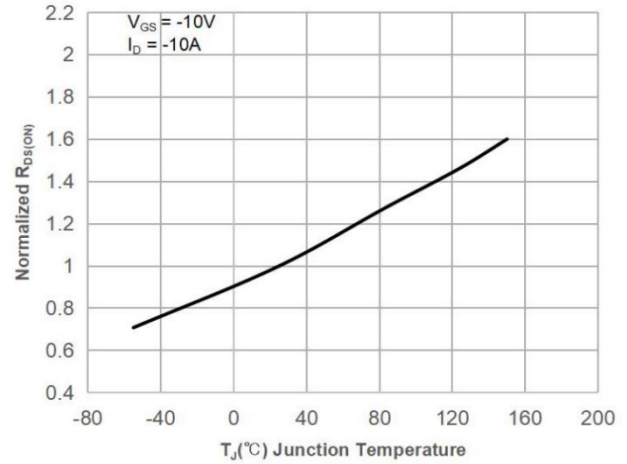


Figure 9: Maximum Safe Operating Area

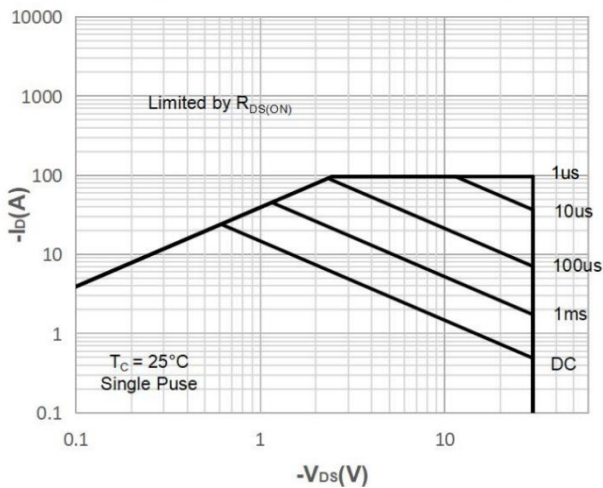


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

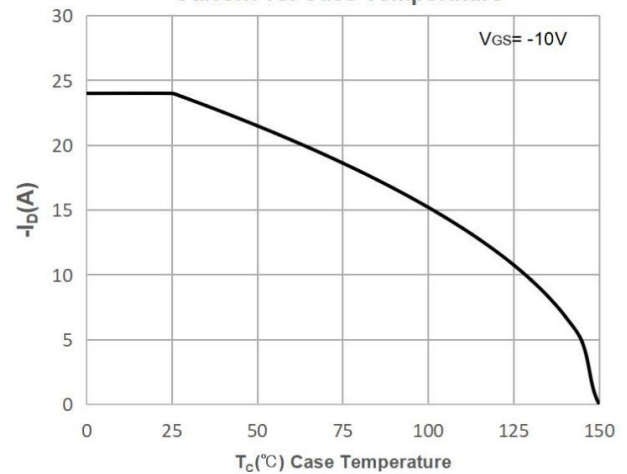


Figure 11: Normalized Maximum Transient Thermal Impedance

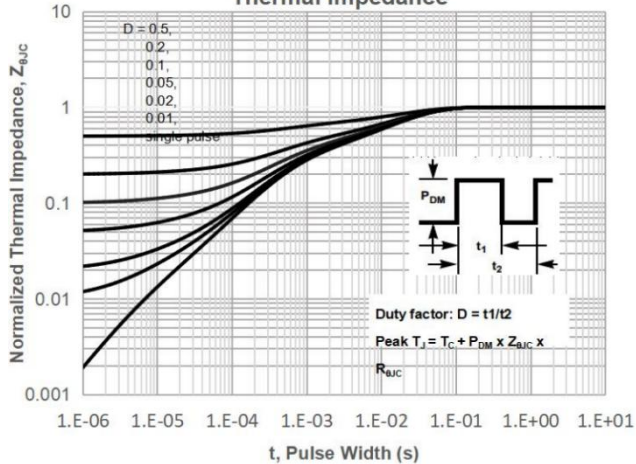
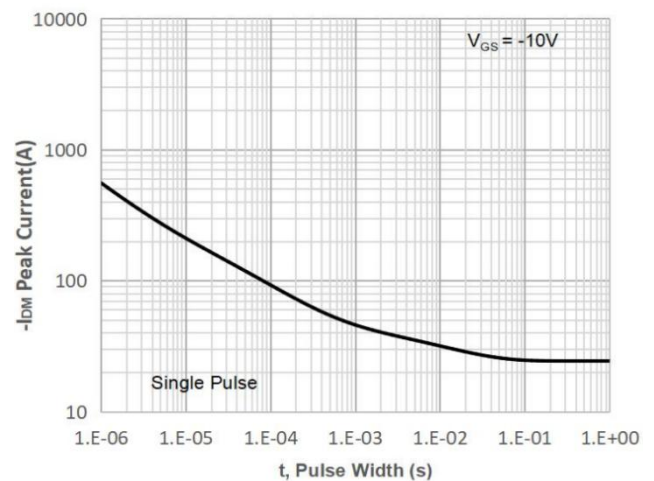
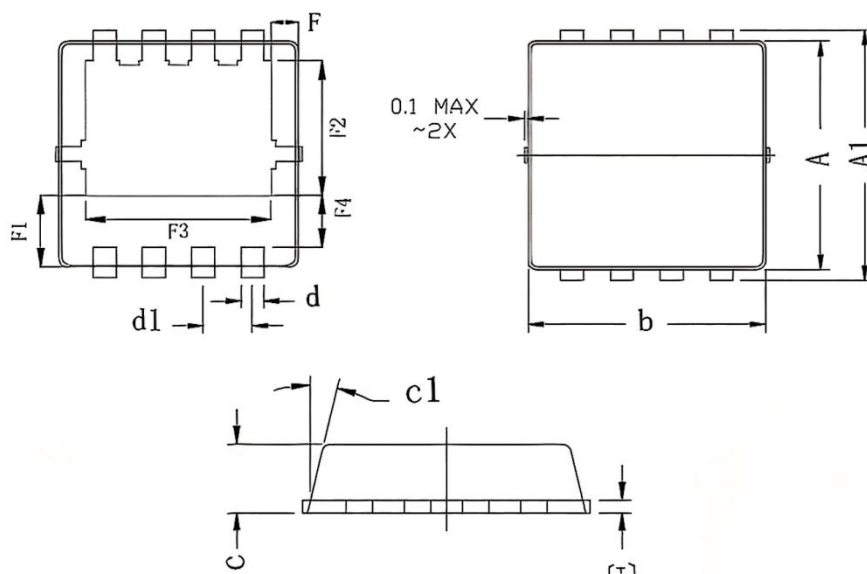


Figure 12: Peak Current Capacity



PDFN3.3*3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	3.070	3.130	0.121	0.123
A1	3.300	3.500	0.130	0.138
b	3.070	3.130	0.121	0.123
c	0.770	0.830	0.030	0.033
c1	13°		13°	
d	0.275	0.325	0.011	0.013
d1	0.625	0.675	0.025	0.027
E	0.144	0.160	0.006	0.006
F	0.300	0.325	0.012	0.013
F1	0.960	1.010	0.038	0.040
F2	1.775	1.825	0.070	0.072
F3	2.425	2.475	0.095	0.097
F4	0.660	0.710	0.026	0.028