



UT3419

Power MOSFET

20V, 3.5A P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

DESCRIPTION

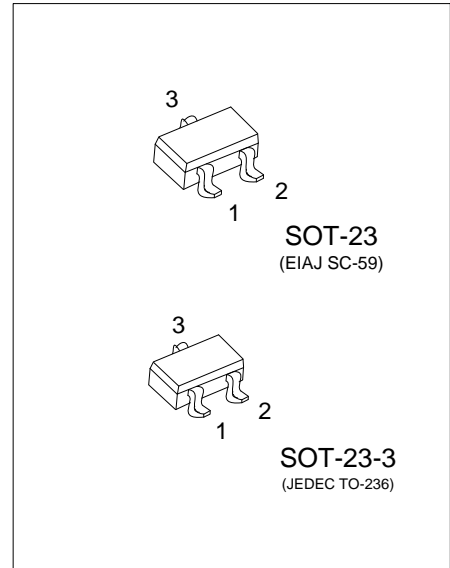
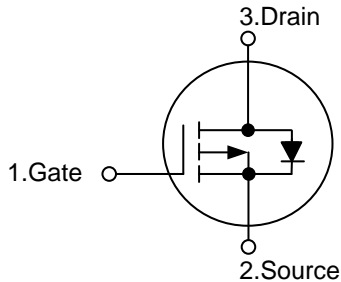
The UTC **UT3419** is a P-channel enhancement MOSFET providing designers with excellent $R_{DS(ON)}$, low gate charge. The gate voltage is as low as 2.5V.

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

FEATURES

- * $R_{DS(ON)} \leq 75 \text{ m}\Omega$ @ $V_{GS}=-10\text{V}$, $I_D=-3.5\text{A}$
- * $R_{DS(ON)} \leq 95 \text{ m}\Omega$ @ $V_{GS}=-4.5\text{V}$, $I_D=-3.0\text{A}$
- * $R_{DS(ON)} \leq 145 \text{ m}\Omega$ @ $V_{GS}=-2.8\text{V}$, $I_D=-1.0\text{A}$

SYMBOL



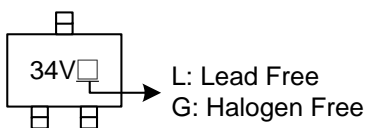
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3419L-AE2-R	UT3419G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT3419L-AE3-R	UT3419G-AE3-R	SOT-23	G	S	D	Tape Reel

Note: Pin Assignment: G: Gate S: Source D: Drain

<p>UT3419G-AE2-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE2: SOT-23-3, AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
---	--

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)	I_D	$T_A = 25^\circ\text{C}$	-3.5
		$T_A = 70^\circ\text{C}$	-2.8
Pulsed Drain Current (Note 2)	I_{DM}	-15	A
Total Power Dissipation (Note 1)	P_D	$T_A = 25^\circ\text{C}$	1.4
		$T_A = 70^\circ\text{C}$	0.9
Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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)	θ_{JA}	$t \leq 10\text{s}$	90
		Steady-State	125

Notes: 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.

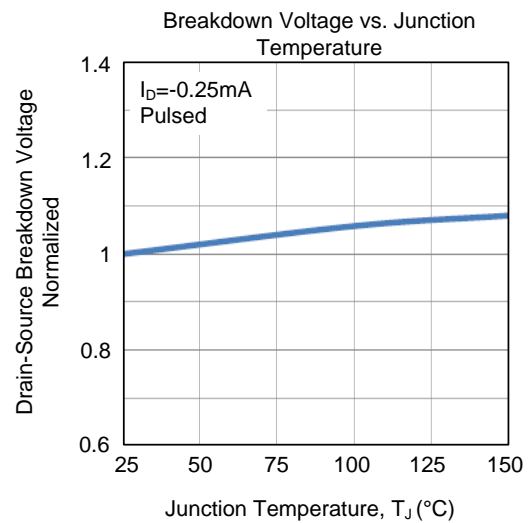
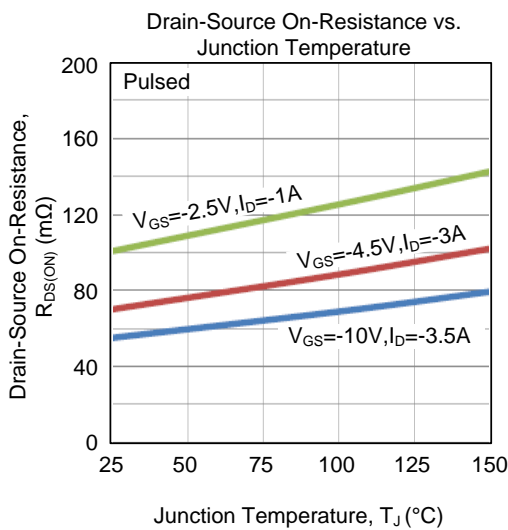
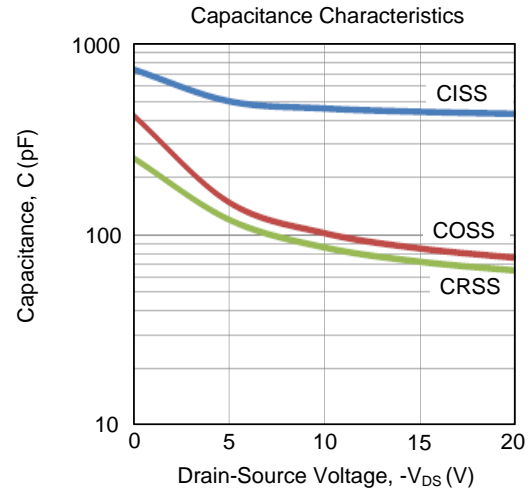
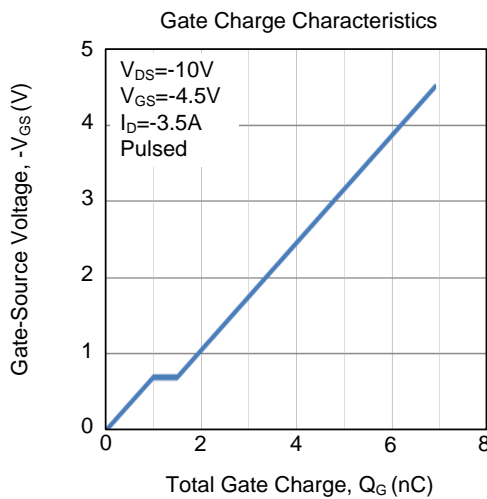
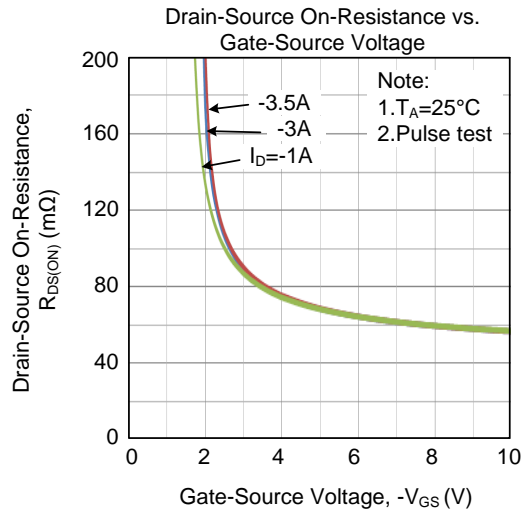
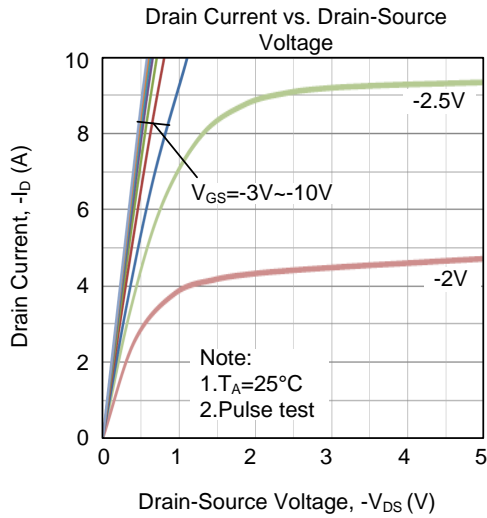
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-16V, V_{GS}=0V$			-0.5	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 10V$			± 100	nA
		$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.7		-1.4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-3.5A$			75	m Ω
		$V_{GS}=-4.5V, I_D=-3.0A$			95	m Ω
		$V_{GS}=-2.5V, I_D=-1.0A$			145	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		460		pF
Output Capacitance	C_{OSS}			100		pF
Reverse Transfer Capacitance	C_{RSS}			85		pF
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=0V, f=1MHz$			13	Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3.5A$		6.8		nC
Gate-Source Charge	Q_{GS}			1		nC
Gate-Drain Charge	Q_{GD}			0.5		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-3.5A, R_G=3.0\Omega$		4		ns
Turn-ON Rise Time	t_R			17		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			19		ns
Turn-OFF Fall Time	t_F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				-2	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=-1.0A, V_{GS}=0V$			-0.95	V

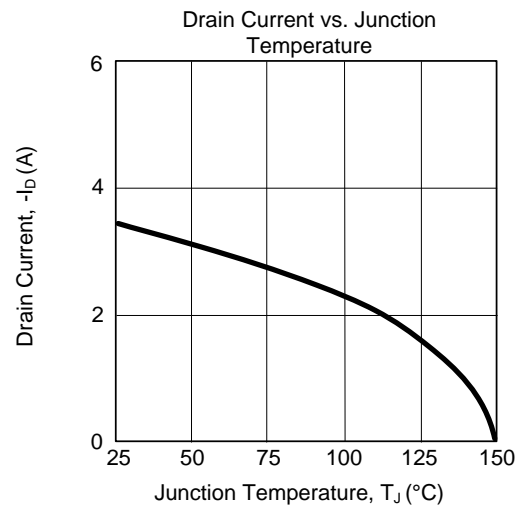
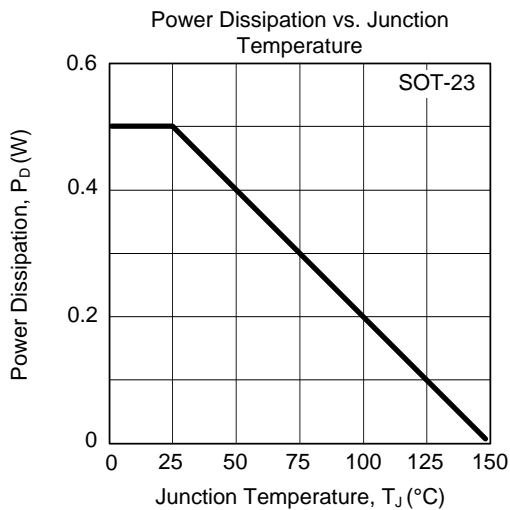
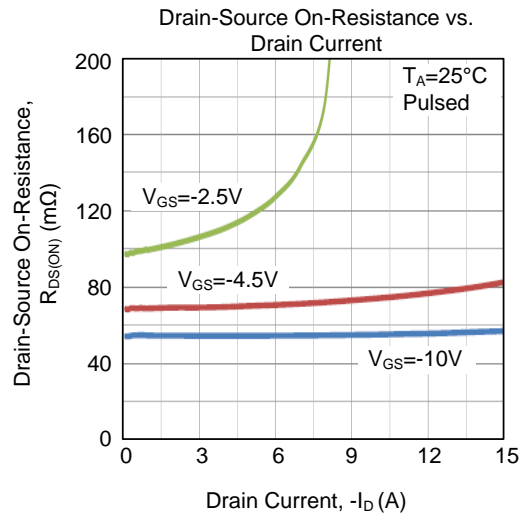
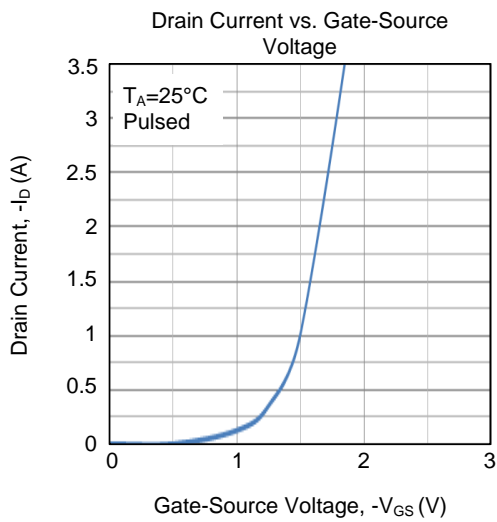
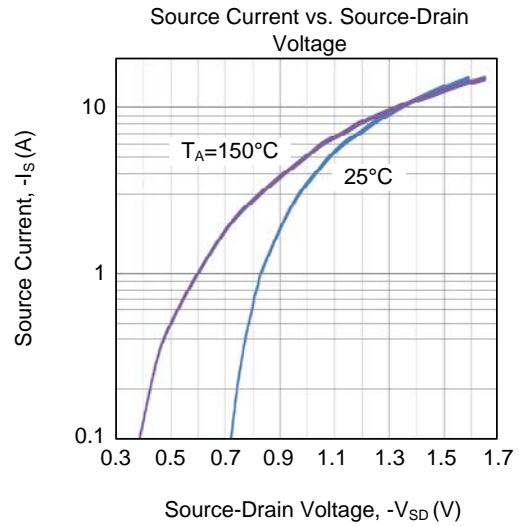
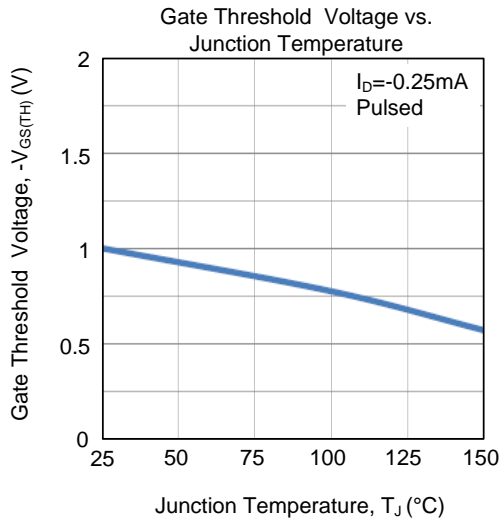
Notes: 1. The θ_{JA} is the sum of the thermal impedance from junction to lead θ_{JL} and lead to ambient.

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

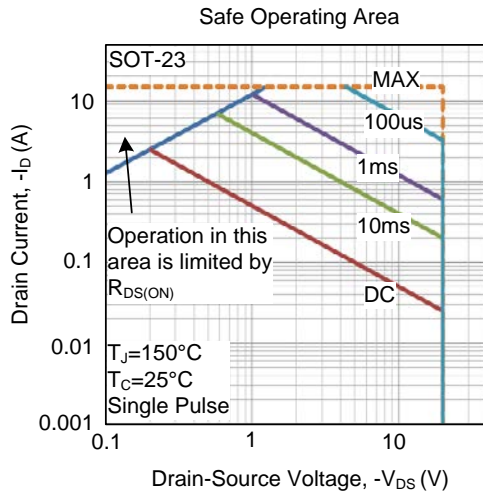
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.