

**UT3419***Power MOSFET***20V, 3.5A P-CHANNEL
ENHANCEMENT MODE FIELD
EFFECT TRANSISTOR****DESCRIPTION**

The UTC **UT3419** is a P-channel enhancement MOSFET providing designers with excellent $R_{DS(ON)}$, low gate charge. The gate voltage is as low as 2.5V. It is ESD protection.

The UTC **UT3419** can be applied in PWM applications or used as a load switch.

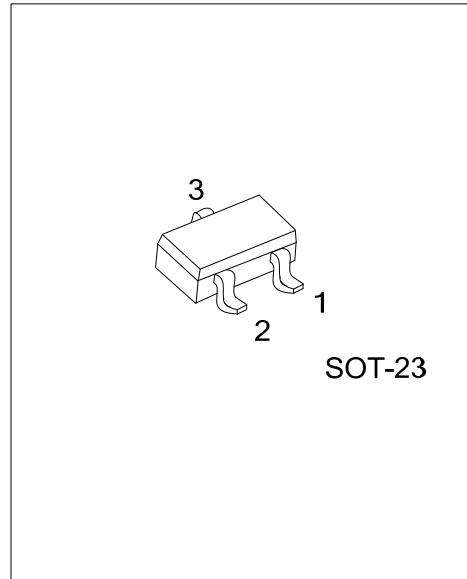
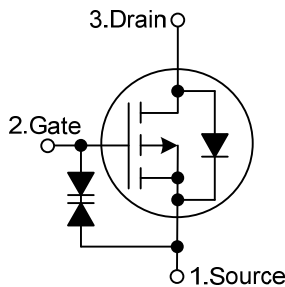
FEATURES

* ESD Rating Is Up To 2000V HBM

* $R_{DS(ON)} < 75m\Omega$ ($V_{GS} = -10V$)

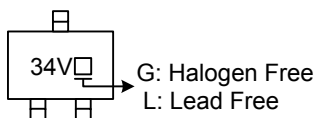
$R_{DS(ON)} < 95m\Omega$ ($V_{GS} = -4.5V$)

$R_{DS(ON)} < 145m\Omega$ ($V_{GS} = -2.5V$)

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3419L-AE3-R	UT3419G-AE3-R	SOT-23	S	G	D	Tape Reel

UT3419L-AE3-R (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free, L: Lead Free
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MARKING

■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain to Source Voltage		V _{DSS}	-20	V
Gate to Source Voltage		V _{GSS}	±12	V
Continuous Drain Current (Note 1)	T _A =25°C	I _D	-3.5	A
	T _A =70°C		-2.8	A
Pulsed Drain Current (Note 2)		I _{DM}	-15	A
Total Power Dissipation (Note 1)	T _A =25°C	P _D	1.4	W
	T _A =70°C		0.9	W
Junction Temperature		T _J	-55 ~ +150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 1)	t ≤ 10s	θJA	90	°C/W
	Steady-State		125	°C/W

Note: 1. The value of θ_{JA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The value in any a given application depends on the user's specific board design. The current rating is based on the $t \leq 10\text{s}$ thermal resistance rating.
2. Repetitive rating, pulse width limited by junction temperature.

■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V			-0.5	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V , V _{GS} =±10V			±1	μA
		V _{DS} =0V , V _{GS} =±12V			±10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D =-250μA	-0.7	-0.9	-1.4	V
On State Drain Current	I _{D(ON)}	V _{GS} =-4.5V, V _{DS} =-5V	-15			A
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-3.5A		59	75	mΩ
		V _{GS} =-4.5V, I _D =-3A		76	95	mΩ
		V _{GS} =-2.5V, I _D =-1A		111	145	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-3.5A		6.8		S
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =-10V, V _{GS} =0V, f =1MHz		512	620	pF
Output Capacitance	C _{OSS}			77		pF
Reverse Transfer Capacitance	C _{RSS}			62		pF
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f =1MHz		9.2	13	Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-3.5A		5.5	6.6	nC
Gate-Source Charge	Q _{GS}			0.8		nC
Gate-Drain Charge	Q _{GD}			1.9		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =-10V, V _{GS} =-10V, R _L =2.8Ω, R _{GEN} =3Ω		5		ns
Turn-ON Rise Time	t _R			6.7		ns
Turn-OFF Delay Time	t _{D(OFF)}			28		ns
Turn-OFF Fall Time	t _F			13.5		ns

■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S = -1A, V_{GS} = 0V$	-0.65	-0.81	-0.95	V
Maximum Body-Diode Continuous Current	I_S				-2	A
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -3.5A, dI/dt = 100A/\mu s$		9.8	12	ns
Body Diode Reverse Recovery Charge	Q_{RR}	$I_F = -3.5A, dI/dt = 100A/\mu s$		2.7		nC

Note: 3. The θ_{JA} is the sum of the thermal impedance from junction to lead θ_{JL} and lead to ambient.

4. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$. The SOA curve provides a single pulse rating.

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