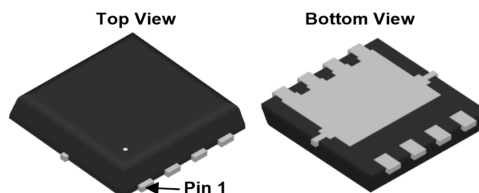


Features

- 30V, 90A
- $R_{DS(ON)}^{TYP} = 3.3m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)}^{TYP} = 5.5m\Omega @ V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

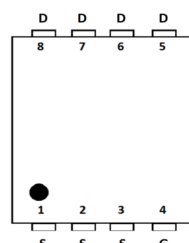


PDFN3x3-8L

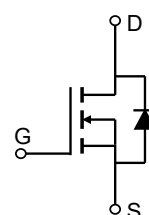
Applications

- Load Switch
- PWM Application
- Power Management

100% UIS TESTED!
100% ΔV_{ds} TESTED!



Pin Assignment



Schematic Diagram

Absolute Maximum Ratings

$T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	30	V
I_D	Drain Current ¹⁾ - Continuous ($T_C = 25^\circ\text{C}$)	90	A
	- Continuous ($T_C = 100^\circ\text{C}$)	57	A
I_{DM}	Drain Current ¹⁾ - Pulsed	360	A
V_{GSS}	Gate-Source Voltage	± 20	V
E_{AS}	Single Pulsed Avalanche Energy ²⁾	217	mJ
P_D	Power Dissipation ($T_C = 25^\circ\text{C}$)	58	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	260	$^\circ\text{C}$

Thermal Characteristics

R_{thJC}	Thermal Resistance, Junction to Case	2.15	$^\circ\text{C/W}$
R_{thJA}	Thermal Resistance, Junction to ambient	62.5	$^\circ\text{C/W}$

Electrical Characteristics

 $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	$V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	$V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$	--	--	-100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.0	1.5	2.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 20\text{ A}$	--	3.3	4.5	m Ω
		$V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$	--	5.5	8.0	m Ω

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V},$ $f = 1\text{ MHz}$	--	2873	--	pF
C_{oss}	Output Capacitance		--	264	--	pF
C_{rss}	Reverse Transfer Capacitance		--	230	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 24\text{ V}, V_{GS} = 10\text{ V}$ $R_G = 3\text{ }\Omega, I_D = 65\text{ A}$	--	12	--	ns
t_r	Turn-On Rise Time		--	230	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	34	--	ns
t_f	Turn-Off Fall Time		--	140	--	ns
Q_g	Total Gate Charge	$V_{DS} = 24\text{ V}, I_D = 100\text{ A},$ $V_{GS} = 10\text{ V}$	--	52	--	nC
Q_{gs}	Gate-Source Charge		--	10	--	nC
Q_{gd}	Gate-Drain Charge		--	18	--	nC

Drain-Source Diode Characteristics

I_S	Maximum Continuous Drain-Source Diode Forward Current	--	--	90	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current	--	--	360	A
V_{SD}	Drain to Source Diode Forward Voltage, $V_{GS} = 0\text{ V}, I_{SD} = 20\text{ A}, T_J = 25^\circ\text{C}$	--	0.8	--	V
t_{rr}	Reverse Recovery Time & $T_J = 25^\circ\text{C}, I_F = 65\text{ A di/dt} = 100\text{ A}/\mu\text{s}$	--	12	--	nS
Q_{rr}	Reverse Recovery Charge & $T_J = 25^\circ\text{C}, I_F = 65\text{ A di/dt} = 100\text{ A}/\mu\text{s}$	--	9	--	nC
I_{rm}	Peak Reverse Recovery Current & $T_J = 25^\circ\text{C}, I_F = 65\text{ A di/dt} = 100\text{ A}/\mu\text{s}$	--	2	--	A

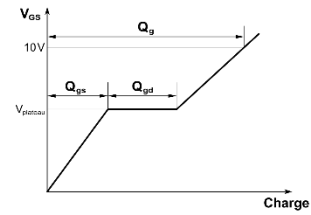
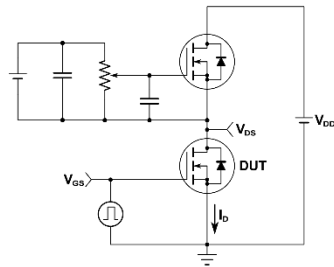
Notes:

1. Repetitive Rating : Drain current limited by package.

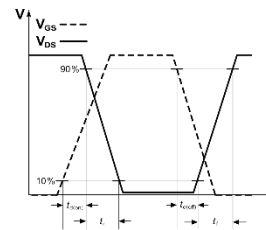
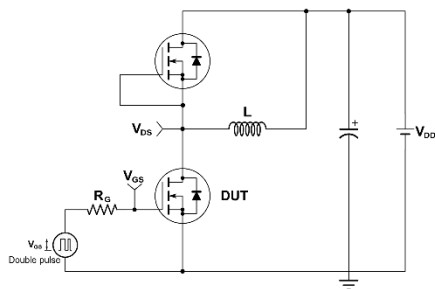
2. EAS condition: $T_J = 25^\circ\text{C}, V_{DD} = 20\text{ V}, V_{GS} = 10\text{ V}, L = 0.5\text{ mH}, I_{AS} = 29.5\text{ A}$

3. These curves are based on the junction-to-case thermal impedance R_{thjc} , assuming maximum junction temperature is 150°C . These curves provide a single pulse rating.

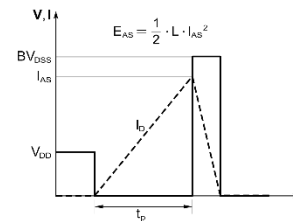
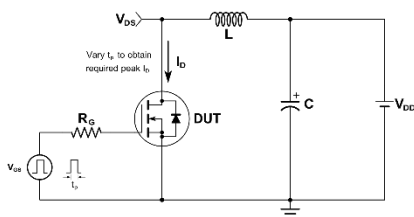
Test Circuits and waveforms



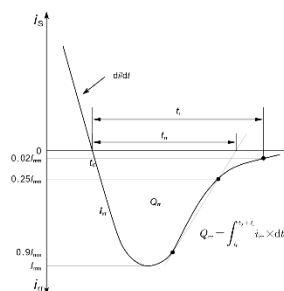
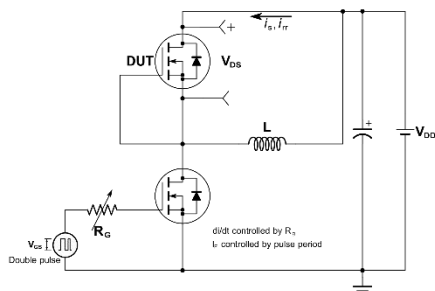
Gate charge test circuit & waveform



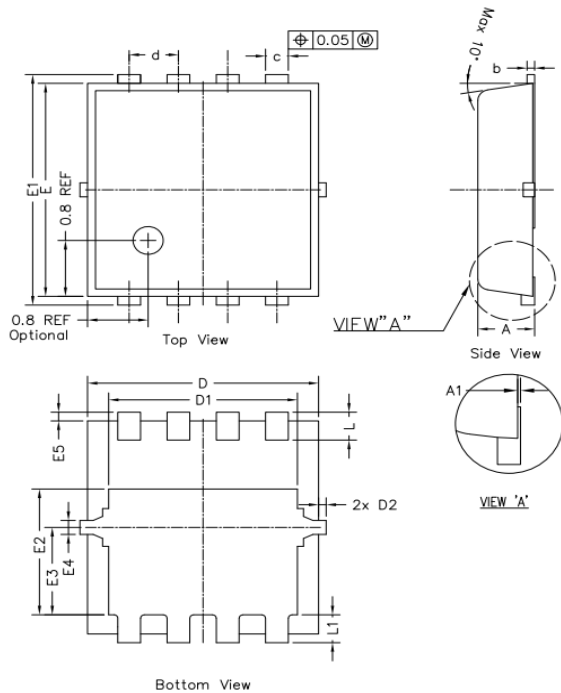
Switching times for inductive load test circuit & waveform



Unclamped inductive load test circuit & waveform



Diode characteristics test circuit & waveform

Package Mechanical Data(PDFN3x3-8L)


SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.750	0.800	0.028	0.030	0.031
A1	---	---	0.050	----	----	0.002
b	0.144	0.152	0.202	0.006	0.006	0.008
c	0.250	0.300	0.350	0.010	0.012	0.014
d	0.65 BSC			0.026 BSC		
D	2.950	3.050	3.150	0.116	0.120	0.124
D1	2.390	2.490	2.590	0.094	0.098	0.102
D2	---	---	0.125	---	---	0.005
E	2.950	3.050	3.150	0.116	0.120	0.124
E1	3.200	3.300	3.400	0.126	0.130	0.134
E2	1.700	1.800	1.900	0.067	0.071	0.075
E3	1.150	1.250	1.350	0.045	0.049	0.053
E4	0.150	0.200	0.250	0.006	0.008	0.010
E5	0.075	0.125	0.175	0.003	0.005	0.007
L	0.300	0.400	0.500	0.01	0.02	0.02
L1	0.300	0.400	0.500	0.01	0.02	0.02