

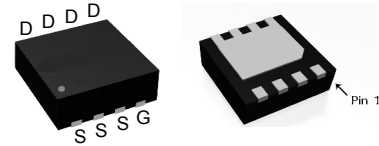
Features

- 30V/120A,
 $R_{DS(ON)} = 1.2m\Omega(\text{typ.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 1.6m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- 100% UIS + R_g Tested
- Avalanche Rated
- Reliable and Rugged
- Lead Free and Green Devices Available
 (RoHS Compliant)

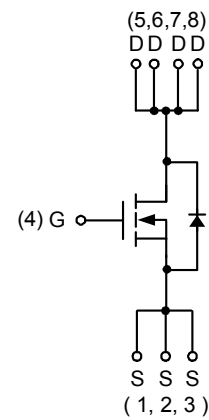
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



DFN3.3x3.3



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		30	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	120	A
I _D	Continuous Drain Current	T _C =25°C	120	
		T _C =100°C	90	
I _{DM}	Pulsed Drain Current	T _C =25°C	360	
P _D	Maximum Power Dissipation	T _C =25°C	62.5	W
		T _C =100°C	25	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	2	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	35	°C/W
		Steady State ^c	70	
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 : Package is limited by 50A.

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

Note c : Surface Mounted on 1in^2 pad area, $t \leq 999\text{s}$.

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

Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

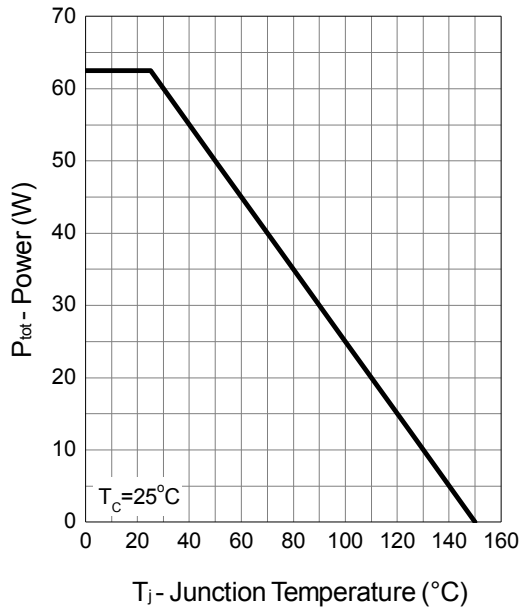
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.4	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 T _J =125°C	-	1.2 1.6	1.5 -	mΩ
		V _{GS} =4.5V, I _{DS} =20A	-	1.6	2.1	
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =20A	-	25	-	S
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	I _F =20A, dI _{SD} /dt=100A/μs	-	48.9	-	ns
t _a	Charge Time		-	24.4	-	
t _b	Discharge Time		-	24.5	-	
Q _{rr}	Reverse Recovery Charge		-	42.8	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	2883	-	pF
C _{oss}	Output Capacitance		-	1857	-	
C _{rss}	Reverse Transfer Capacitance		-	125	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	18	33	ns
t _r	Turn-on Rise Time		-	10.7	20	
t _{d(OFF)}	Turn-off Delay Time		-	48.3	88	
t _f	Turn-off Fall Time		-	71.2	129	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =20A	-	22	30.8	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =20A	-	42.5	59.5	
Q _{gth}	Threshold Gate Charge		-	6.4	9	
Q _{gs}	Gate-Source Charge		-	10.6	14.8	
Q _{gd}	Gate-Drain Charge		-	5.1	7.1	

Note e : Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

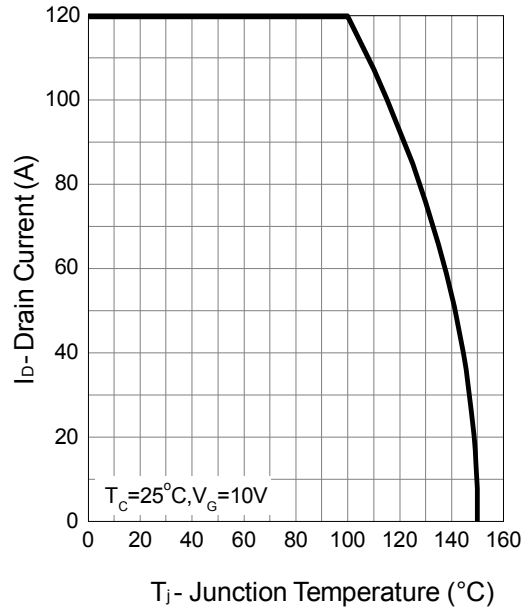
Note f : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

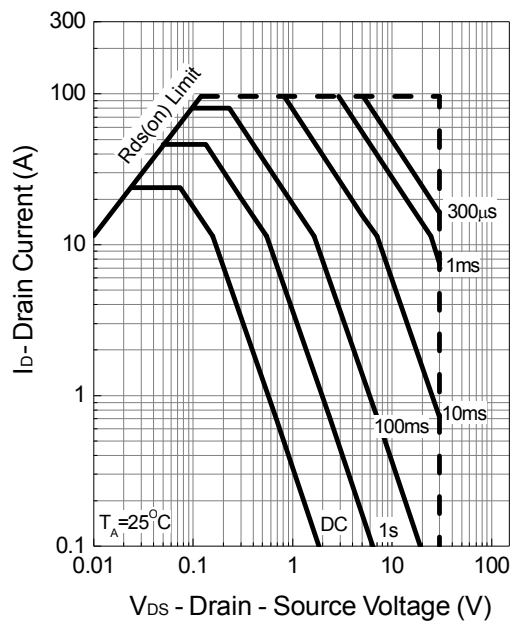
Power Dissipation



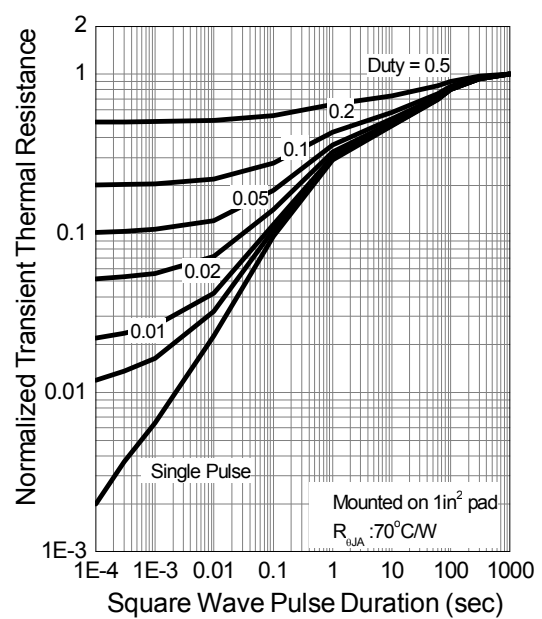
Drain Current



Safe Operation Area

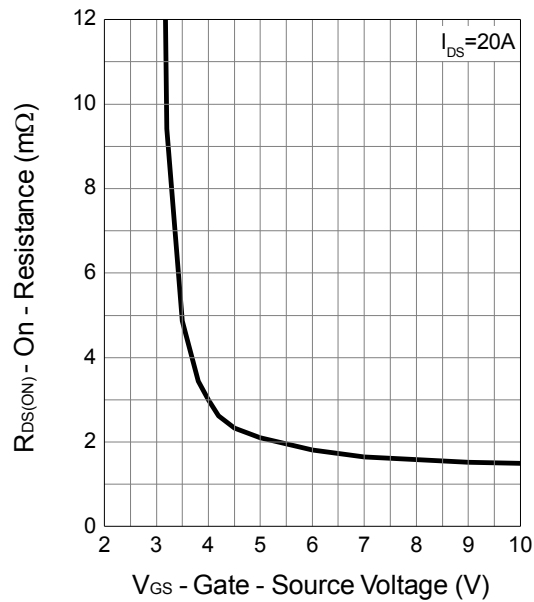


Thermal Transient Impedance

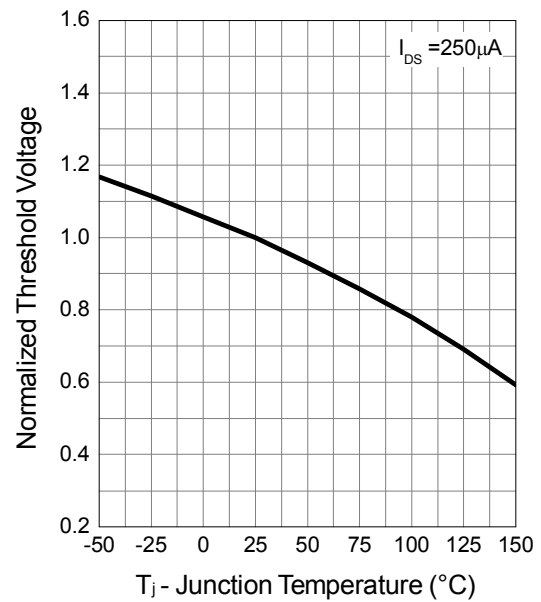


Typical Operating Characteristics (Cont.)

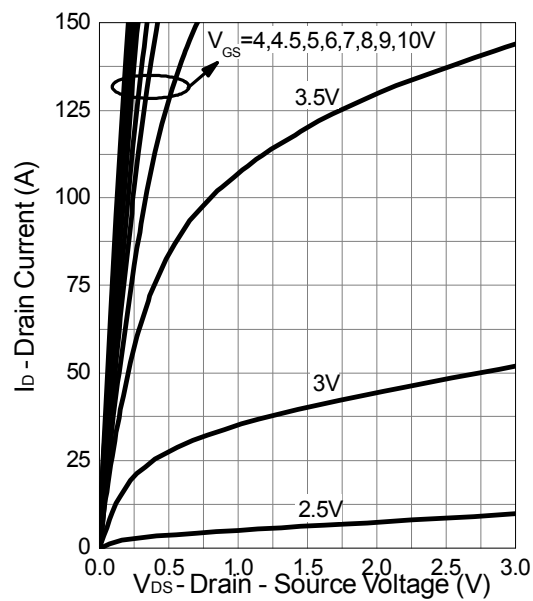
Gate-Source On Resistance



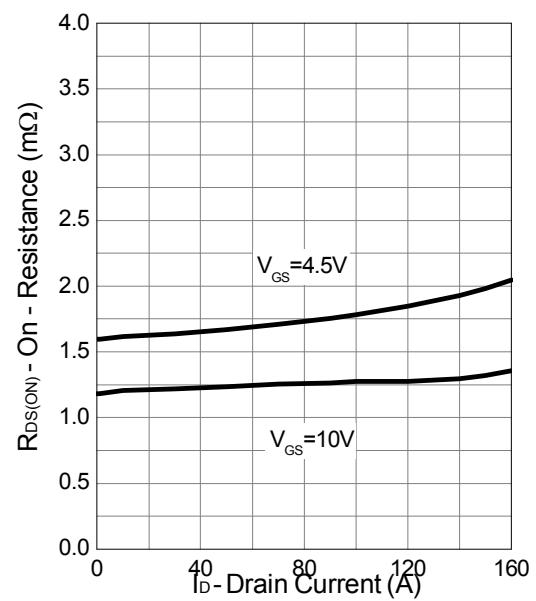
Gate Threshold Voltage



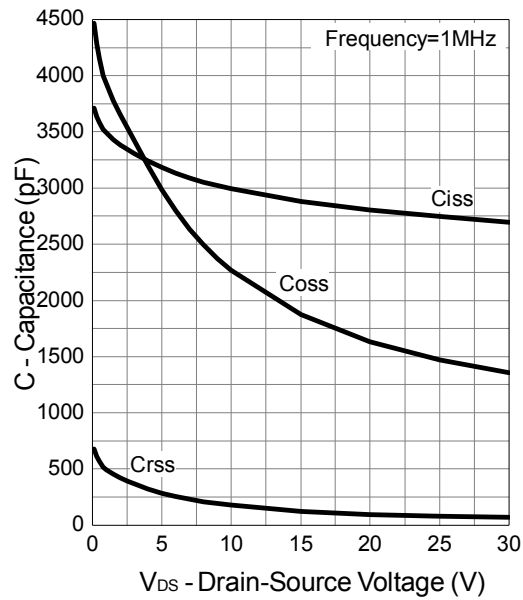
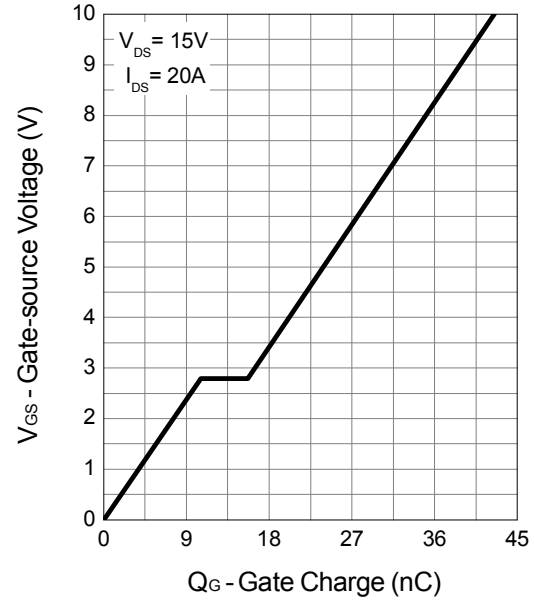
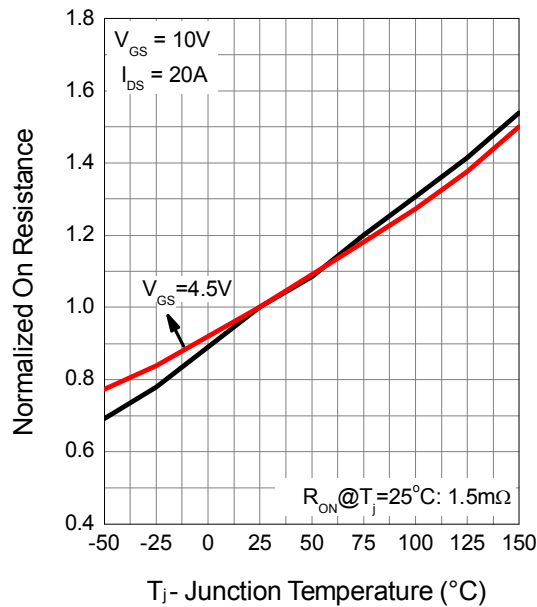
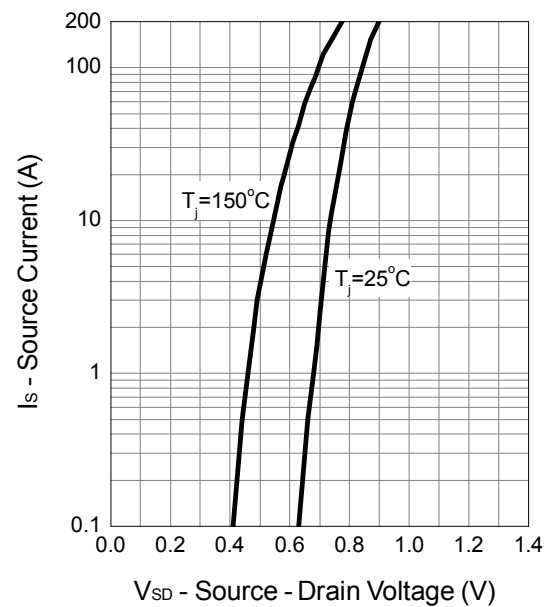
Output Characteristics



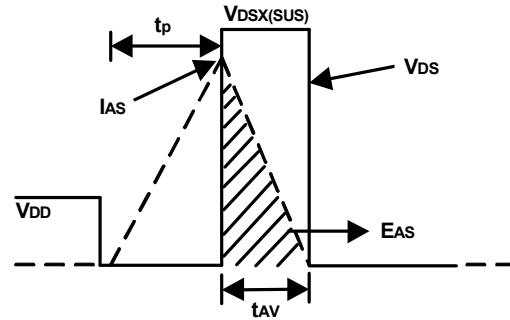
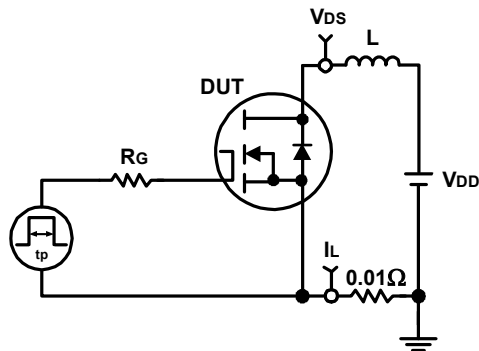
Drain-Source On Resistance



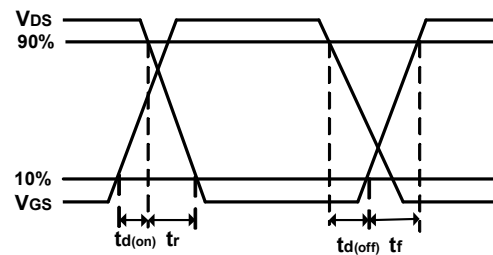
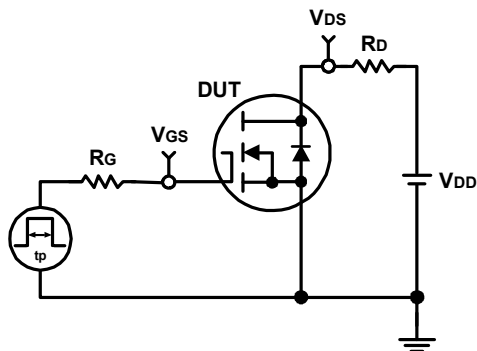
Typical Operating Characteristics (Cont.)

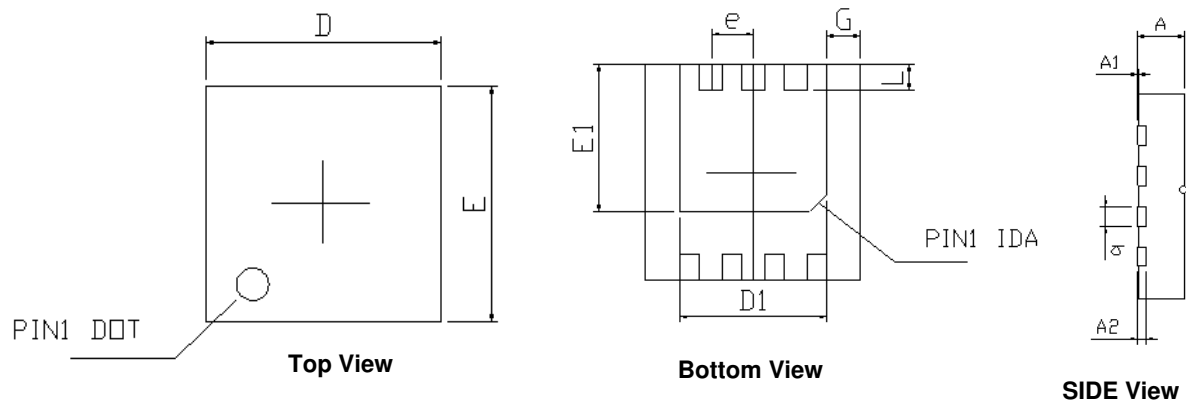
Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms



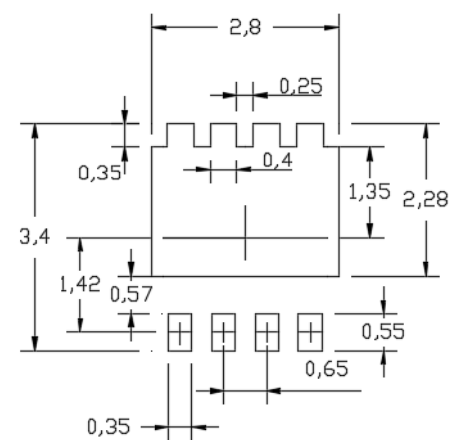
Switching Time Test Circuit and Waveforms





SYMBOLS				
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.700	0.800	0.028	0.031
A1	0.000	0.500	0.000	0.020
A2	0.100	0.250	0.004	0.010
b	0.240	0.350	0.009	0.014
D	3.150	3.400	0.124	0.134
D1	2.100	2.800	0.083	0.110
E	3.150	3.400	0.124	0.134
E1	2.150	2.350	0.085	0.093
e	0.600	0.700	0.024	0.028
G	0.275	0.575	0.011	0.023
L	0.350	0.450	0.014	0.018

RECOMMENDED LAND PATTERN



UNIT: mm