3419

P-Channel Enhancement Mode MOSFET

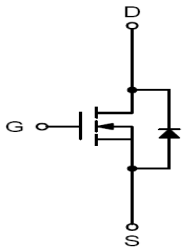
产品说明书

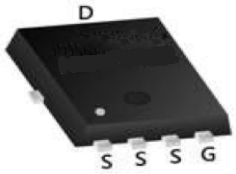
DATA SHEET

3419

P-Channel Enhancement Mode MOSFET

The 3419 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.





DFN3X3

GENERAL FEATURES

- RDS(ON) < 13mΩ @ VGS=-4.5V
  RDS(ON) < 9mΩ @ VGS=-10V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management

ABSOLUTE MAXIMUM RATINGS(T_A=25℃unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-30	V
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-50 to 150	°C
I_S	Diode Continuous Forward Current①	T_C=25°C	-30	A
I_{DM}	Pulse Drain Current Tested①	T_C=25°C	-100	A
I_D	Continuous Drain Current(V_{GS}=-10V)①	T_C=25°C	-20	A

ELECTRICAL CHARACTERISTICS (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-30		-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1.0	-1.75	-2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-15A	-	8	10	mΩ
		V_{GS}=-4.5V, I_D=-8A	-	11.5	15	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-15A	30	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz	-	2300	-	PF
Output Capacitance	C_{oss}		-	410	-	PF
Reverse Transfer Capacitance	C_{rss}		-	280	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-15V, ID=-10A, V_{GS}=-10V,R_{GEN}=3Ω	-	15	-	nS
Turn-on Rise Time	t_r		-	11	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	44	-	nS
Turn-Off Fall Time	t_f		-	21	-	nS
Total Gate Charge	Q_g	V_{DS}=-15V,I_D=-10A,V_{GS}=-10V	-	48	-	nC
Gate-Source Charge	Q_{gs}		-	12	-	nC
Gate-Drain Charge	Q_{gd}		-	14	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-2A	-	-	-1.2	V

NOTES:

a. Surface Mounted on FR4 Board, t ≤10 sec.
b. Pulse Test：Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
c. Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

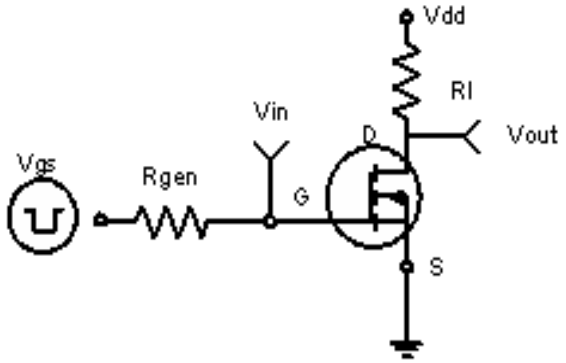


Figure 1 Switching Test Circuit

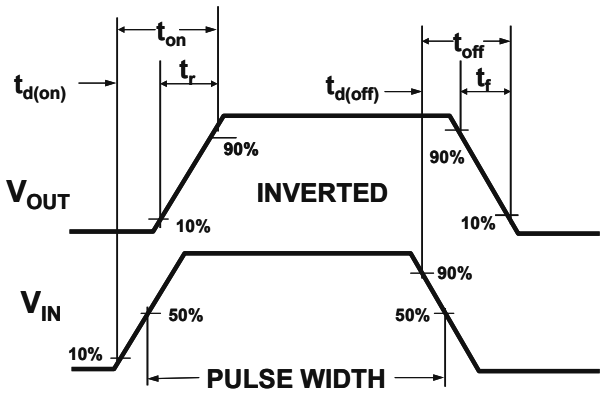
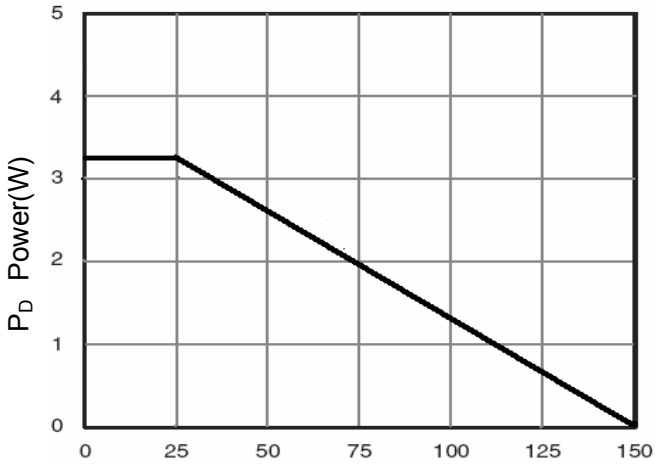
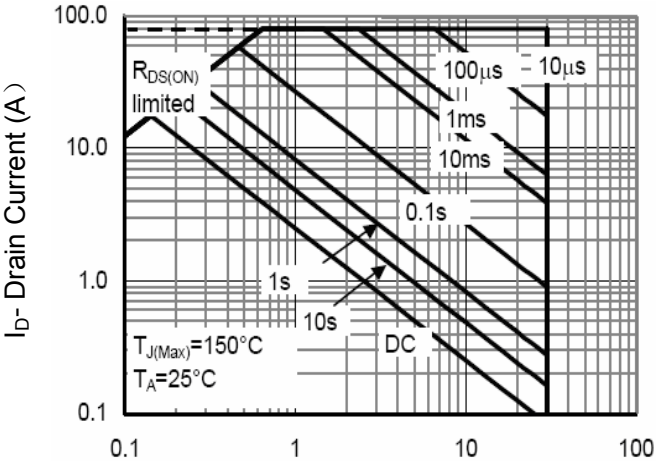


Figure 2 Switching Waveforms



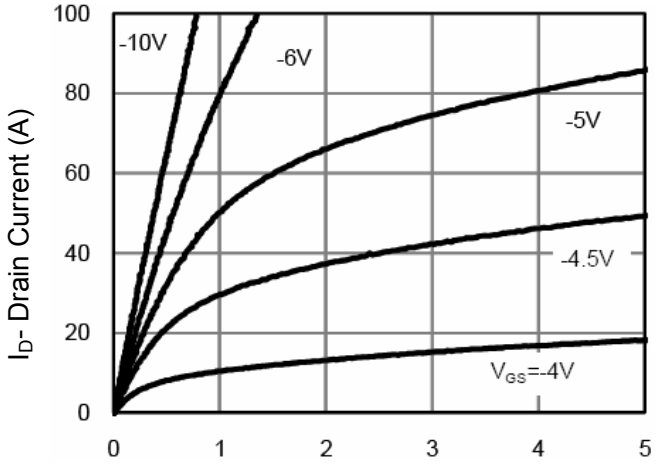
T_J-Junction Temperature(℃)

Figure 3 Power Dissipation



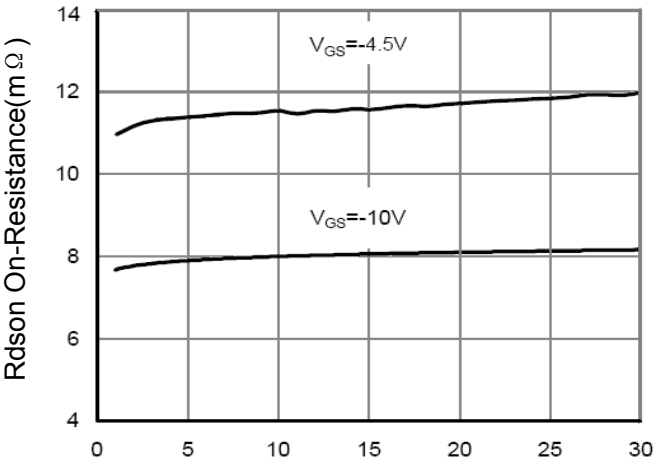
Vds Drain-Source Voltage (V)

Figure 4 Safe Operation Area



Vds Drain-Source Voltage (V)

Figure 5 Output Characteristics



I_D- Drain Current (A)

Figure 6 Drain-Source On-Resistance

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

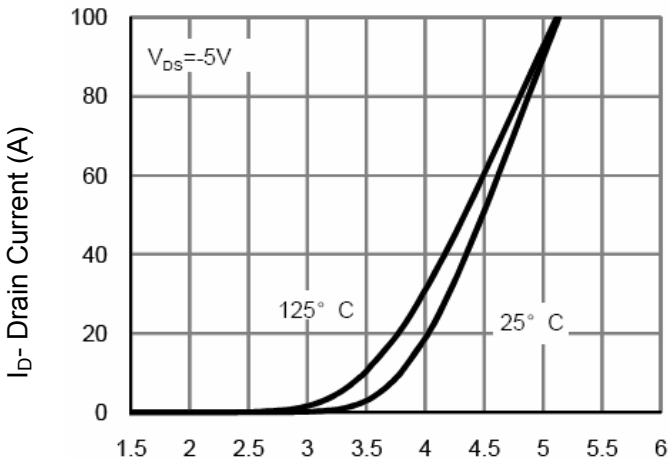


Figure 7 Transfer Characteristics

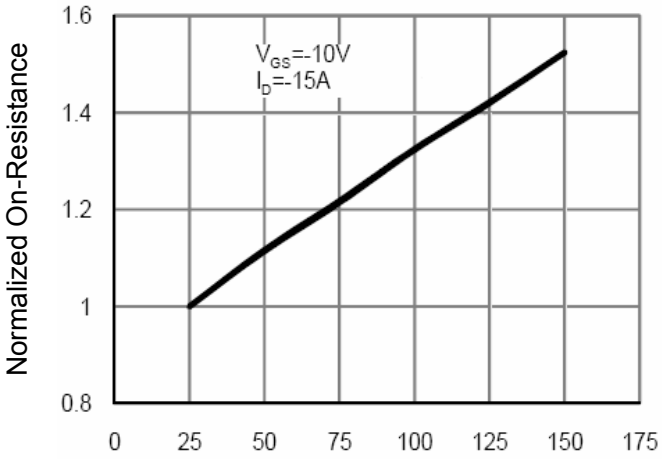


Figure 8 Drain-Source On-Resistance

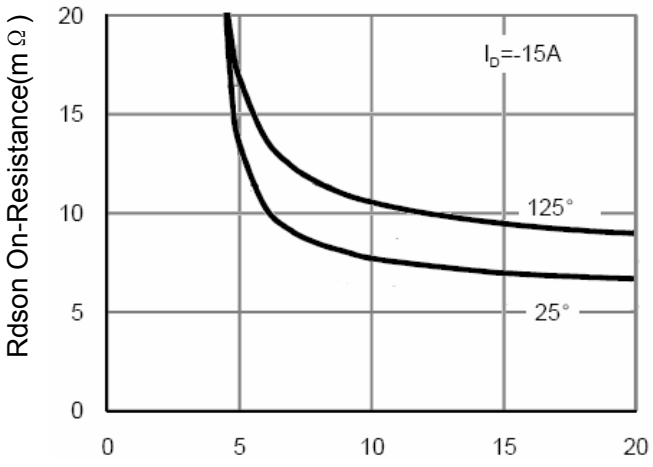


Figure 9 Rdson vs Vgs

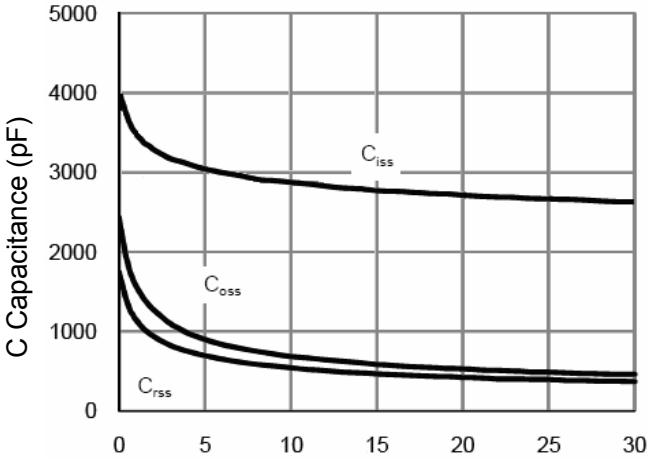


Figure 10 Capacitance vs Vds

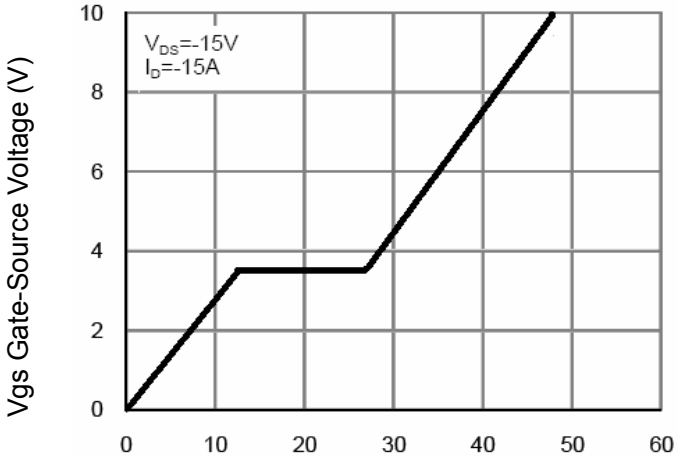


Figure 11 Gate Charge

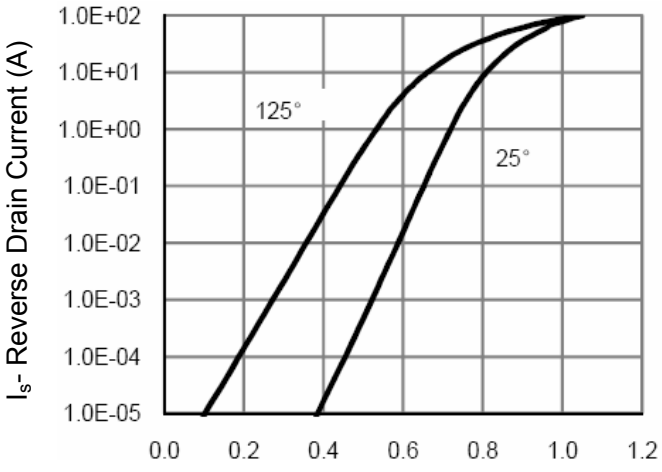


Figure 12 Source- Drain Diode Forward

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

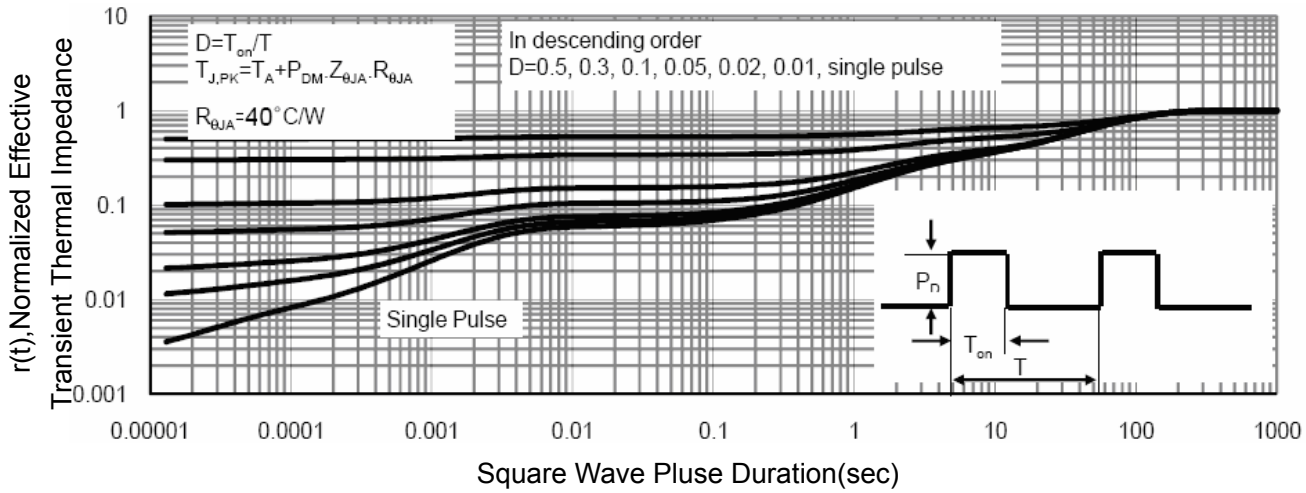
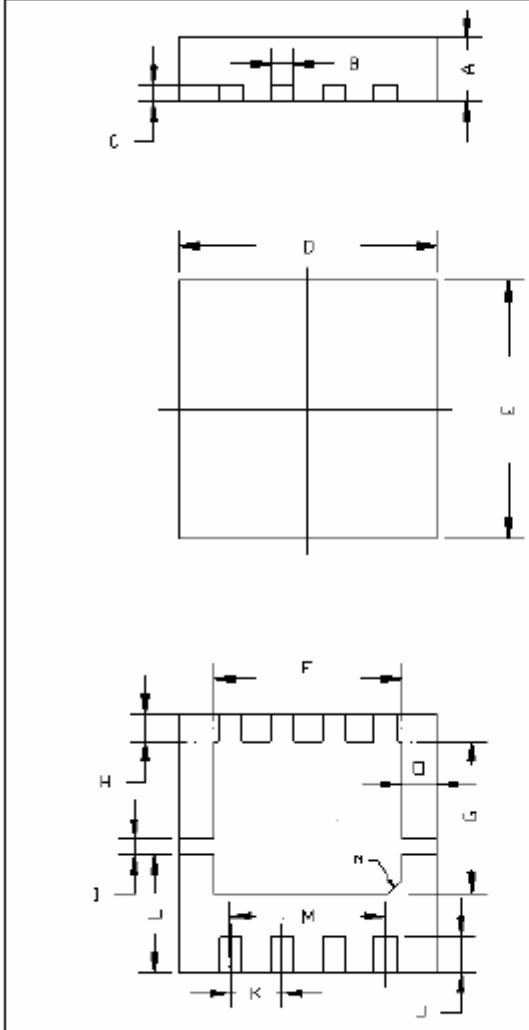


Figure 13 Normalized Maximum Transient Thermal Impedance

Package Information

DFN3.3X3.3 EP Package Information

封装外形尺寸图



符号	单位：mm		
	MIN	MAX	TYP
A	0.75	0.85	0.8
B	0.25	0.35	0.3
C	0.18	0.22	0.2
D	3.2	3.3	3.25
E	3.2	3.3	3.25
F	2.2	2.5	2.35
G	1.8	2.0	1.9
H	0.3	0.4	0.35
I	0.15	0.25	0.2
J	0.4	0.5	0.45
K	0.6	0.7	0.65
L	1.38	1.58	1.48
M	1.8	2.1	1.95
N	0.15*45°		
O	0.4	0.5	0.45