



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

* SOT-23-3/SOT-23

$R_{DS(ON)} \leq 130 \text{ m}\Omega @ V_{GS} = -10\text{V}, I_D = -2.6\text{A}$

$R_{DS(ON)} \leq 200 \text{ m}\Omega @ V_{GS} = -4.5\text{V}, I_D = -2.0\text{A}$

* SOT-323

$R_{DS(ON)} \leq 160 \text{ m}\Omega @ V_{GS} = -10\text{V}, I_D = -2.6\text{A}$

$R_{DS(ON)} \leq 260 \text{ m}\Omega @ V_{GS} = -4.5\text{V}, I_D = -2.0\text{A}$

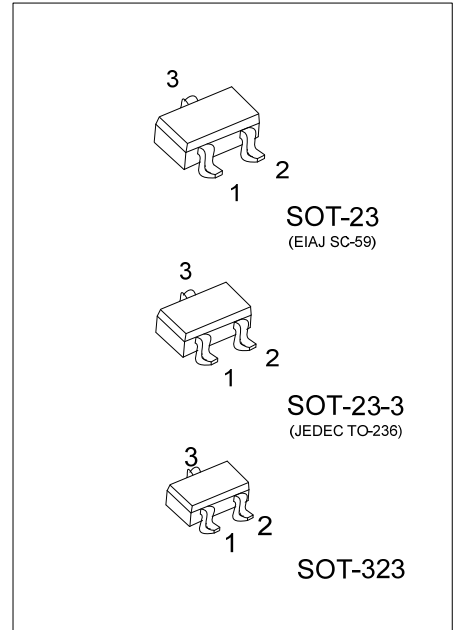
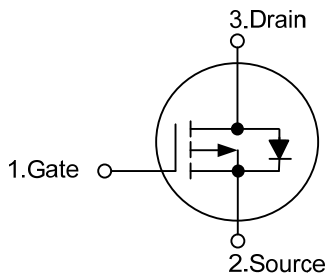
* Low capacitance

* Low gate charge

* Fast switching capability

* Avalanche energy specified

SYMBOL



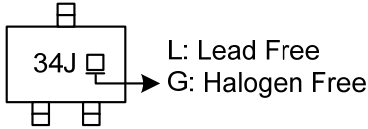
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3409L-AE2-R	UT3409G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT3409L-AE3-R	UT3409G-AE3-R	SOT-23	G	S	D	Tape Reel
UT3409L-AL3-R	UT3409G-AL3-R	SOT-323	G	S	D	Tape Reel

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

<p>UT3409G-AE3-R</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, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATING (T_A=25°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	SOT-23	P _D	0.9	W
	SOT-23-3		0.8	W
	SOT-323		0.6	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°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. Repetitive Rating: Pulse width limited by maximum junction temperature.
 3. Surface mounted on 1 in² copper pad of FR4 board.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23	θ _{JA}	138	°C/W
	SOT-23-3		156	°C/W
	SOT-323		208	°C/W

Note: Surface mounted on FR4 board using 1 sq in pad size, (Cu Area 1.127 sq in [2 oz] including traces).

■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
STATIC PARAMETERS								
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =-250μA, V _{GS} =0V	-30			V	
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	μA	
Gate-Source Leakage Current		I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA	
ON CHARACTERISTICS								
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.6	-3.0	V	
Static Drain-Source On-Resistance	SOT-23-3	R _{DS(ON)}	V _{GS} =-10V, I _D =-2.6A		100	130	mΩ	
	SOT-23		V _{GS} =-4.5V, I _D =-2.0A		170	200	mΩ	
	SOT-323		V _{GS} =-10V, I _D =-2.6A		120	160	mΩ	
			V _{GS} =-4.5V, I _D =-2.0A		190	260	mΩ	
DYNAMIC PARAMETERS								
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-15V, f=1MHz		285		pF	
Output Capacitance		C _{OSS}			62		pF	
Reverse Transfer Capacitance		C _{RSS}			47		pF	
SWITCHING PARAMETERS								
Total Gate Charge	10V	Q _G	V _{GS} =-10V, V _{DS} =-24V, I _D =-2.6A		9.8		nC	
	4.5V				5		nC	
Gate Source Charge		Q _{GS}			1.7		nC	
Gate Drain Charge		Q _{GD}			1.6		nC	
Turn-ON Delay Time		t _{D(ON)}			4		ns	
Turn-ON Rise Time		t _R		V _{GS} =-10V, V _{DS} =-15V,		16		ns
Turn-OFF Delay Time		t _{D(OFF)}		I _D =-2.6A, R _G =3.0Ω		13		ns
Turn-OFF Fall-Time		t _F				21		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS								
Maximum Body-Diode Continuous Current		I _S				-2	A	
Diode Forward Voltage		V _{SD}	I _S =-1.0A, V _{GS} =0V		-0.82	-1	V	

- Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
 2. Essentially independent of operating temperature.

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