

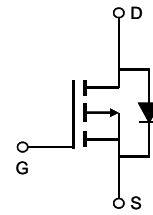
The 3419 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

- $R_{DS(ON)} < 13m\Omega @ V_{GS} = -4.5V$
 $R_{DS(ON)} < 9m\Omega @ V_{GS} = -10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management



DFN3X3

ABSOLUTE MAXIMUM RATINGS($T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ C$ 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	$^\circ C$
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ C$
I_S	Diode Continuous Forward Current ^①	$T_C=25^\circ C$	-30
I_{DM}	Pulse Drain Current Tested ^①	$T_C=25^\circ C$	-100
I_D	Continuous Drain Current($V_{GS}=-10V$) ^①	$T_C=25^\circ C$	-20

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30		-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	A
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250 A$	-1.0	-1.75	-2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-15A$	-	8	10	m
		$V_{GS}=-4.5V, I_D=-8A$	-	11.5	15	m
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-15A$	30	-	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	2300	-	PF
Output Capacitance	C_{oss}		-	410	-	PF
Reverse Transfer Capacitance	C_{rss}		-	280	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-10A,$ $V_{GS}=-10V, R_{GEN}=3$	-	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:

- Surface Mounted on FR4 Board, $t \leq 10$ sec.
- Pulse Test : Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1 Switching Test Circuit

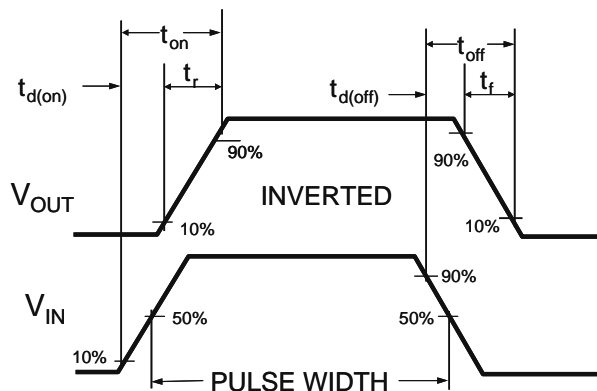


Figure 2 Switching Waveforms

P_D Power(W)

T_J -Junction Temperature()
Figure 3 Power Dissipation

I_D - Drain Current (A)

V_{DS} Drain-Source Voltage (V)
Figure 5 Output Characteristics

I_D - Drain Current (A)

V_{DS} Drain-Source Voltage (V)
Figure 4 Safe Operation Area

$R_{DS(on)}$ On-Resistance(m)

I_D - Drain Current (A)
Figure 6 Drain-Source On-Resistance

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

<p>I_D- Drain Current (A)</p>	<p>Normalized On-Resistance</p>
<p>Vgs Gate-Source Voltage (V) Figure 7 Transfer Characteristics</p>	<p>T_J-Junction Temperature() Figure 8 Drain-Source On-Resistance</p>
<p>R_{dson} On-Resistance(mΩ)</p>	<p>C Capacitance (pF)</p>
<p>Vgs Gate-Source Voltage (V) Figure 9 R_{dson} vs Vgs</p>	<p>Vds Drain-Source Voltage (V) Figure 10 Capacitance vs Vds</p>
<p>Vgs Gate-Source Voltage (V)</p>	<p>I_S- Reverse Drain Current (A)</p>
<p>Qg Gate Charge (nC) Figure 11 Gate Charge</p>	<p>Vsd Source-Drain Voltage (V) Figure 12 Source- Drain Diode Forward</p>

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

r(t), Normalized Effective
Transient Thermal Impedance

Square Wave Pulse Duration(sec)

Figure 13 Normalized Maximum Transient Thermal Impedance

Package Information

DFN3.3X3.3 EP Package Information