

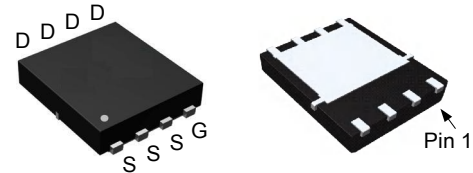
Features

- 40V/80A,
 $R_{DS(ON)} = 4.4m\Omega(\text{typ.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 5.4m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

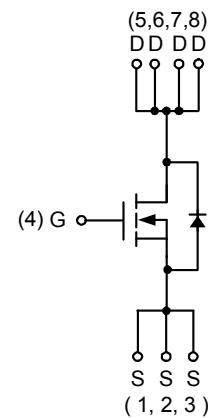
Applications

- SMPS Synchronous Rectification.
- Load Switch.
- DC-DC Conversion.

Pin Description



PDFN5*6-8L



N-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		40	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _C =25°C	80	A
I _D ^a	Continuous Drain Current	T _C =25°C	80	
		T _C =100°C	60	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	300	
P _D	Maximum Power Dissipation	T _C =25°C	54	W
		T _C =100°C	22	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	2.3	°C/W
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	17	°C/W
		Steady State	50	
I _{AS} ^d	Avalanche Current, Single pulse	L=0.1mH	50	A
E _{AS} ^d	Avalanche Energy, Single pulse	L=0.1mH	125	mJ

Note a : Max. continue current is limited by bonding wire.

Note b : Pulse width is limited by max. junction temperature.

Note c : Surface mounted on 1in2 pad area, steady state t=999s.

Note d : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J=25°C).

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

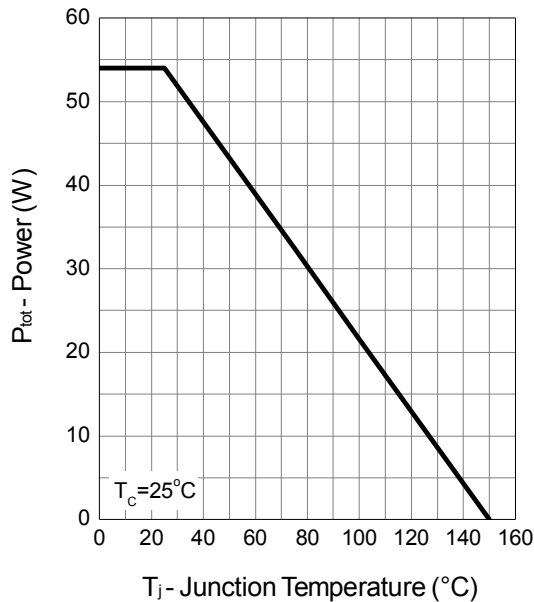
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.3	1.7	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =40A	-	4.4	5.7	mΩ
		V _{GS} =4.5V, I _{DS} =35A	-	5.4	6.7	
G _{fs}	Forward Transconductance	V _{DS} =5V, I _{DS} =20A	-	31	-	S
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V	-	0.75	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs	-	28	-	ns
t _a	Charge Time		-	17	-	
t _b	Discharge Time		-	12	-	
Q _{rr}	Reverse Recovery Charge		-	20	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1	2	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz	-	1540	1996	pF
C _{oss}	Output Capacitance		-	984	-	
C _{rss}	Reverse Transfer Capacitance		-	52	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, R _L =20Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	14.3	26	ns
t _r	Turn-on Rise Time		-	7.7	14	
t _{d(OFF)}	Turn-off Delay Time		-	32.6	59	
t _f	Turn-off Fall Time		-	26.6	48	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =20A	-	24.8	34.7	nC
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =4.5V, I _{DS} =20A	-	11.5	-	
Q _{gth}	Threshold Gate Charge		-	3	-	
Q _{gs}	Gate-Source Charge		-	5.2	-	
Q _{gd}	Gate-Drain Charge		-	2.6	-	

Note e : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

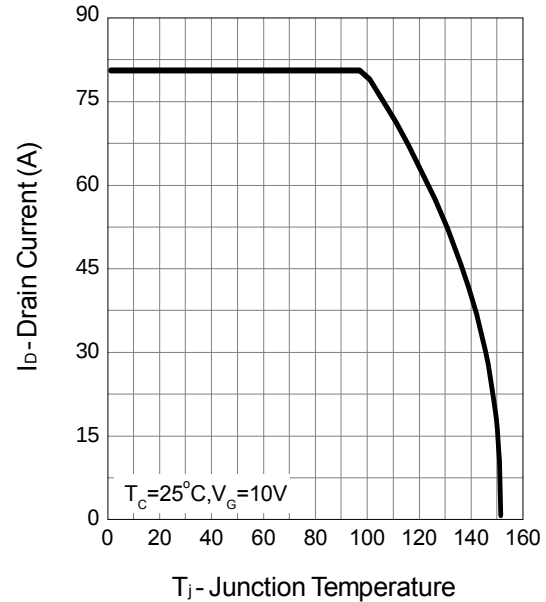
Note f : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

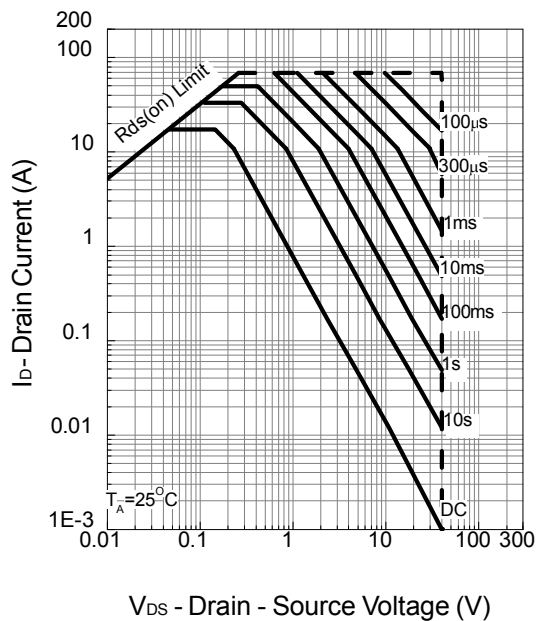
Power Dissipation



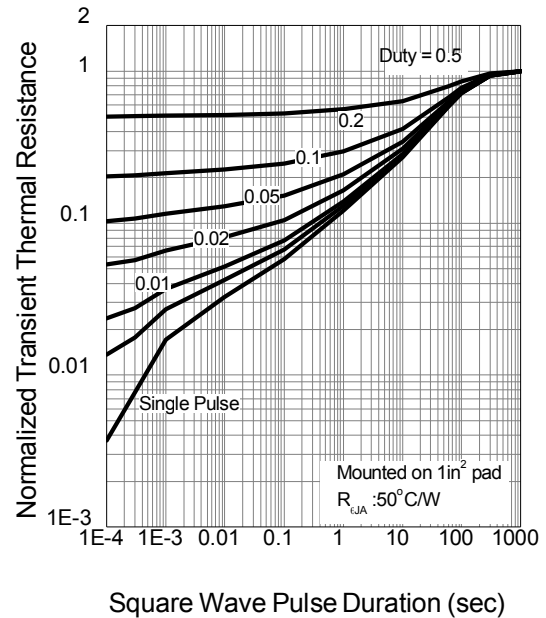
Drain Current



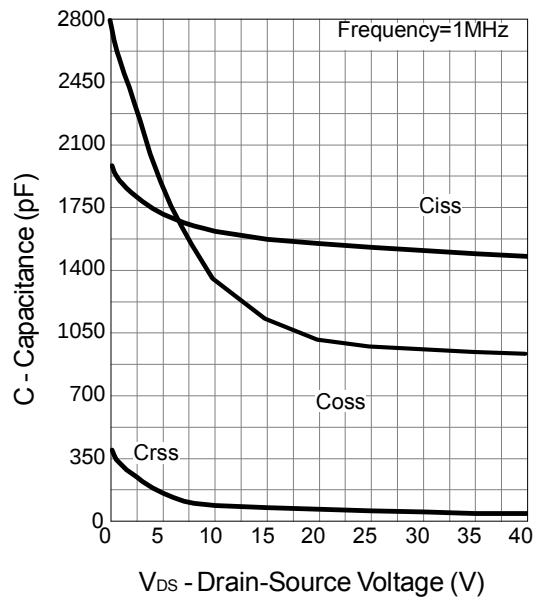
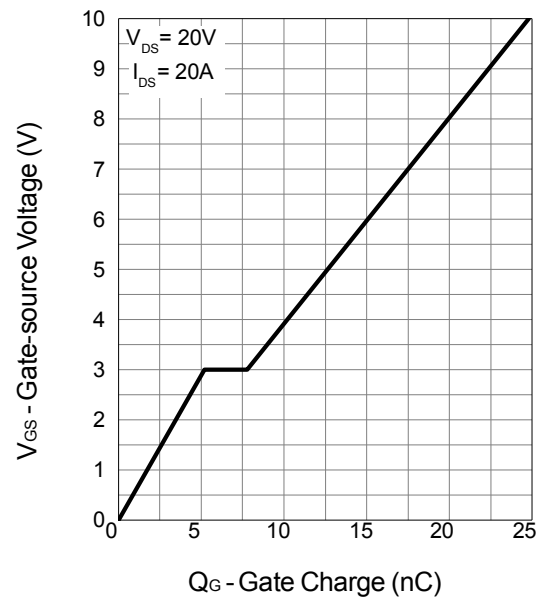
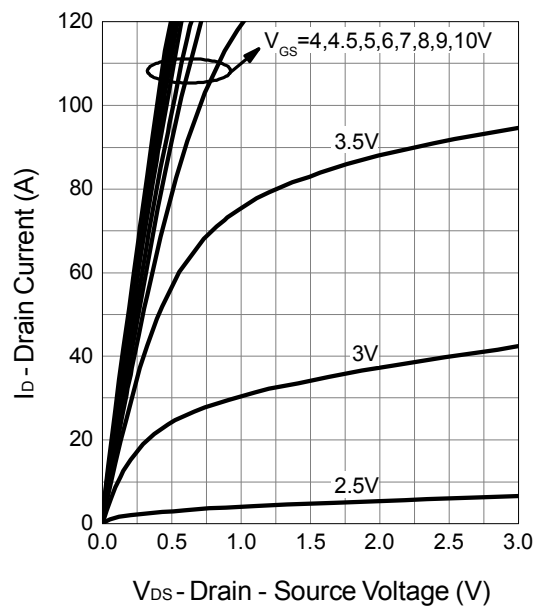
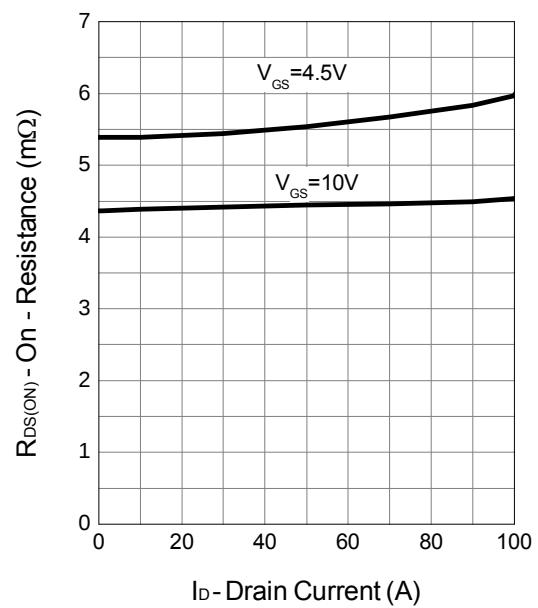
Safe Operation Area



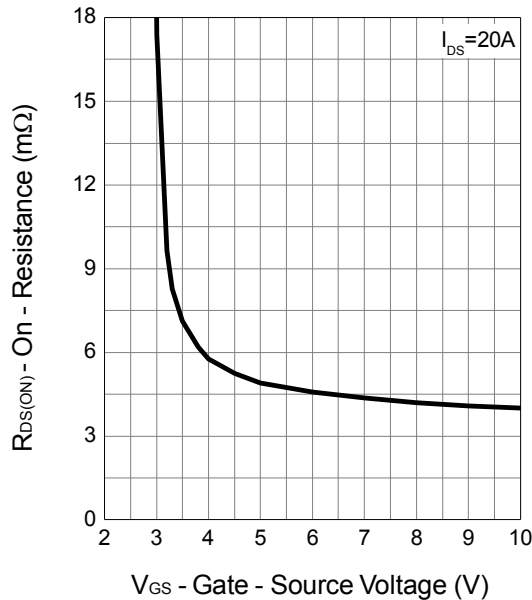
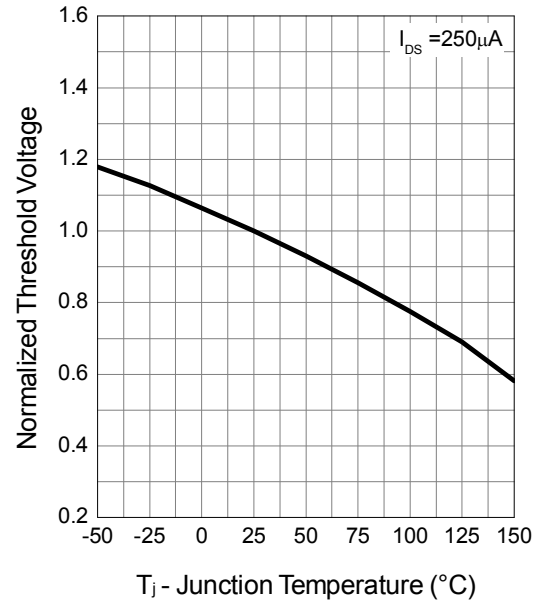
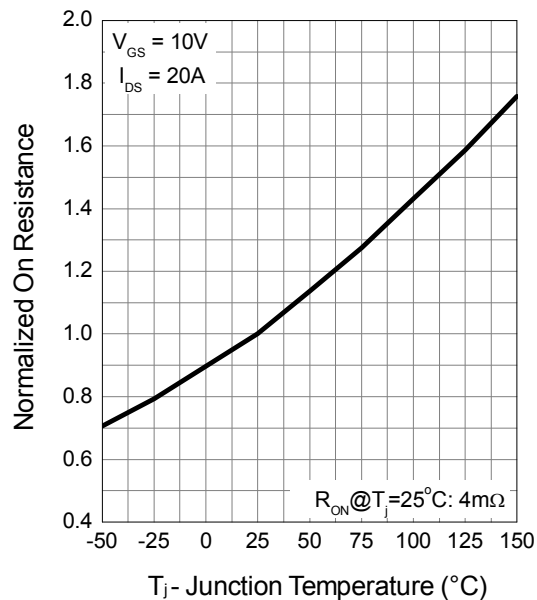
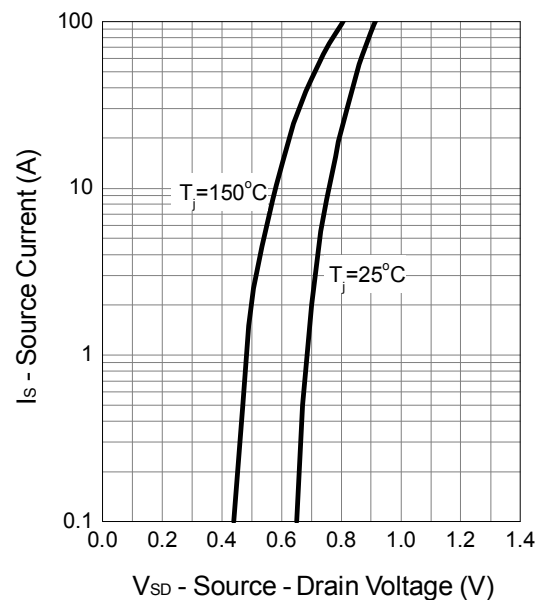
Thermal Transient Impedance



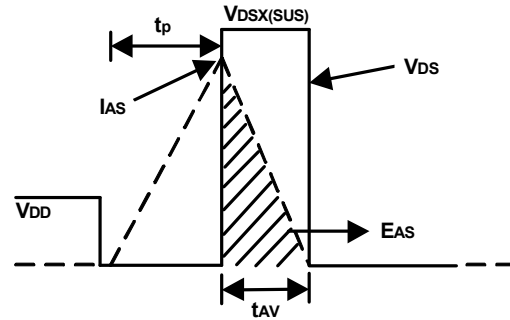
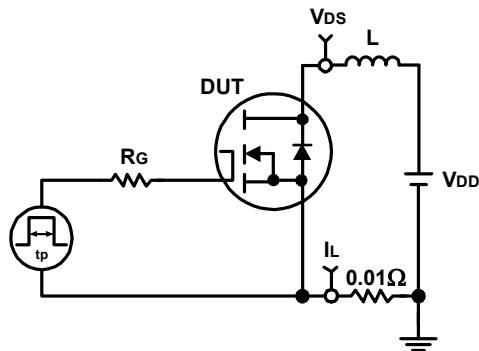
Typical Operating Characteristics (Cont.)

Capacitance

Gate Charge

Output Characteristics

Drain-Source On Resistance


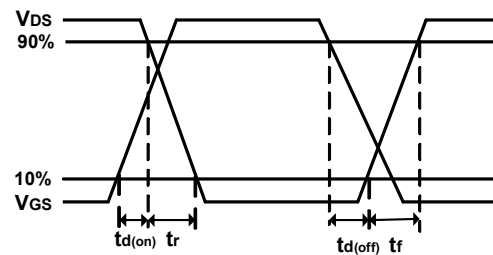
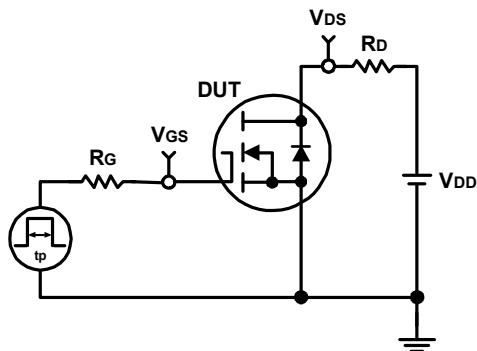
Typical Operating Characteristics (Cont.)

Gate-Source On Resistance

Gate Threshold Voltage

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

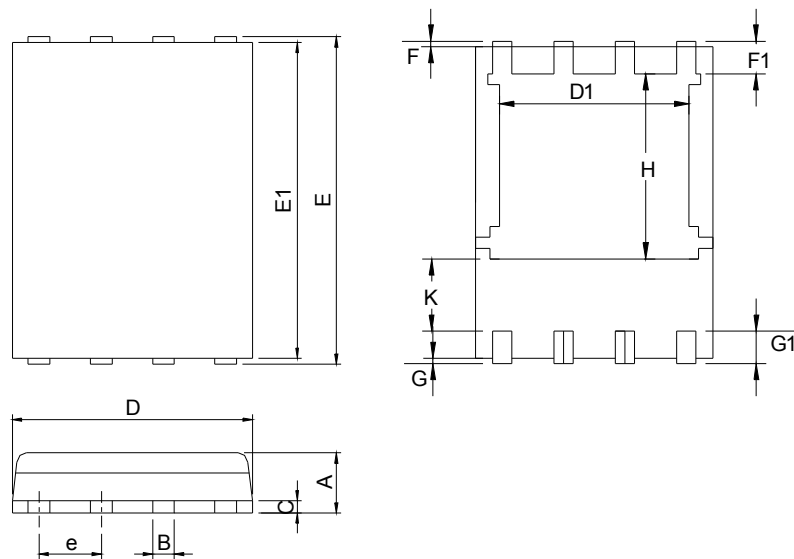


Switching Time Test Circuit and Waveforms



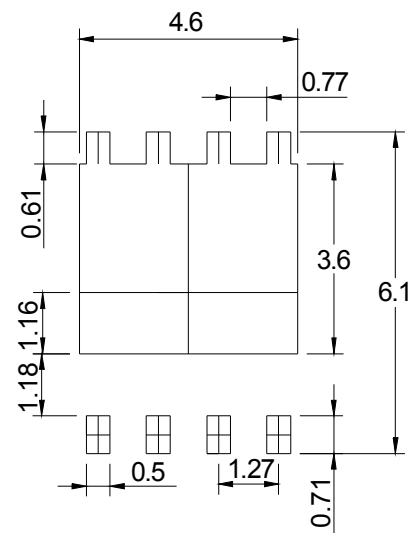
Package Information

PDFN5*6-8L



PDFN5*6-8L	PDFN5*6-8L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.90	1.20	0.035	0.047
B	0.3	0.51	0.012	0.020
C	0.19	0.25	0.007	0.010
D	4.80	5.30	0.189	0.209
D1	4.00	4.40	0.157	0.173
E	5.90	6.20	0.232	0.244
E1	5.50	5.80	0.217	0.228
e	1.27 BSC		0.050 BSC	
F	0.05	0.30	0.002	0.012
F1	0.35	0.75	0.014	0.030
G	0.05	0.30	0.002	0.012
G1	0.35	0.75	0.014	0.030
H	3.34	3.9	0.131	0.154
K	0.762	-	0.03	-

RECOMMENDED LAND PATTERN



UNIT: mm

Note : 1.Dimension D, D1,D2 and E1 do not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 10 mil.