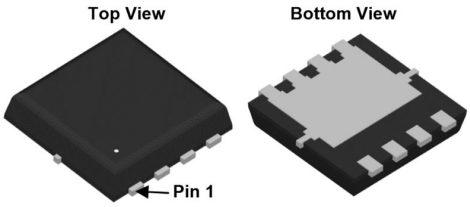
Features

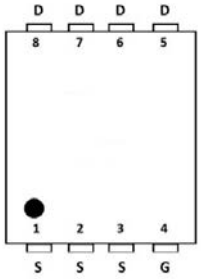
- -40V, -40A

  $R_{DS(ON)}$ Typ = 7.7mΩ @ V_{GS} = -10V

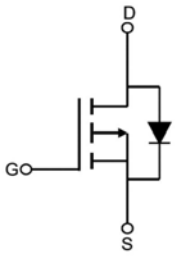
  $R_{DS(ON)}$ Typ = 10.7mΩ @ V_{GS} = -4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free



PDFN3.3x3.3-8L



Pin Assignment



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management

Absolute Maximum Ratings (@ T_J = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		-40	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	-40	A
		T_C = 100°C	-24	
I_{DM}	Pulsed Drain Current (1)		-160	A
E_{AS}	Single Pulsed Avalanche Energy (2)		121	mJ
P_D	Power Dissipation	T_C = 25°C	28	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		4.5	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = -250μA, V_{GS} = 0V	-40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -40V, V_{GS} = 0V	-	-	-1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-1.1	-1.6	-2.2	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = -10V, I_D = -20A	-	7.7	10	mΩ
		V_{GS} = -4.5V, I_D = -15A	-	10.7	14.2	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = -20V, f = 1MHz	-	2653	-	pF
C_{oss}	Output Capacitance		-	324	-	pF
C_{rss}	Reverse Transfer Capacitance		-	257	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to -10V, V_{DS} = -20V, I_D = -20A	-	59	-	nC
Q_{gs}	Gate Source Charge		-	7.2	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	14.7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn On DelayTime	V_{GS} = -10V, V_{DD} = -20V, I_D= -20A, R_{GEN} = 3Ω	-	12.5	-	ns
t_r	Turn-On Rise Time		-	18	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	50	-	ns
t_f	Turn-Off Fall Time		-	28	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-40	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-160	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -5A	-	-	-1.2	V
trr	Body Diode Reverse Recovery Time	I_F = -20A, di/dt = 100A/us	-	40	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	43	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=-20V, V_G=-10V, R_G=25ohm, L=0.5mH, I_{AS}=-22A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

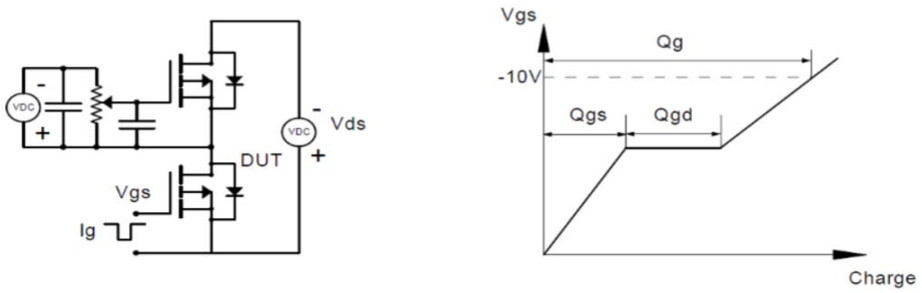


Figure 1: Gate Charge Test Circuit & Waveform

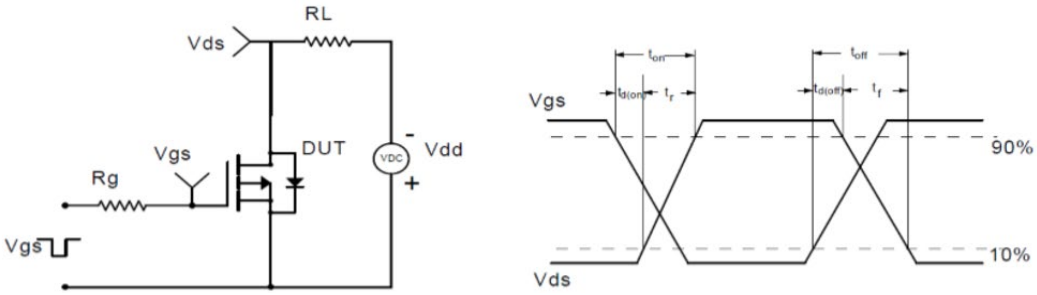


Figure 2: Resistive Switching Test Circuit & Waveform

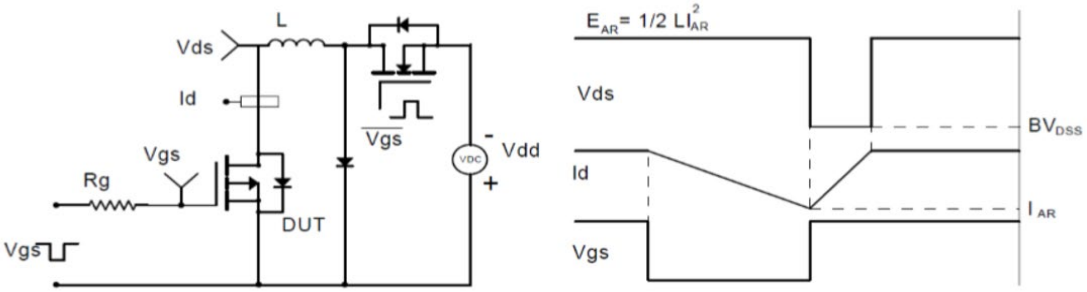


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

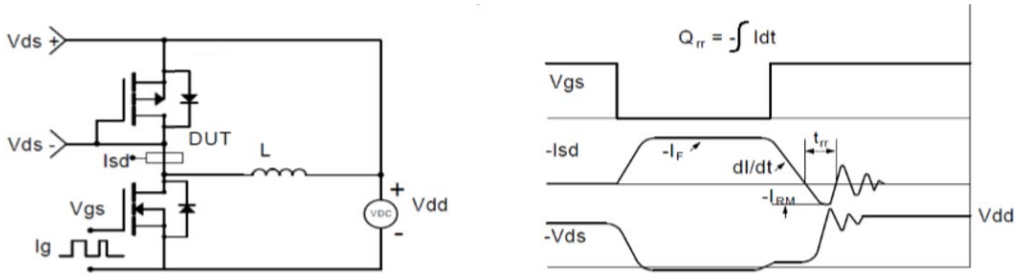
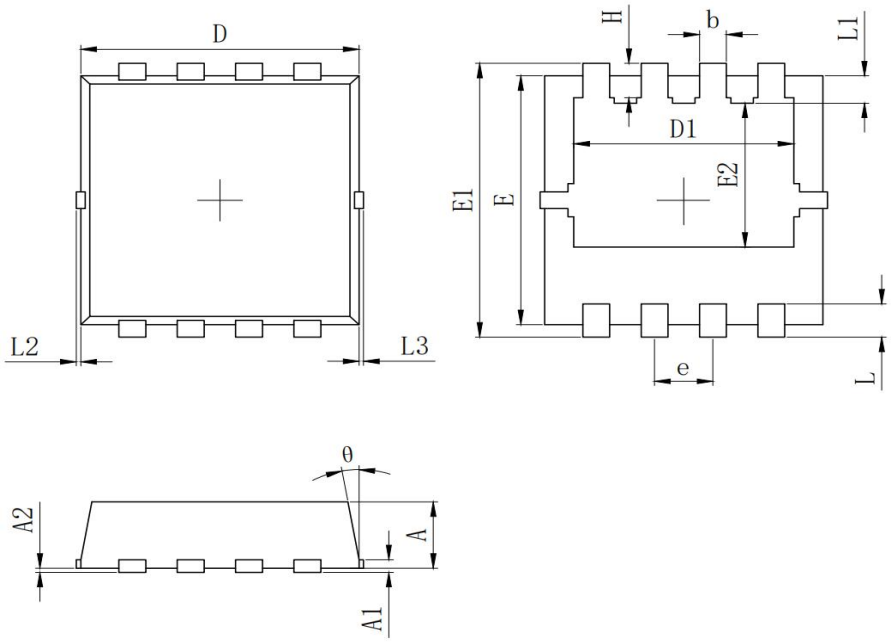


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN3.3x3.3-8L)



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.535	1.735	1.935
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0~0.100		
L3	0~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°