



## UT3401

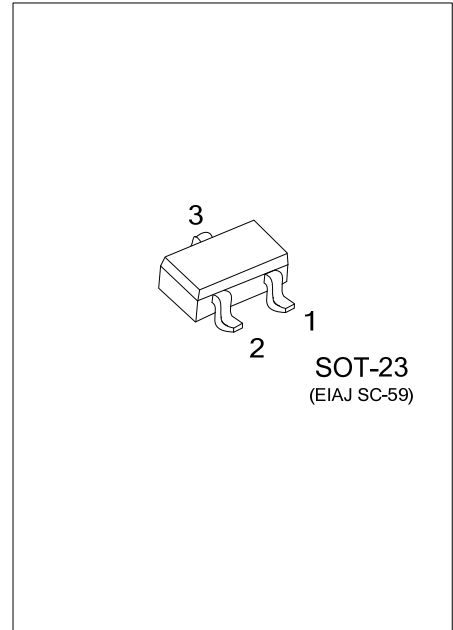
Power MOSFET

### P-CHANNEL ENHANCEMENT MODE

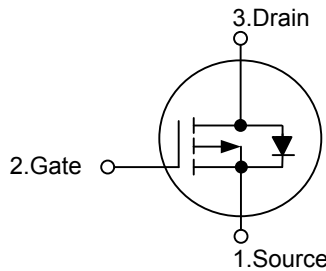
#### DESCRIPTION

The UTC **UT3401** is P-channel enhancement mode Power MOSFET, designed with high density cell, with fast switching speed, low on-resistance, excellent thermal and electrical capabilities and operation with low gate voltages.

This device is suitable for use as a load switch or in PWM applications.



#### SYMBOL



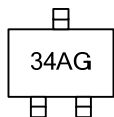
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT3401G-AE3-R	SOT-23	S	G	D	Tape Reel

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

<p>UT3401G-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and 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-Source Voltage	$V_{DSS}$	-30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current (Note 1)	$I_D$	-4.2	A
Pulsed Drain Current (Note 2)	$I_{DM}$	-30	A
Power Dissipation (Note 1)	$P_D$	1.4	W
Junction Temperature	$T_J$	+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

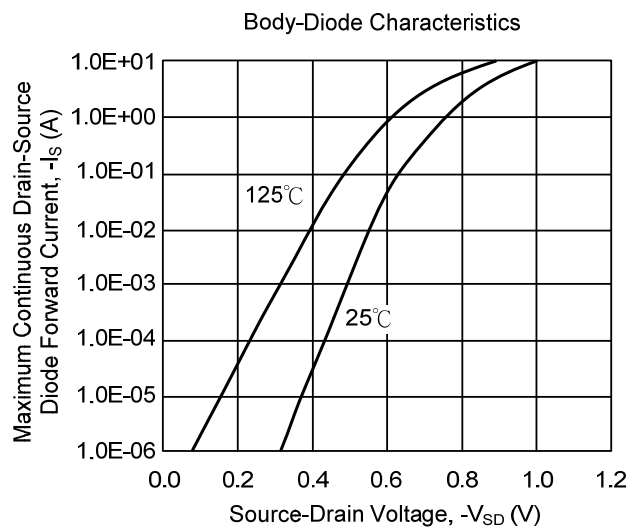
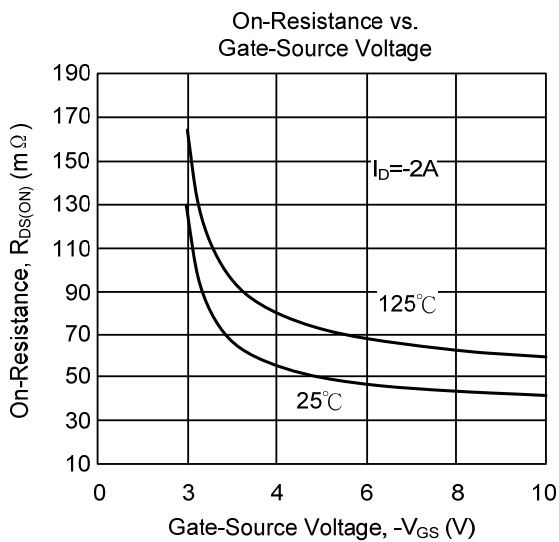
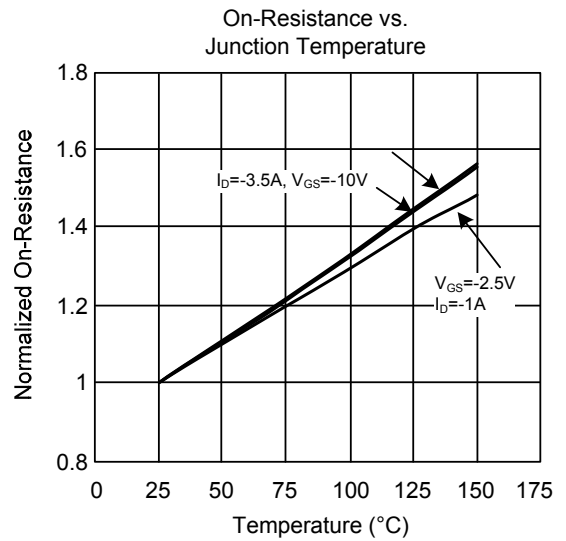
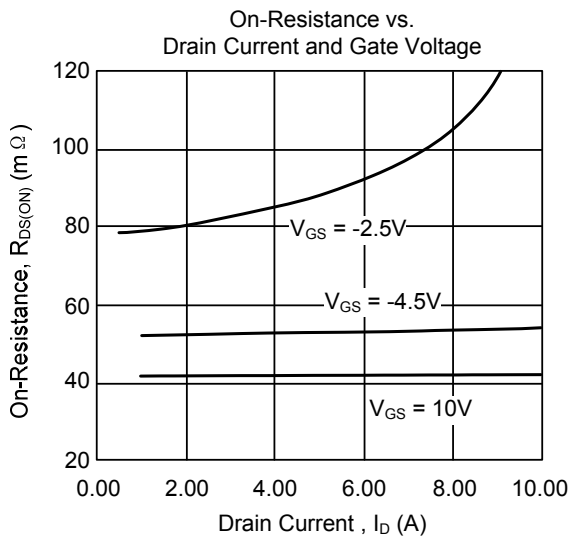
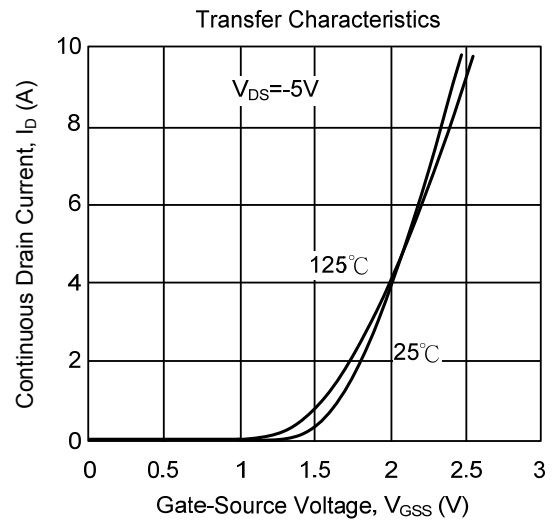
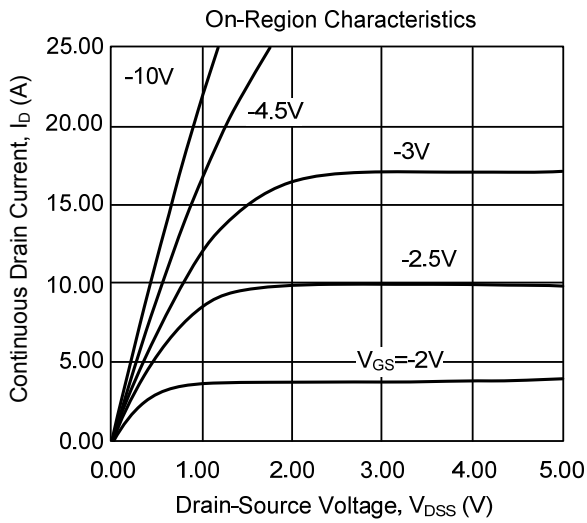
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	$\theta_{JA}$		65	90	$^{\circ}\text{C}/\text{W}$

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

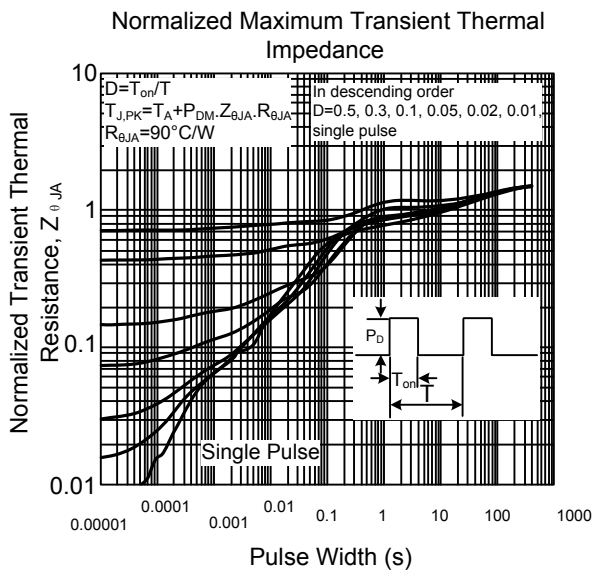
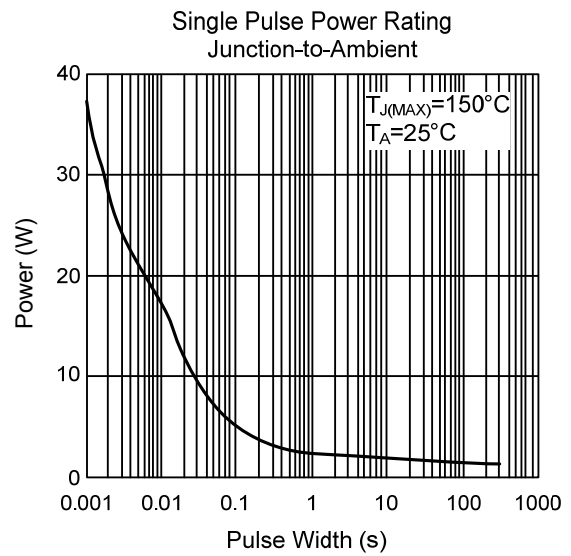
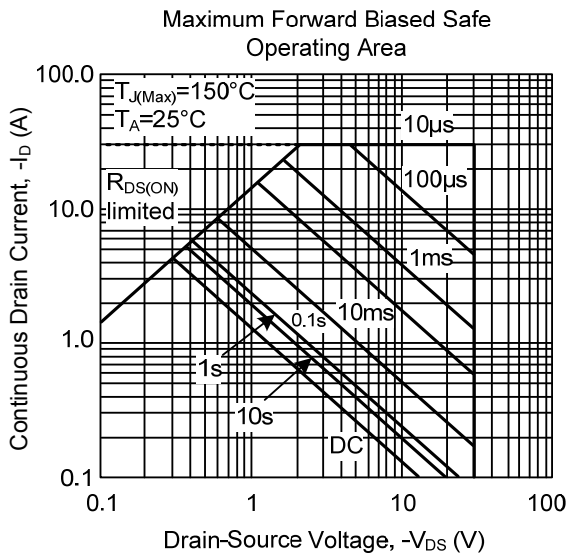
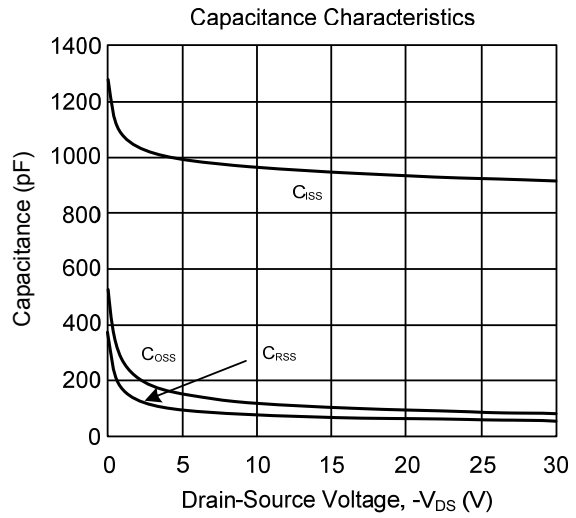
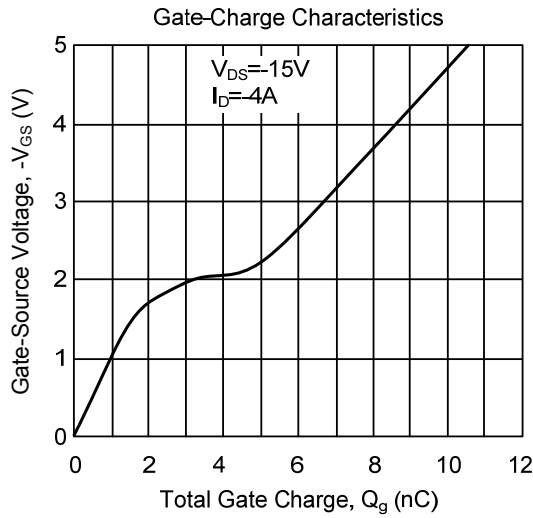
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=-250\mu\text{A}$ , $V_{GS}=0\text{V}$	-30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-24\text{V}$ , $V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 12\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=-250\mu\text{A}$	-0.7	-1	-1.3	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$ , $I_D=-4.2\text{A}$		42	50	m $\Omega$
		$V_{GS}=-4.5\text{V}$ , $I_D=-4\text{A}$		53	65	m $\Omega$
		$V_{GS}=-2.5\text{V}$ , $I_D=-1\text{A}$		80	120	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=-15\text{V}$ , $f=1\text{MHz}$		954		pF
Output Capacitance	$C_{OSS}$			115		pF
Reverse Transfer Capacitance	$C_{RSS}$			77		pF
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{GS}=-10\text{V}$ , $V_{DS}=-15\text{V}$ $R_L=3.6\Omega$ , $R_G=6\Omega$		6.3		ns
Turn-ON Rise Time	$t_R$			3.2		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			38.2		ns
Turn-OFF Fall Time	$t_F$			12		ns
Total Gate Charge (Note 2)	$Q_G$	$V_{GS}=-4.5\text{V}$ , $V_{DS}=-15\text{V}$ , $I_D=-4\text{A}$		9.4		nC
Gate-Source Charge	$Q_{GS}$			2		nC
Gate-Drain Charge	$Q_{GD}$			3		nC
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage(Note2)	$V_{SD}$	$V_{DS}=0\text{V}$ , $I_S=-1\text{A}$		-0.75	-1	V
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				-2.2	A
Reverse Recovery Time	$t_{RR}$	$I_F=-4\text{A}$ , $dI/dt=100\text{A}/\mu\text{s}$		20.2		ns
Reverse Recovery Charge	$Q_{RR}$				11.2	

Notes: 1. Pulse width limited by  $T_{J(MAX)}$   
 2. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$   
 3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board

## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS(Cont.)



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