



UT3409

Power MOSFET

P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

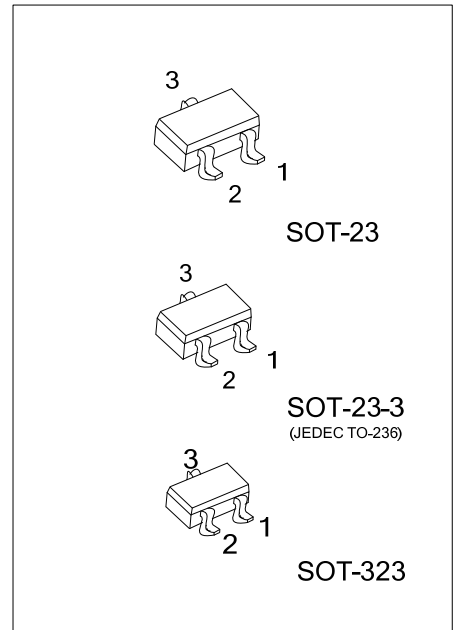
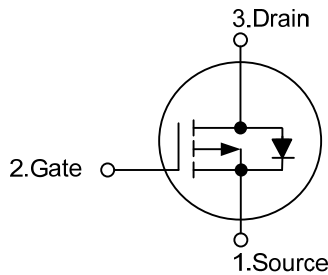
DESCRIPTION

The UTC **UT3409** 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.

FEATURES

- * $R_{DS(ON)} < 130m\Omega @ V_{GS} = -10V$
- * $R_{DS(ON)} < 200m\Omega @ V_{GS} = -4.5V$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL



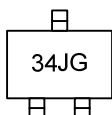
ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT3409G-AE2-R	SOT-23-3	S	G	D	Tape Reel
UT3409G-AE3-R	SOT-23	S	G	D	Tape Reel
UT3409G-AL3-R	SOT-323	S	G	D	Tape Reel

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

<p>UT3409G-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3, AE3: SOT-23, AL3: SOT-323</p> <p>(3) G: Halogen Free and Lead Free</p>
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MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current (Note 3)	I_D	-2.6	A
Pulsed Drain Current (Note 2)	I_{DM}	-20	A
Power Dissipation	P_D	1.4	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Notes: 1. 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.

2. Pulse width limited by $T_{J(MAX)}$

3. Surface mounted on 1 in² copper pad of FR4 board

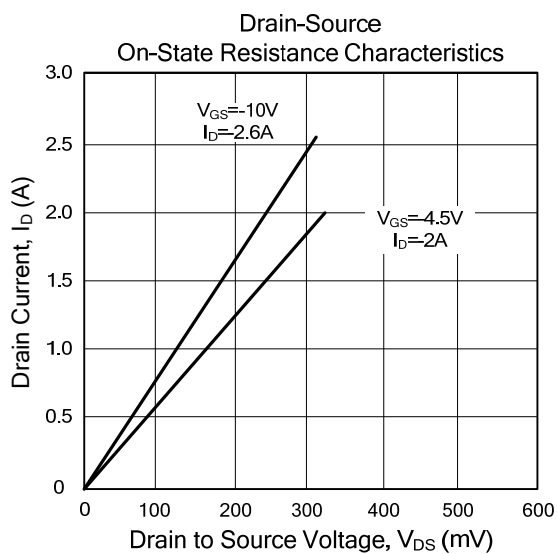
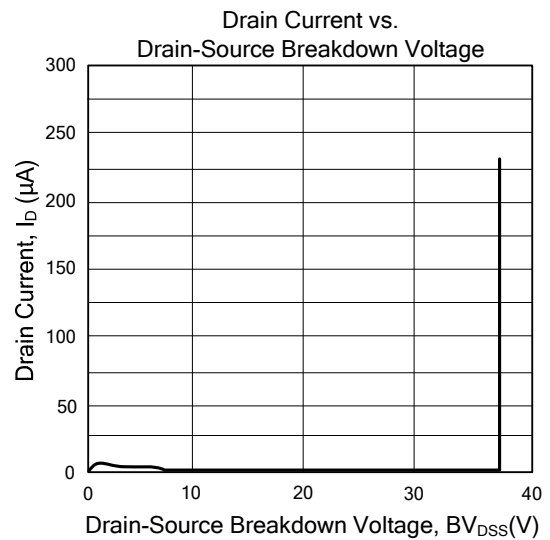
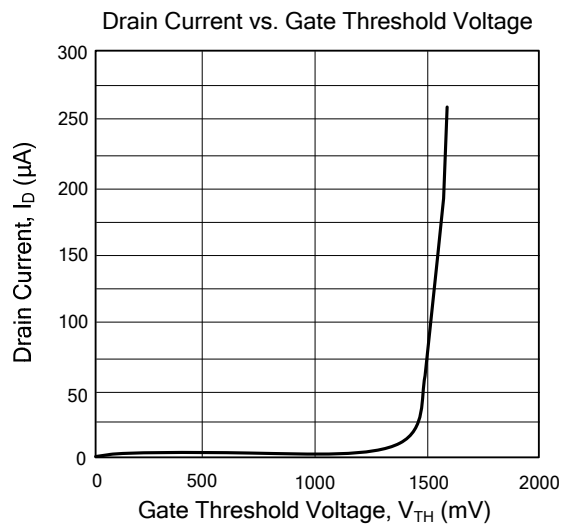
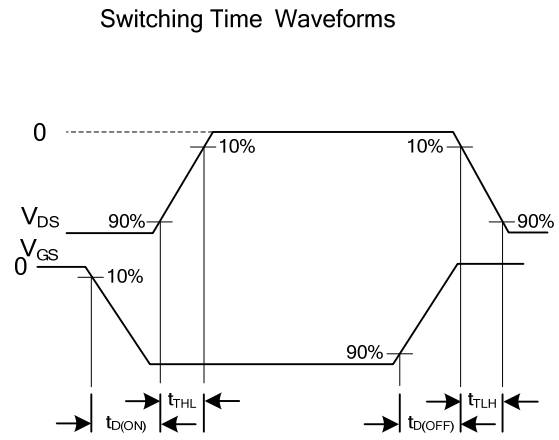
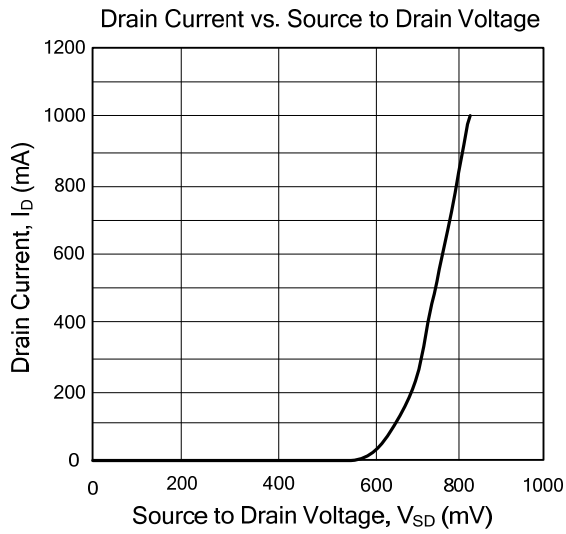
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 3)	θ_{JA}	90	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = -250\mu\text{A}, V_{GS} = 0\text{V}$	-30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}$			-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1	-1.9	-3	V
On state drain current	$I_{D(ON)}$	$V_{GS} = -4.5\text{V}, V_{DS} = -5\text{V}$	-5			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = -10\text{V}, I_D = -2.6\text{A}$		97	130	m Ω
		$V_{GS} = -4.5\text{V}, I_D = -2\text{A}$		166	200	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{V}, V_{DS} = -15\text{V}, f = 1\text{MHz}$		302	370	pF
Output Capacitance	C_{OSS}			50.3		pF
Reverse Transfer Capacitance	C_{RSS}			37.8		pF
SWITCHING PARAMETERS						
Total Gate Charge	10V	Q_G	$V_{GS} = -10\text{V}, V_{DS} = -15\text{V}, I_D = -2.6\text{A}$	6.8	9	nC
	4.5V			2.4		nC
Gate Source Charge	Q_{GS}	1.6			nC	
Gate Drain Charge	Q_{GD}	0.95			nC	
Turn-ON Delay Time	$t_{D(ON)}$	7.5			ns	
Turn-ON Rise Time	t_R	3.2			ns	
Turn-OFF Delay Time	$t_{D(OFF)}$	17		ns		
Turn-OFF Fall-Time	t_F	6.8		ns		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V_{SD}	$I_S = -1\text{A}, V_{GS} = 0\text{V}$		-0.82	-1	V
Maximum Body-Diode Continuous Current	I_S				-2	A
Body Diode Reverse Recovery Time	t_{RR}	$I_F = -2.6\text{A}, dI/dt = 100\text{A}/\mu\text{s}$		16.8	22	ns
Body Diode Reverse Recovery Charge	Q_{RR}	$I_F = -2.6\text{A}, dI/dt = 100\text{A}/\mu\text{s}$		10		nC

TYPICAL CHARACTERISTICS



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