

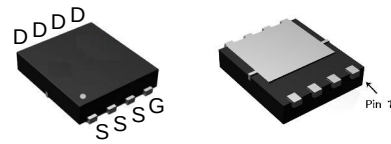
Features

- 20V/-50A
 $R_{DS(ON)}=10m\Omega(\text{typ.})@V_{GS}=-4.5V$
 $R_{DS(ON)}=14m\Omega(\text{typ.})@V_{GS}=-2.5V$
 $R_{DS(ON)}=23m\Omega(\text{typ.})@V_{GS}=-1.8V$
- 100% UIS + R_g Tested
- ESD Protection
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- Moisture Sensitivity Level MSL1
(per JEDEC J-STD-020D)

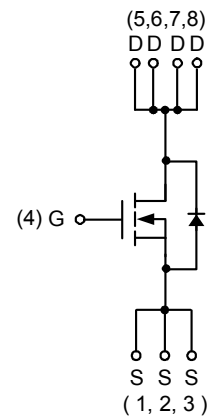
Applications

- Portable Equipment applications.
- Load switch.

Pin Description



PDFN3.3*3.3-8L



N-Channel MOSFET

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-20	V
V _{GSS}	Gate-Source Voltage		±12	
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	-19	A
I _D	Continuous Drain Current	T _C =25°C	-50	A
		T _C =100°C	-24.5	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	-152	
P _D	Maximum Power Dissipation	T _C =25°C	29.7	W
		T _C =100°C	11.9	
R _{θJC}	Thermal Resistance-Junction to Case	Steady state	4.2	°C/W
I _D	Continuous Drain Current	T _A =25°C	-10.2	A
		T _A =70°C	-8.2	
P _D	Maximum Power Dissipation	T _A =25°C	2.08	W
		T _A =70°C	1.33	
R _{θJA} ^b	Thermal Resistance-Junction to Ambient	Steady state	60	°C/W
I _{AS} ^c	Avalanche Current, Single pulse	L=0.5mH	-9	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.5mH	20.25	mJ

Note a : Pulse width limited by max. junction temperature.

Note b : Surface Mounted on 1in^2 pad area.

Note c : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^{\circ}\text{C}$).

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

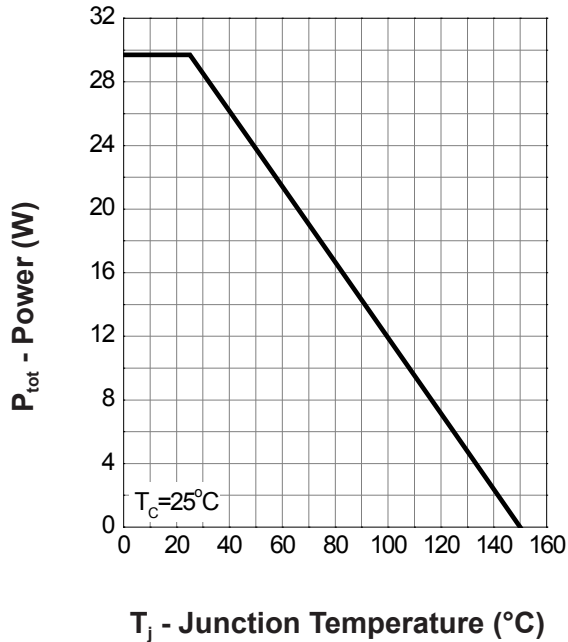
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V	-	-	-1	μA
		T _J =85°C	-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.5	-0.7	-1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-15A	-	10	13.2	mΩ
		V _{GS} =-2.5V, I _{DS} =-8A	-	14	20.3	
		V _{GS} =-1.8V, I _{DS} =-4A	-	23	35	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.6	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-15A, dI _{SD} /dt=100A/μs	-	16	-	ns
Q _{rr}	Reverse Recovery Charge		-	6	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	8	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz	-	1630	2120	pF
C _{oss}	Output Capacitance		-	300	-	
C _{rss}	Reverse Transfer Capacitance		-	230	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =10Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	9	16	ns
t _r	Turn-on Rise Time		-	13	23	
t _{d(OFF)}	Turn-off Delay Time		-	26	47	
t _f	Turn-off Fall Time		-	160	288	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _{DS} =-15A	-	18	25	nC
Q _{gs}	Gate-Source Charge		-	2.6	-	
Q _{gd}	Gate-Drain Charge		-	5.9	-	

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

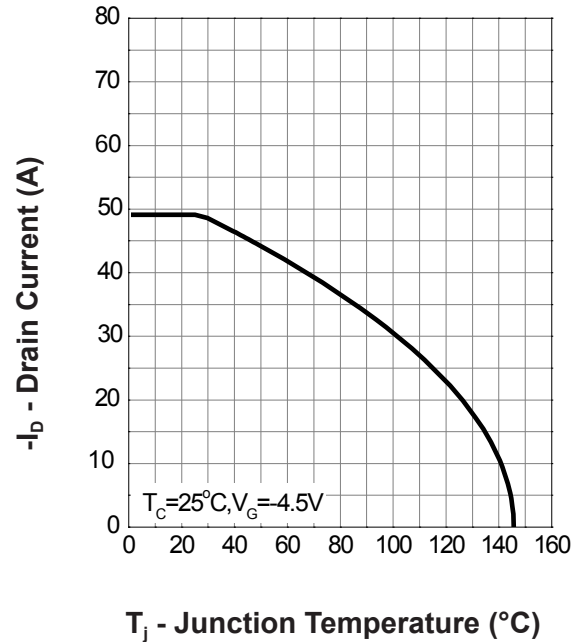
Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

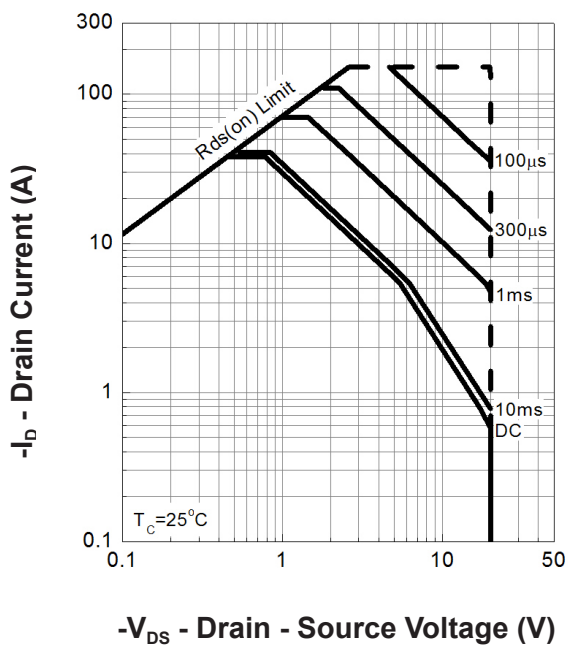
Power Dissipation



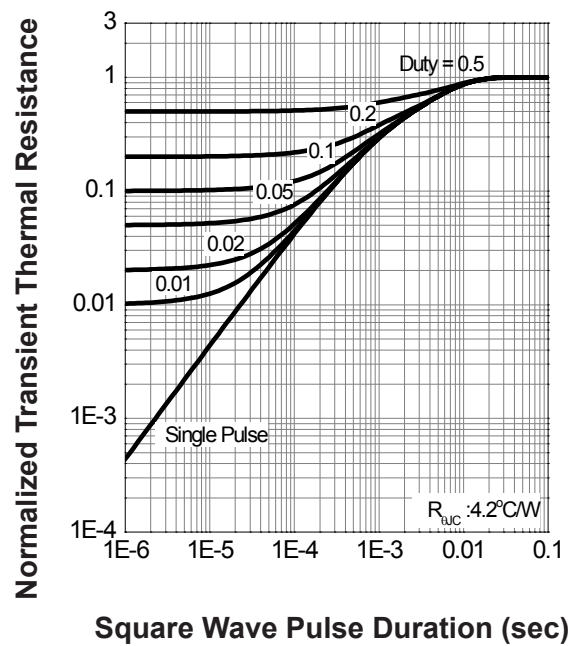
Drain Current



Safe Operation Area

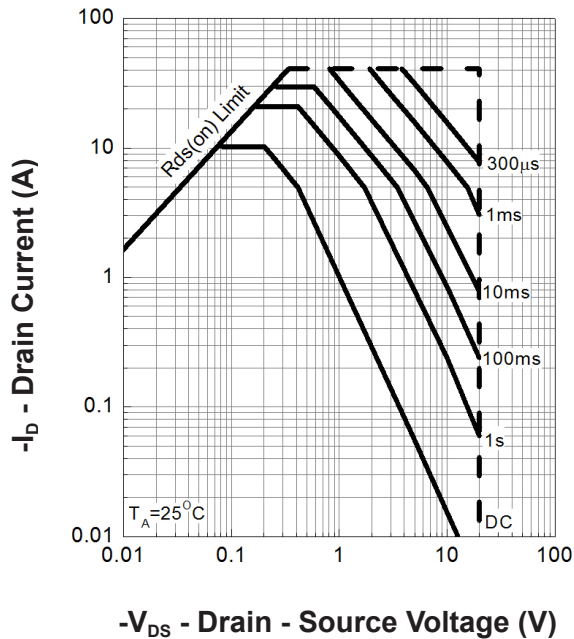


Thermal Transient Impedance

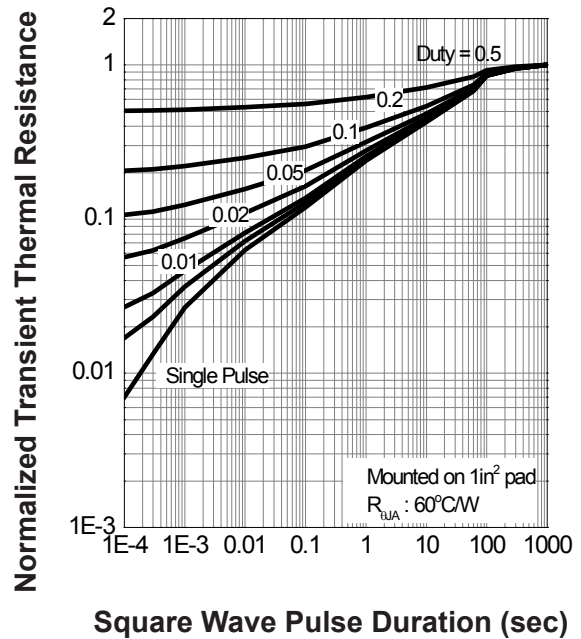


Typical Operating Characteristics(Cont.)

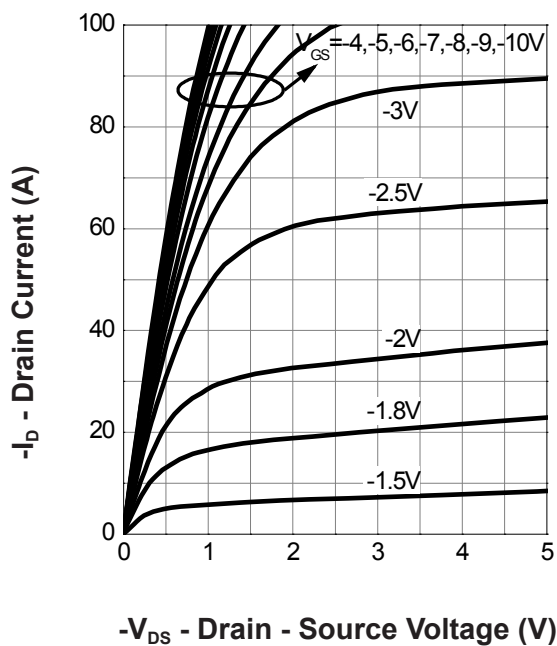
Safe Operation Area



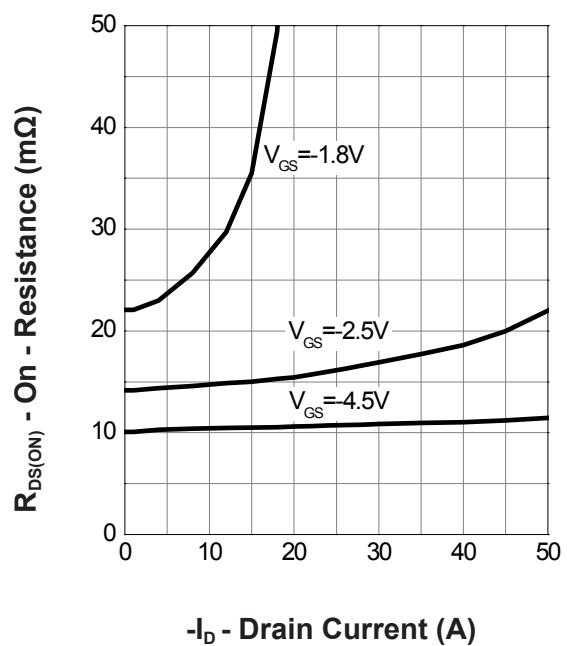
Thermal Transient Impedance



Output Characteristics

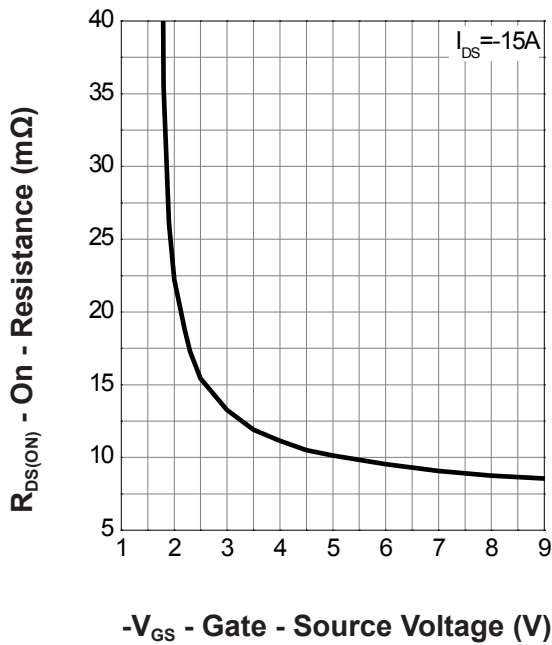


Drain-Source On Resistance

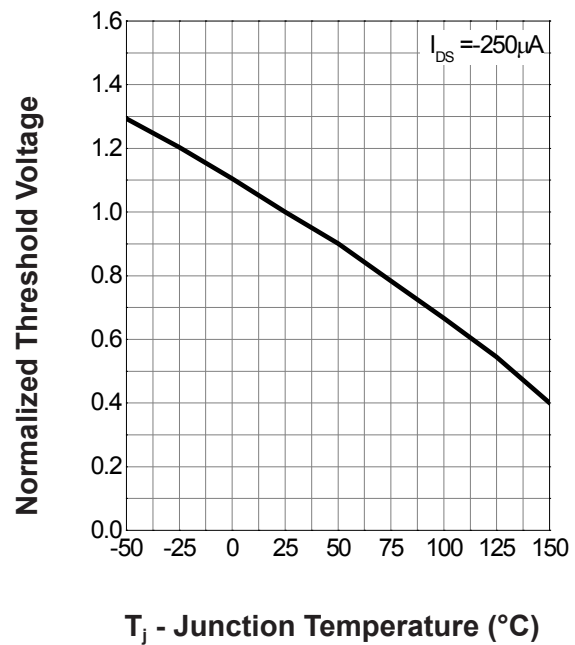


Typical Operating Characteristics(Cont.)

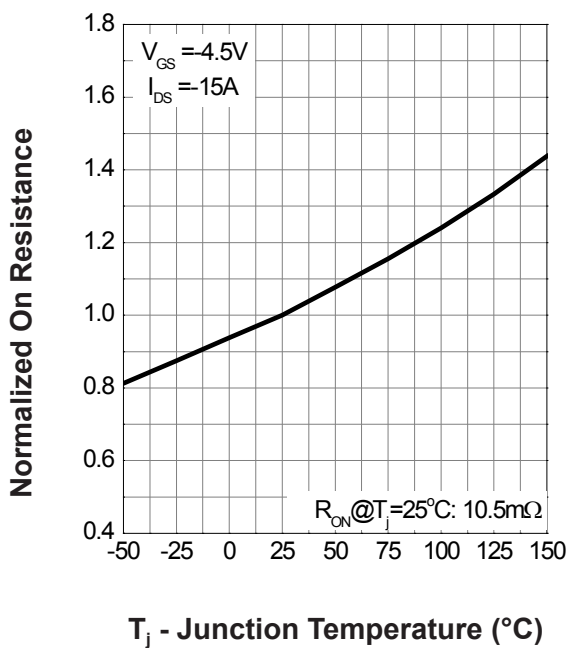
Gate-Source On Resistance



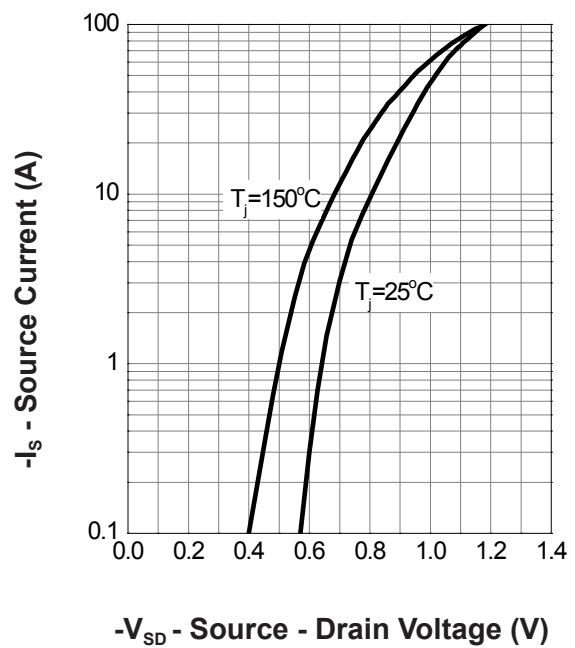
Gate Threshold Voltage



Drain-Source On Resistance

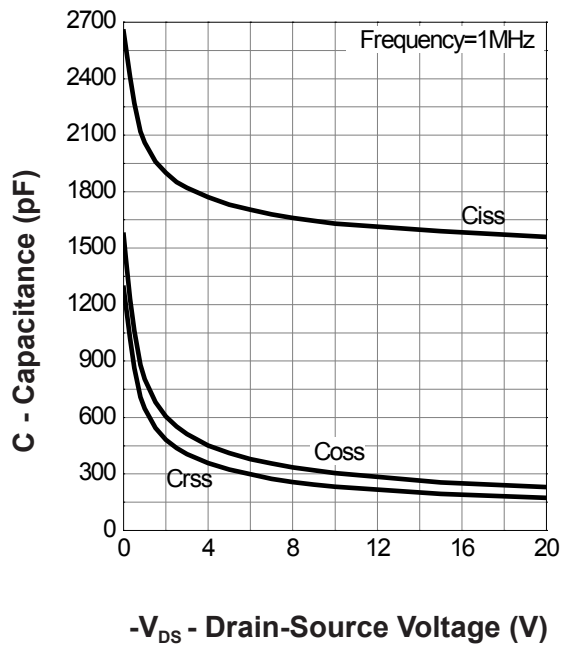


Source-Drain Diode Forward

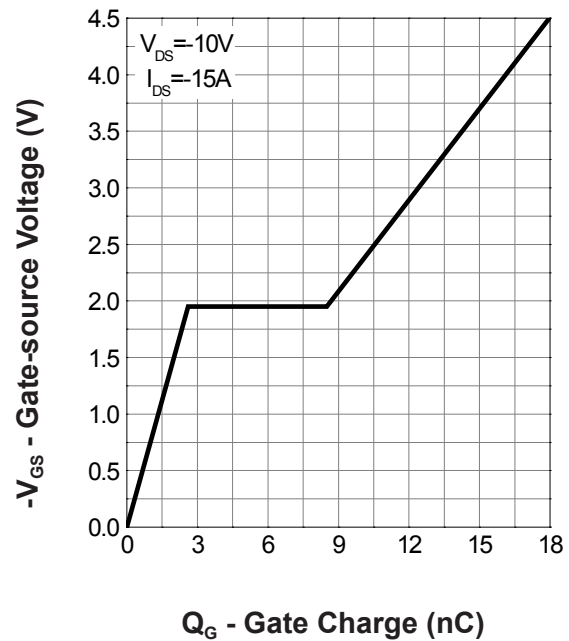


Typical Operating Characteristics(Cont.)

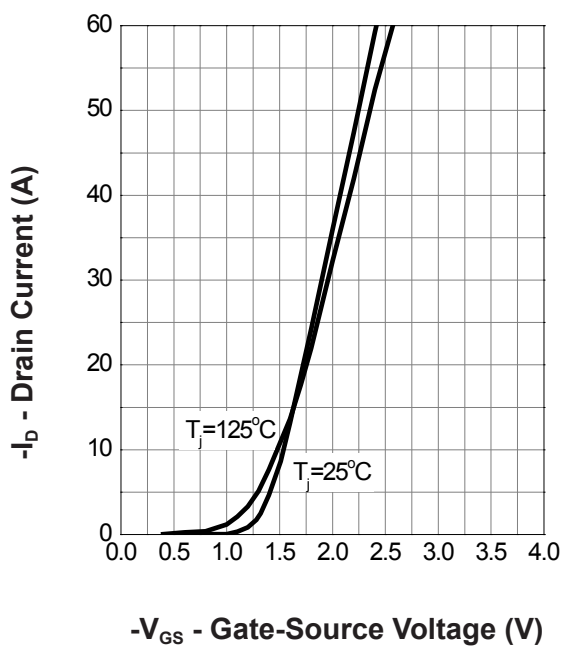
Capacitance



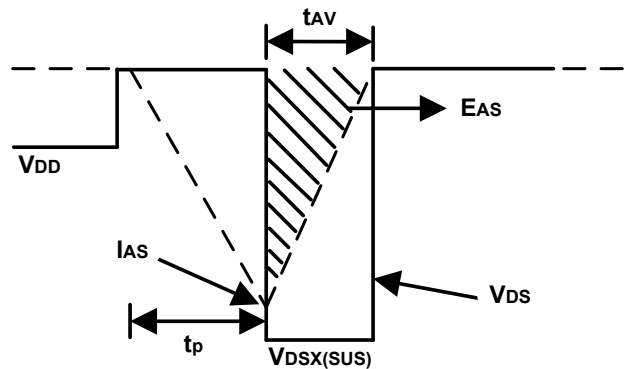
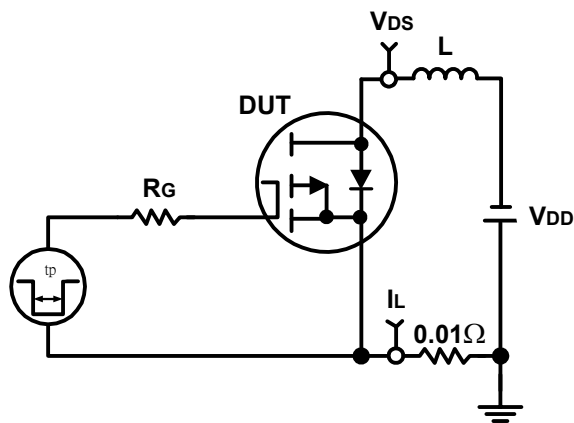
Gate Charge



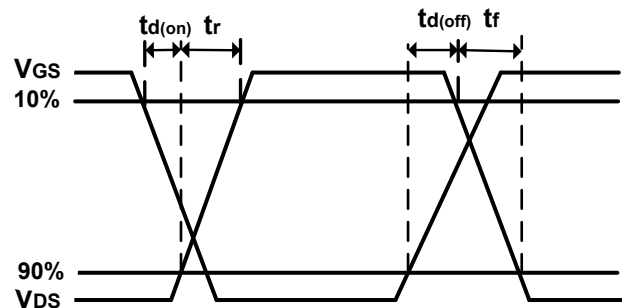
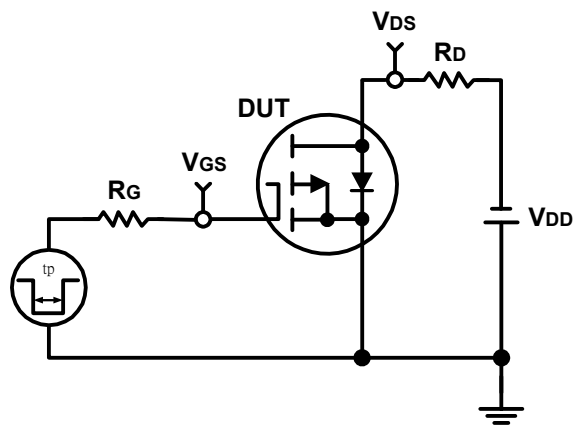
Transfer Characteristics



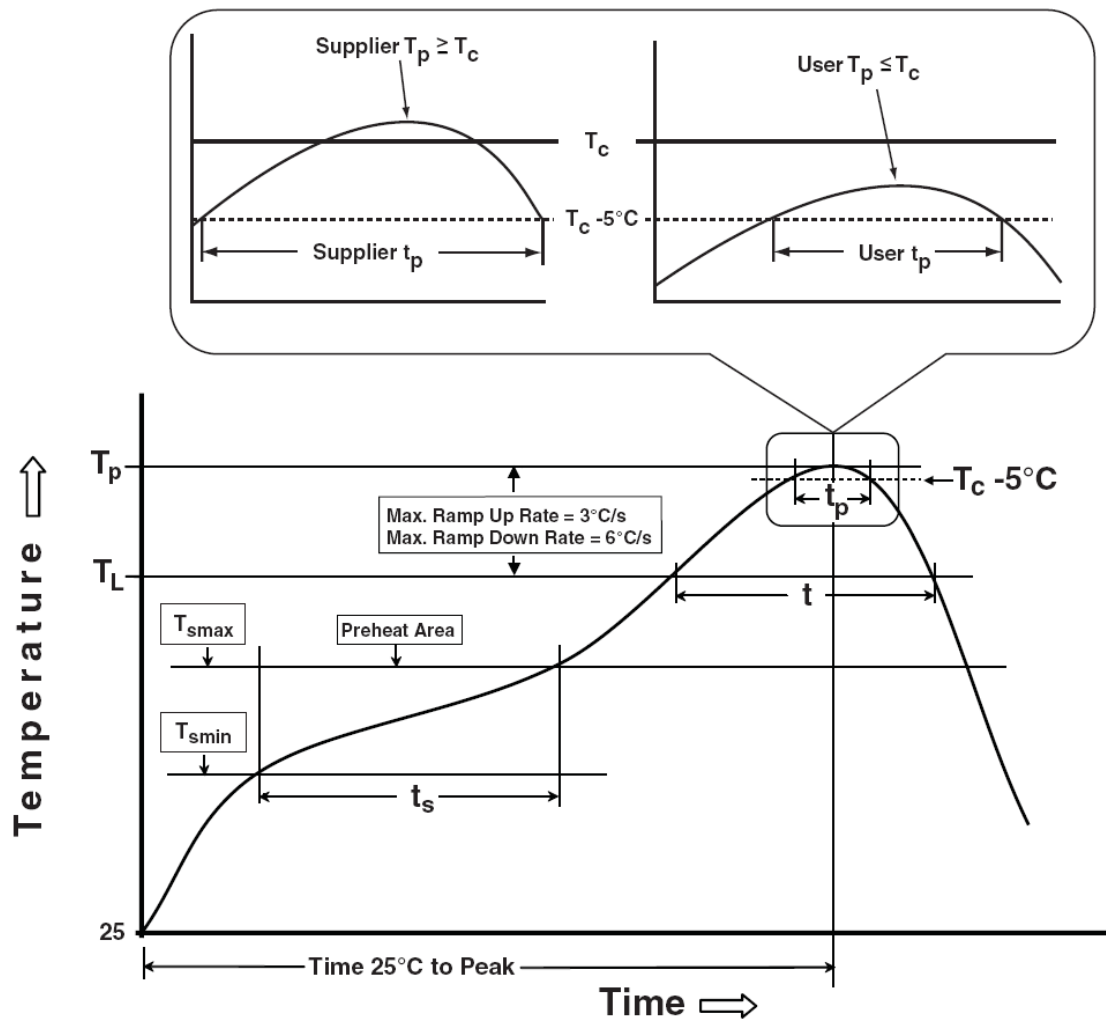
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

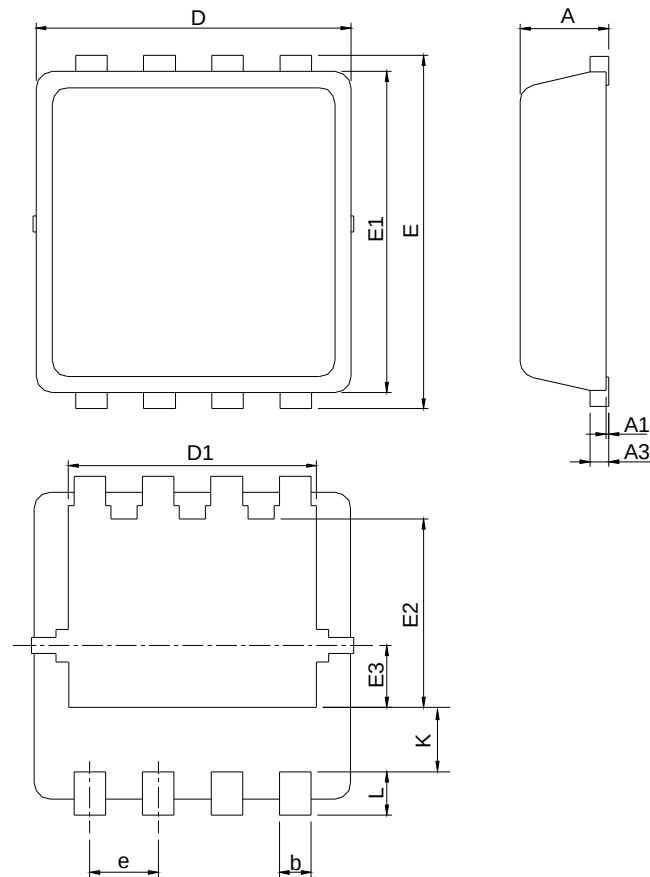


Classification Profile



Package Information

PDFN3.3*3.3-8L



SYMBOL	PDFN3.3*3.3-8L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.002
A3	0.10	0.25	0.004	0.010
b	0.24	0.35	0.009	0.014
D	2.90	3.10	0.114	0.122
D1	2.25	2.45	0.089	0.096
E	3.10	3.30	0.122	0.130
E1	2.90	3.10	0.114	0.122
E2	1.65	1.85	0.065	0.073
E3	0.56	0.58	0.022	0.023
e	0.65 BSC		0.026 BSC	
K	0.475	0.775	0.019	0.031
L	0.30	0.50	0.012	0.020

RECOMMENDED LAND PATTERN

