



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

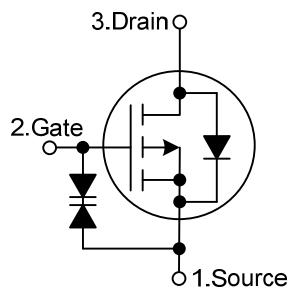
* ESD Rating Is Up To 2000V HBM

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

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

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

SYMBOL

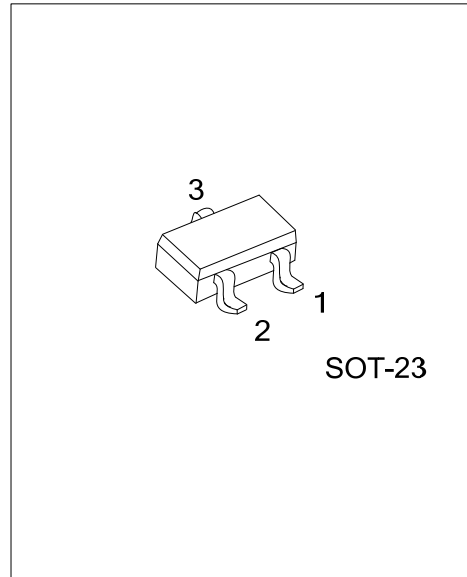
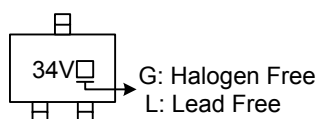


ORDERING INFORMATION

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
---	---

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.

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.