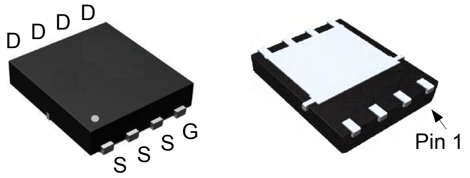
Features

- 40V/80A,
  $R_{DS(ON)}$= 5mΩ(typ.) @ V_{GS}= 10V
  $R_{DS(ON)}$= 6.2mΩ(typ.) @ V_{GS}= 4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

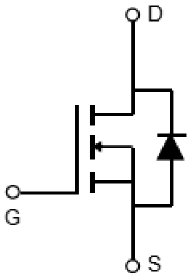
Applications

- 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	320	
P_D	Maximum Power Dissipation	T_C=25°C	54	W
		T_C=100°C	22	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	2.3	°C/W
$R_{\theta JA}$ [c]	Thermal Resistance-Junction to Ambient	t ≤ 10s	17	°C/W
		Steady State	50	
I_{AS} [d]	Avalanche Current, Single pulse	L=0.1mH	90	A
E_{AS} [d]	Avalanche Energy, Single pulse	L=0.1mH	405	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°C unless otherwise noted)

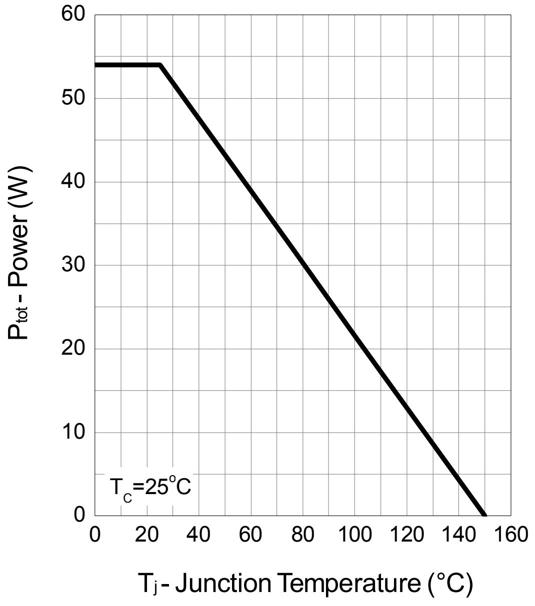
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250µA	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=32V, V_{GS}=0V	-	-	1	µA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250µA	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}=20A	-	5	5.8	mΩ
		V_{GS}=4.5V, I_{DS}=15A	-	6.2	7.8	
Gfs	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	-	1622	2139	pF
C_{oss}	Output Capacitance		-	385	-	
C_{rss}	Reverse Transfer Capacitance		-	55	-	
$t_{d(ON)}$	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≤300µs, duty cycle≤2%.

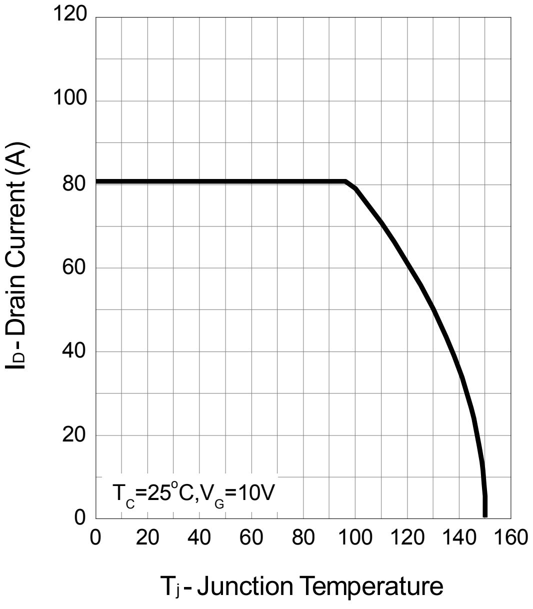
Note f：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

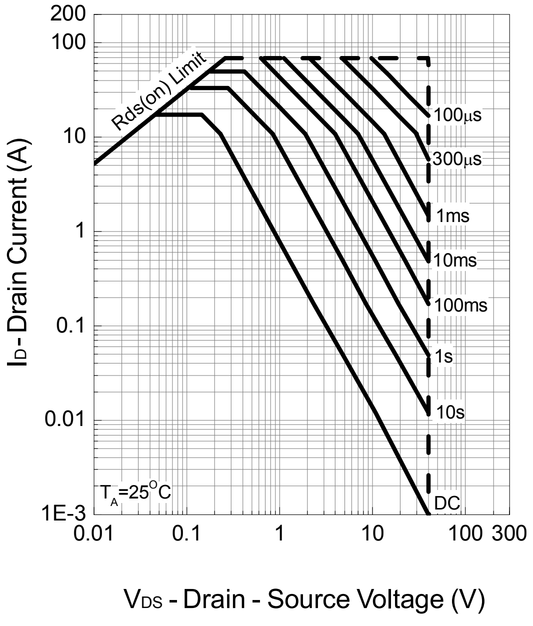
Power Dissipation



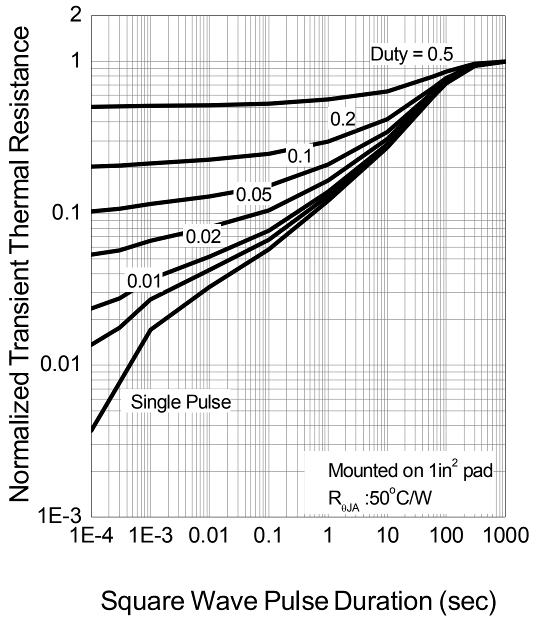
Drain Current



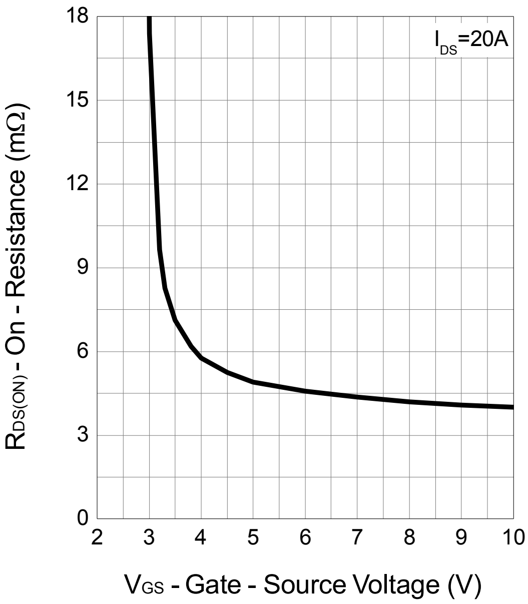
Safe Operation Area



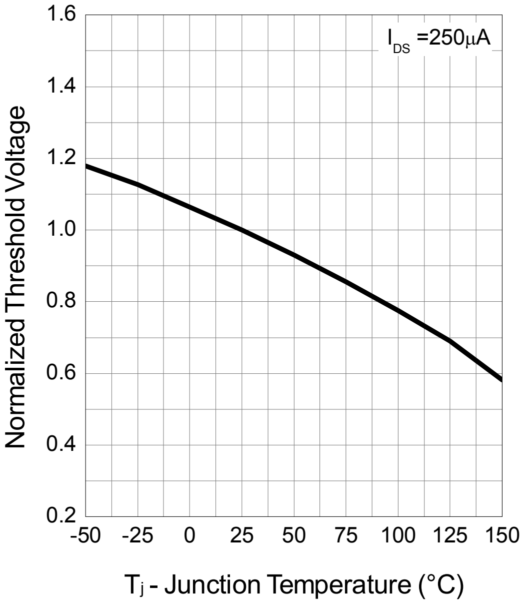
Thermal Transient Impedance



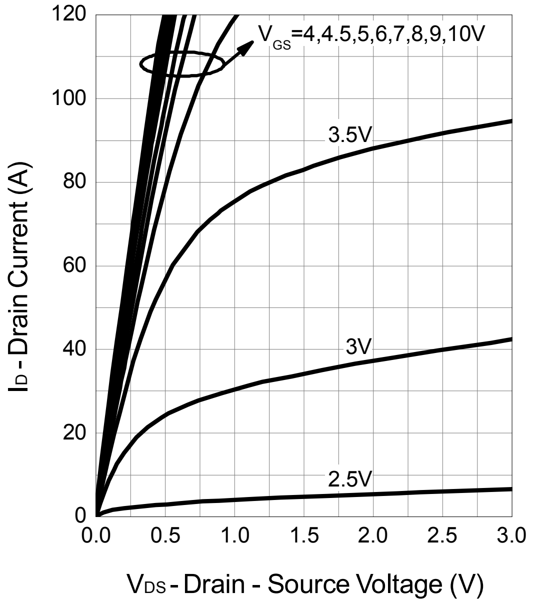
Typical Operating Characteristics (Cont.)



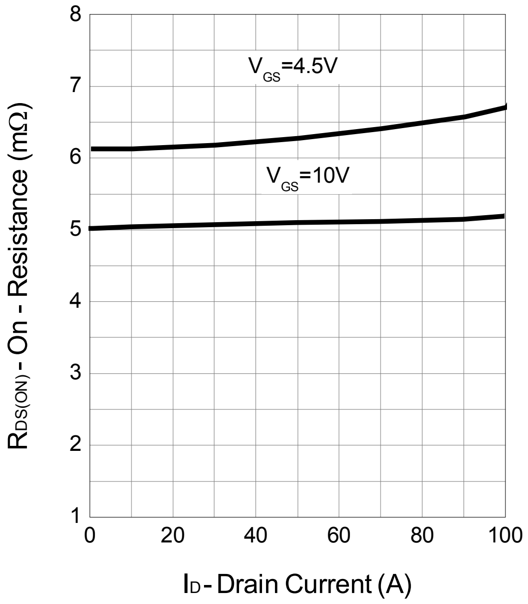
Gate-Source On Resistance



Gate Threshold Voltage

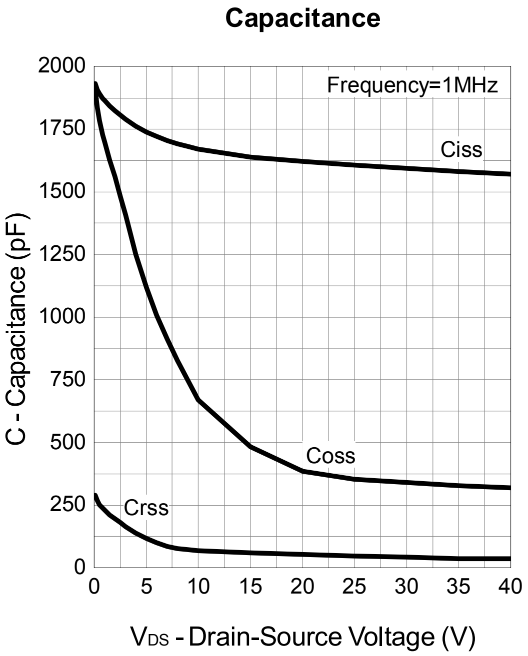


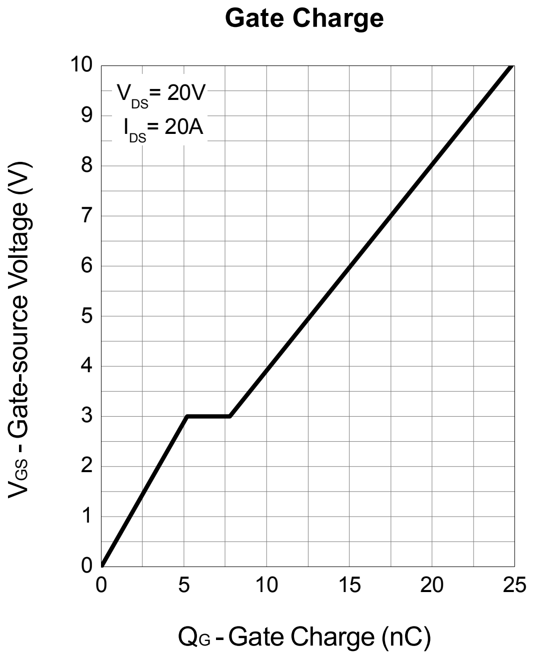
Output Characteristics

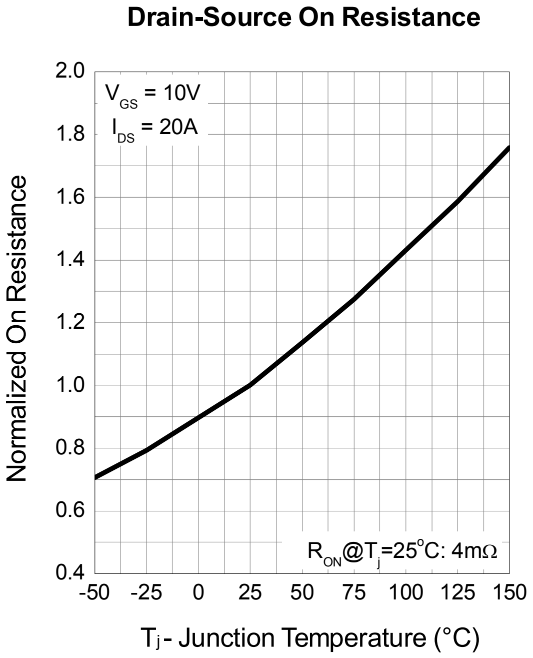


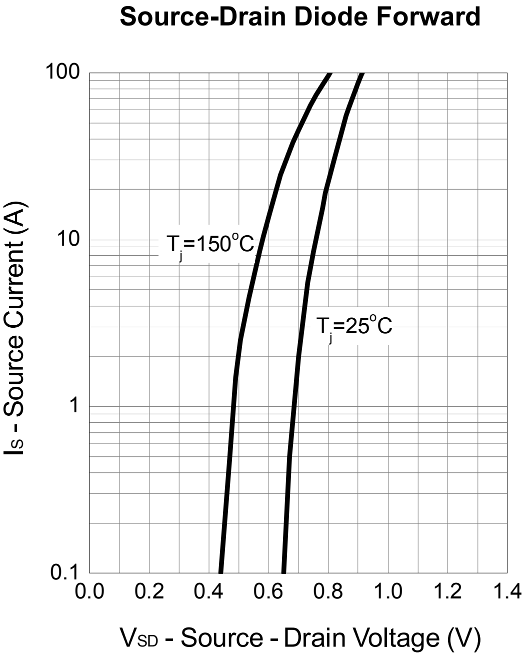
Drain-Source On Resistance

Typical Operating Characteristics (Cont.)

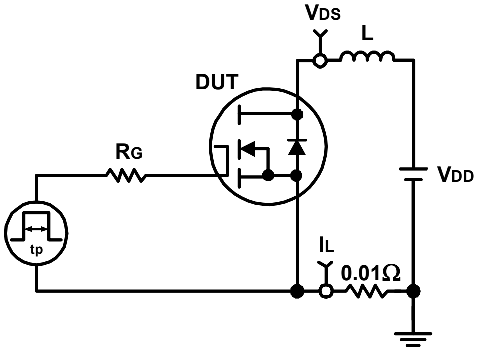


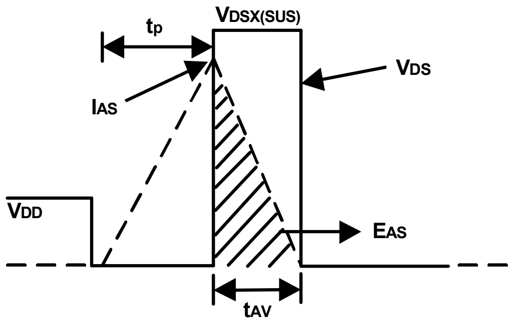




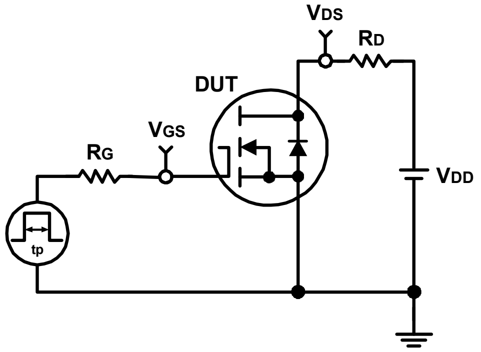


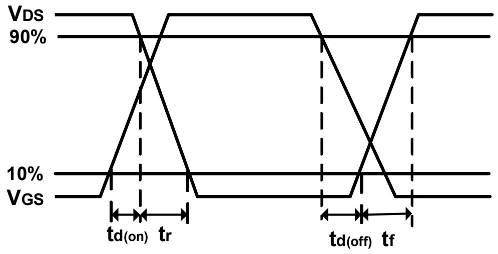
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





Package Information

PDFN5*6-8L