



UT3419

Power MOSFET

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

DESCRIPTION

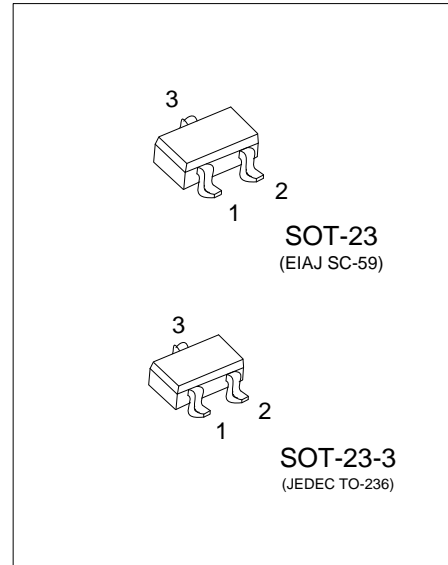
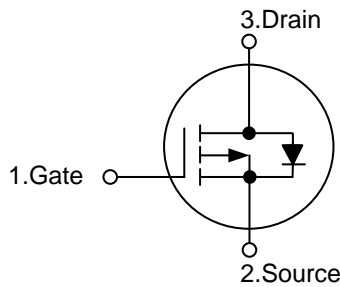
The UTC **UT3419** is a P-channel enhancement MOSFET providing designers with excellent $R_{DS(ON)}$, low gate charge. The gate voltage is as low as 2.5V.

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

FEATURES

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

SYMBOL



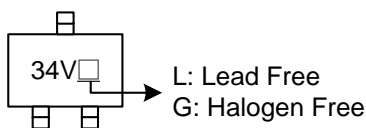
ORDERING INFORMATION

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>
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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)	I_D	$T_A = 25^\circ\text{C}$	-3.5	A
		$T_A = 70^\circ\text{C}$	-2.8	A
Pulsed Drain Current (Note 2)	I_{DM}	-15	A	
Total Power Dissipation (Note 1)	P_D	$T_A = 25^\circ\text{C}$	1.4	W
		$T_A = 70^\circ\text{C}$	0.9	W
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	$^\circ\text{C/W}$
		Steady-State	125	$^\circ\text{C/W}$

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.

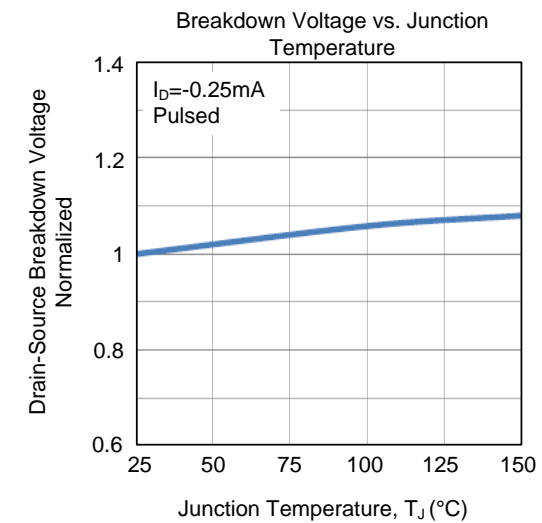
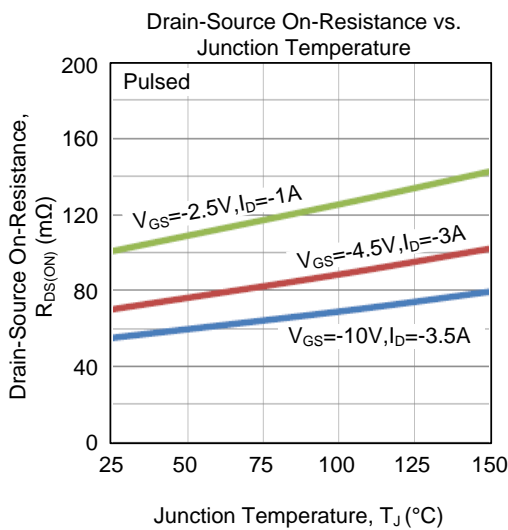
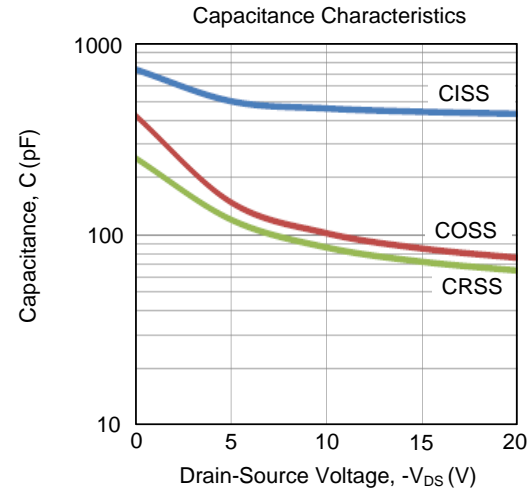
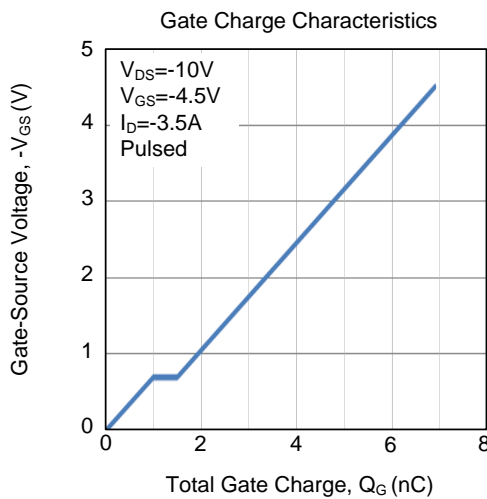
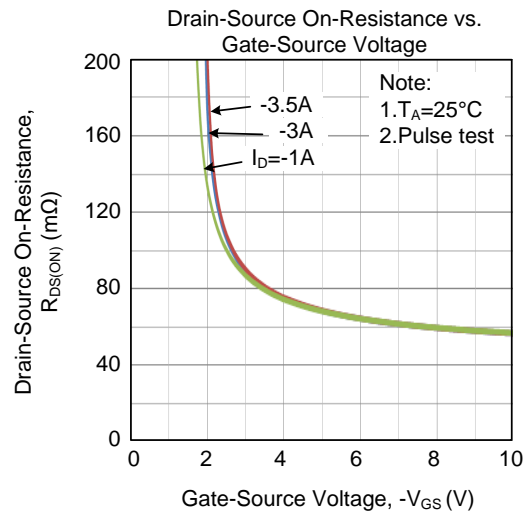
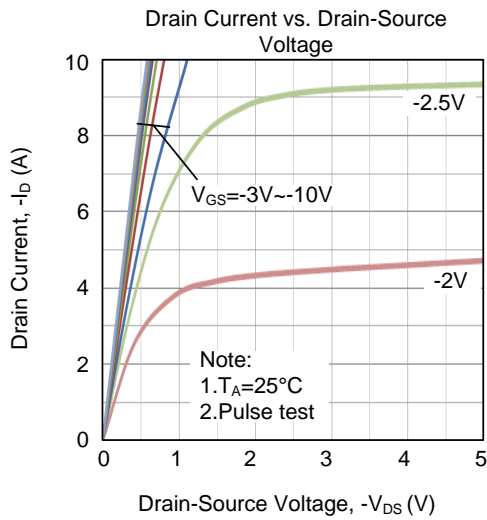
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

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

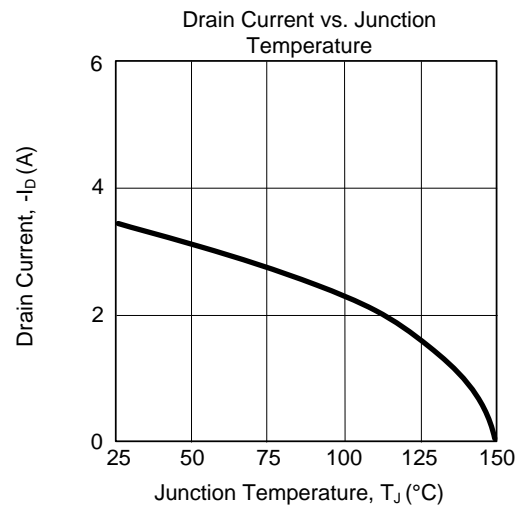
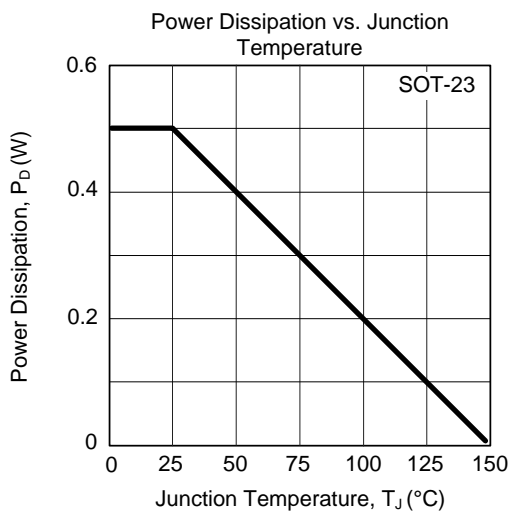
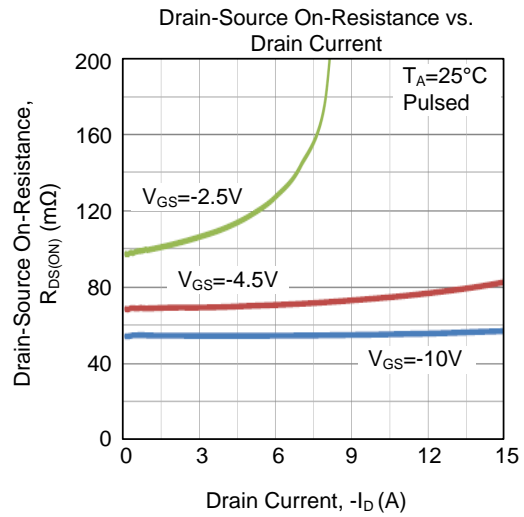
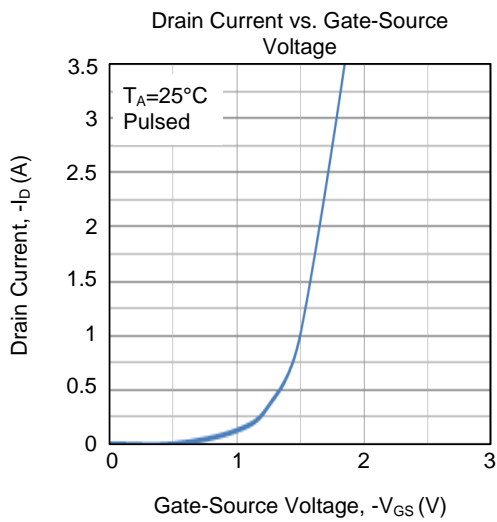
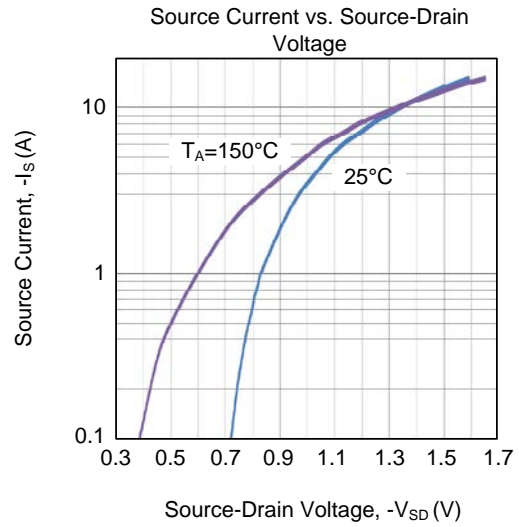
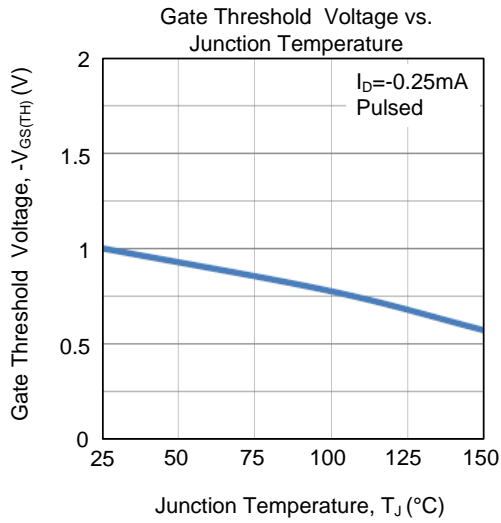
Notes: 1. The θ_{JA} is the sum of the thermal impedance from junction to lead θ_{JL} and lead to ambient.

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.

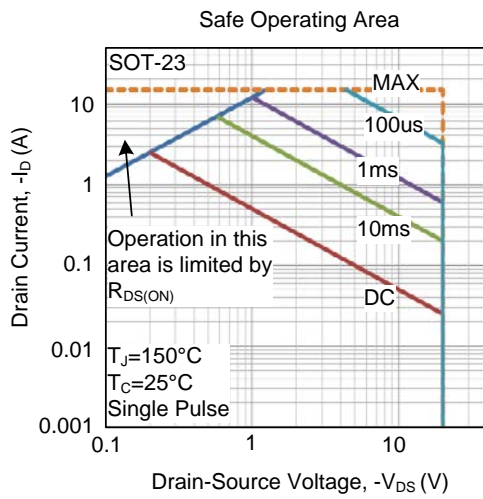
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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