



UT3401

Power MOSFET

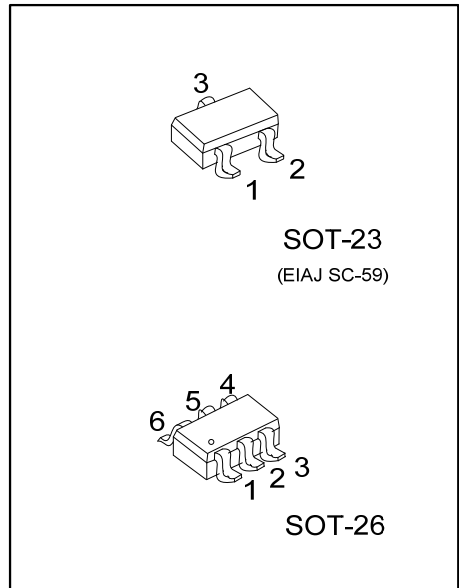
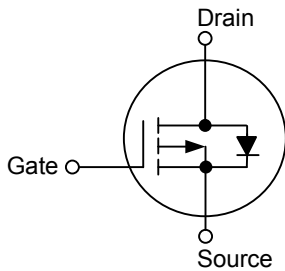
P-CHANNEL ENHANCEMENT MODE POWER MOSFET

■ 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



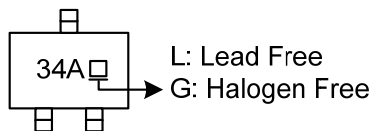
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT3401L-AE3-R	UT3401G-AE3-R	SOT-23	G	S	D	-	-	-	Tape Reel
UT3401L-AG6-R	UT3401G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

<p>UT3401G-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) AE3: SOT-23, AG6: SOT-26</p> <p>(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-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	± 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	1.25	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	RATINGS	UNIT
Junction-to-Ambient	θ_{JA}	100	$^{\circ}\text{C}/\text{W}$

Notes: Surface mounted on 1 in² copper pad of FR4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$.

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

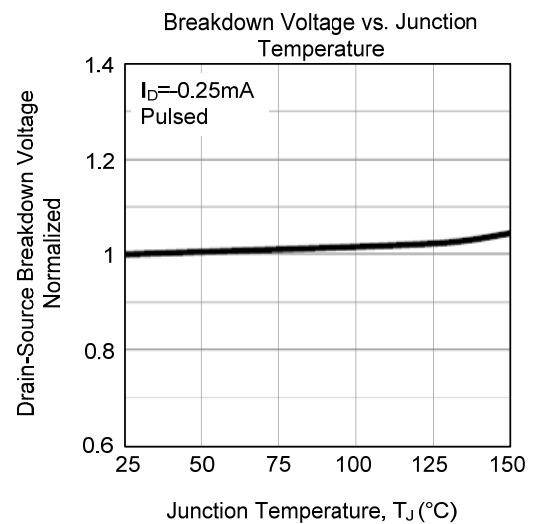
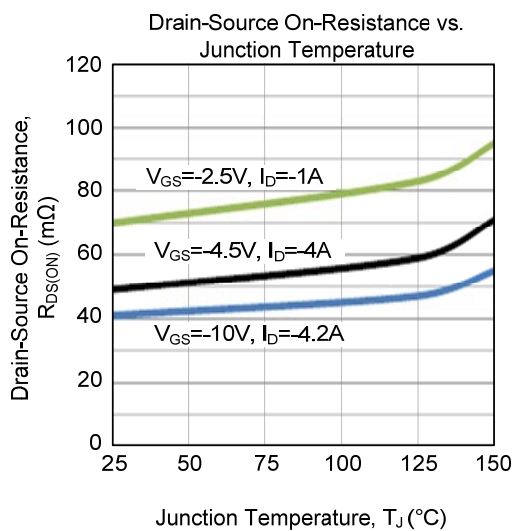
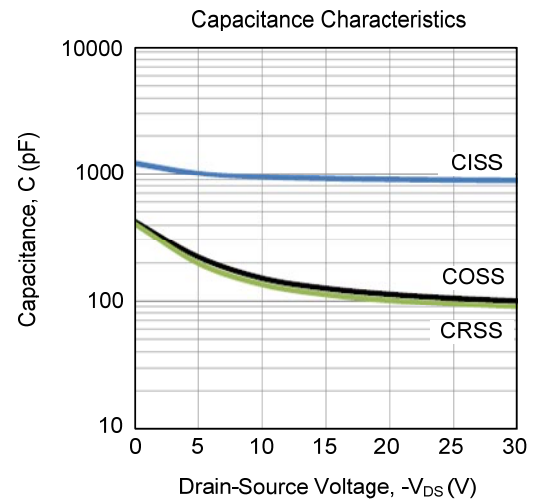
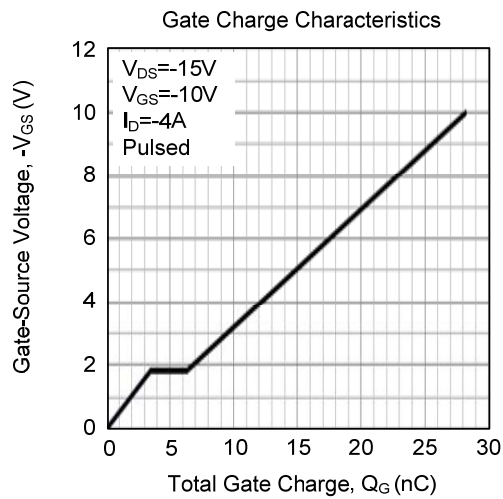
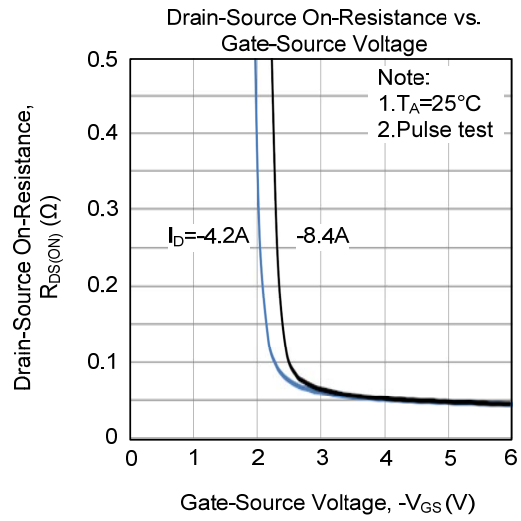
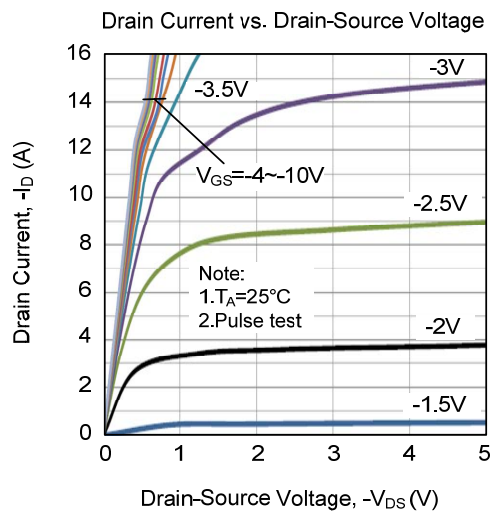
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$			-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 12\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-0.7	-1.0	-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 Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-4\text{A}$		53	65	m Ω
		$V_{GS}=-2.5\text{V}$, $I_D=-1\text{A}$		80	120	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=-15\text{V}$, $f=1\text{MHz}$		925		pF
Output Capacitance	C_{OSS}			125		pF
Reverse Transfer Capacitance	C_{RSS}			110		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 2)	Q_G	$V_{DS}=-15\text{V}$, $V_{GS}=-4.5\text{V}$, $I_D=-4\text{A}$		14.2		nC
Gate-Source Charge	Q_{GS}			3.5		nC
Gate-Drain Charge	Q_{GD}			3		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=-15\text{V}$, $V_{GS}=-10\text{V}$, $I_D=-4\text{A}$ $R_G=6\Omega$		7		ns
Turn-ON Rise Time	t_R			15		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			55		ns
Turn-OFF Fall Time	t_F			24		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-2.2	A
Drain-Source Diode Forward Voltage (Note2)	V_{SD}	$V_{DS}=0\text{V}$, $I_S=-1\text{A}$		-0.75	-1	V
Reverse Recovery Time	t_{rr}	$I_F=-4\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$		200		ns
Reverse Recovery Charge	Q_{rr}				400	

Notes: 1. Repetitive Rating : Pulse width limited by maximum junction temperature.

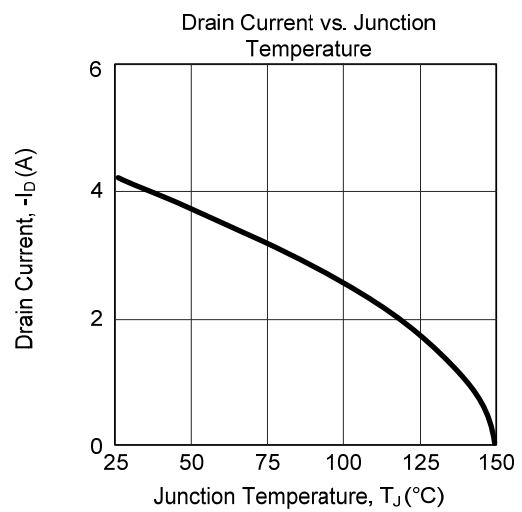
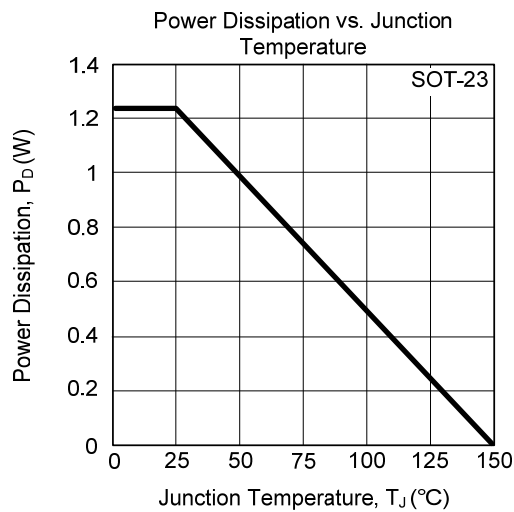
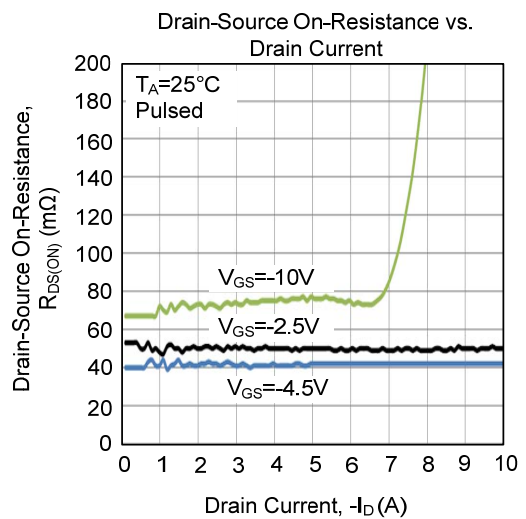
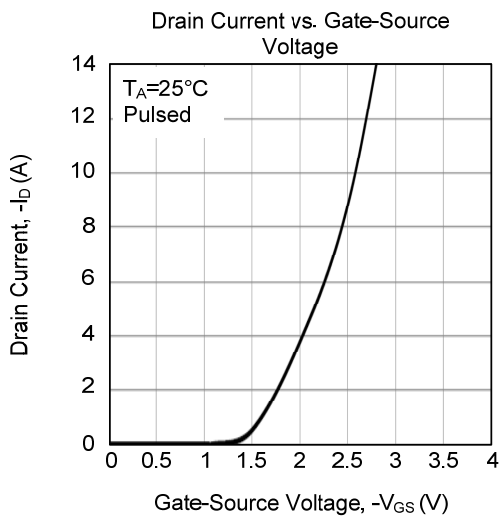
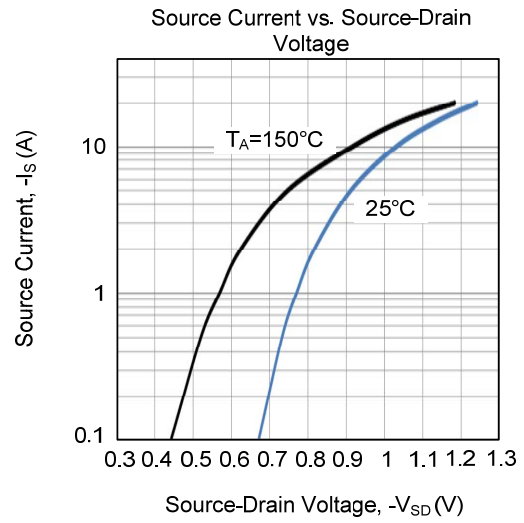
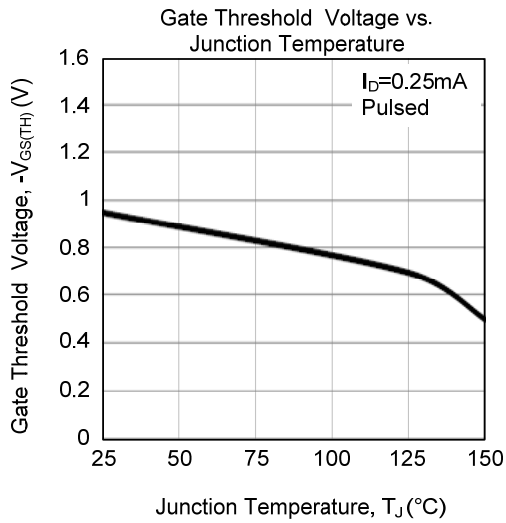
2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

3. Surface mounted on 1 in² copper pad of FR4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$.

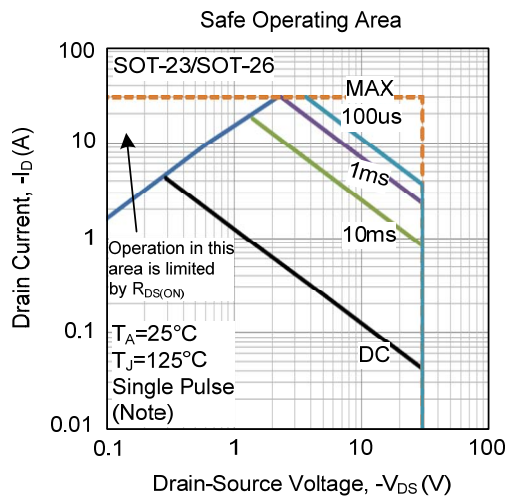
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



Note: Surface mounted on 1 in2 copper pad of FR4 board with 2oz.

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