



## UT4101

Power MOSFET

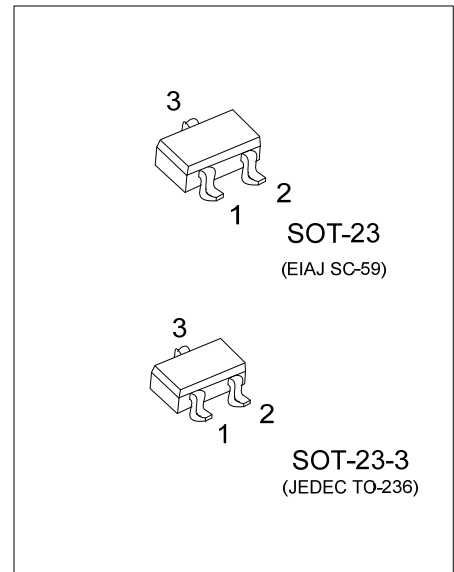
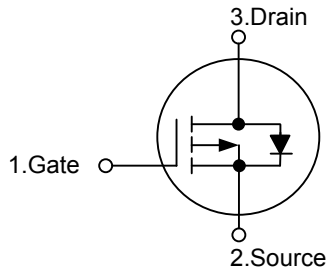
### P-CHANNEL ENHANCEMENT MODE

#### DESCRIPTION

The UTC **UT4101** 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



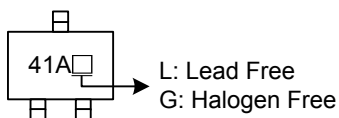
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT4101L-AE2-R	UT4101G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT4101L-AE3-R	UT4101G-AE3-R	SOT-23	G	S	D	Tape Reel

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

<p>UT4101G-AE2-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</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



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

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8.0$	V
Continuous Drain Current (Note 3)	$I_D$	-2.4	A
Pulsed Drain Current (Note 1, 2)	$I_{DM}$	-7.5	A
Power Dissipation	$P_D$	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 CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction-to-Ambient	$\theta_{JA}$	100	$^\circ\text{C/W}$

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

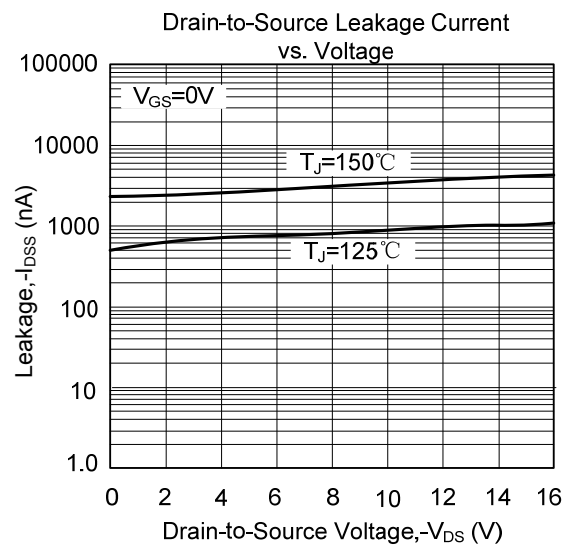
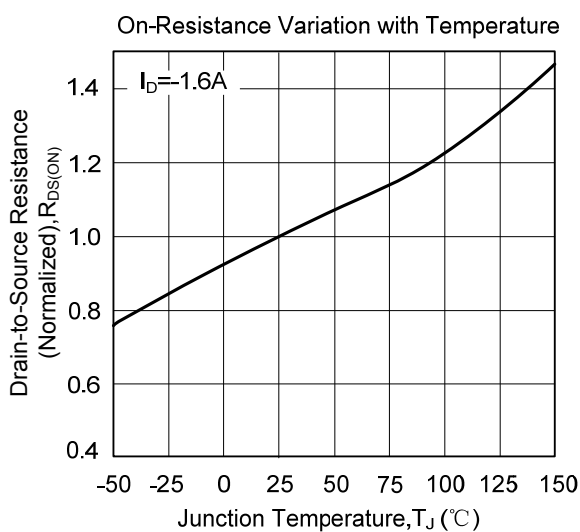
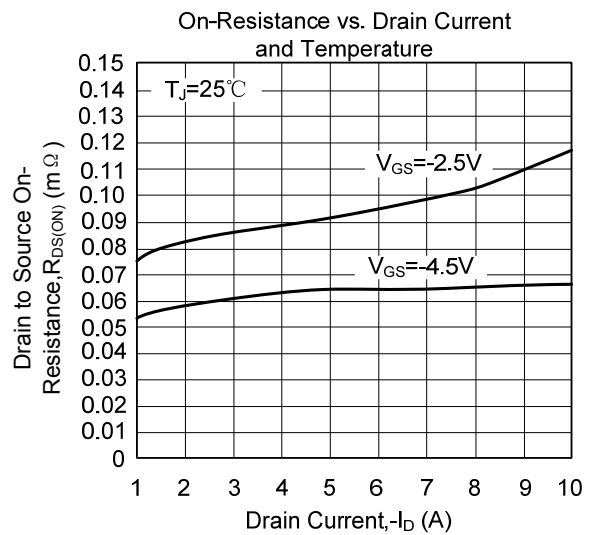
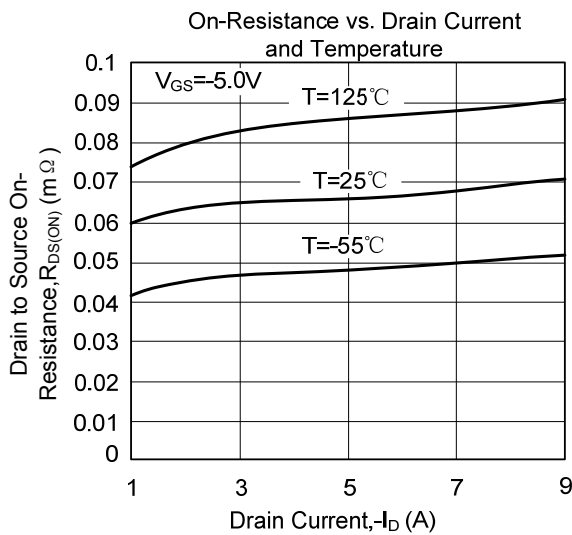
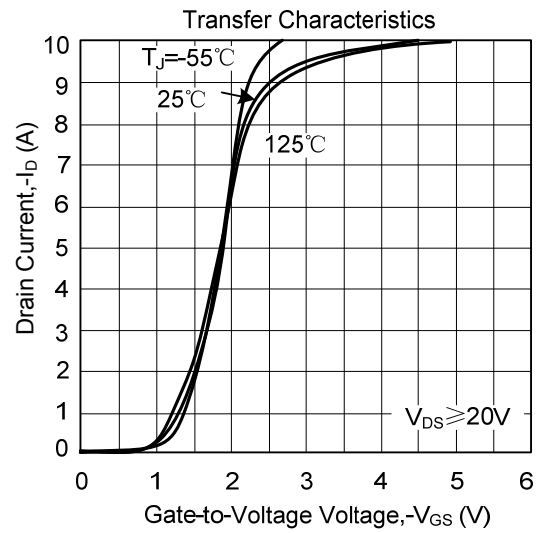
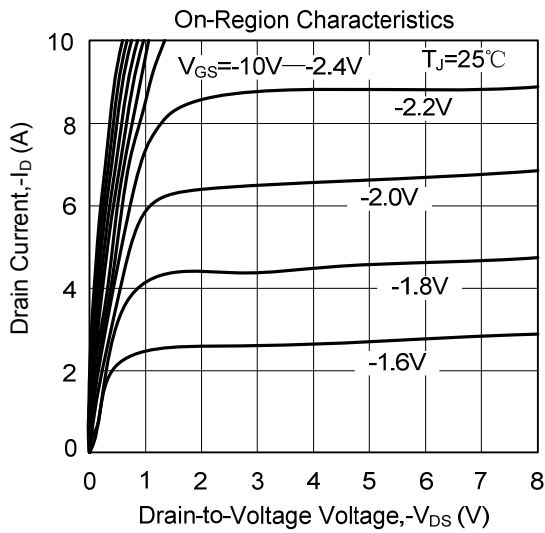
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$	-20			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = -16\text{ V}, V_{GS} = 0\text{ V}$			-1.0	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8.0\text{ V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-0.40	-0.72	-1.5	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS} = -4.5\text{ V}, I_D = -1.6\text{ A}$		70	85	m $\Omega$
		$V_{GS} = -2.5\text{ V}, I_D = -1.3\text{ A}$		90	120	m $\Omega$
		$V_{GS} = -1.8\text{ V}, I_D = -0.9\text{ A}$		112	210	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = -10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		675		pF
Output Capacitance	$C_{OSS}$			100		pF
Reverse Transfer Capacitance	$C_{RSS}$			75		pF
<b>SWITCHING PARAMETERS</b>						
Gate Charge	$Q_G$	$V_{DS} = -10\text{ V}, V_{GS} = -4.5\text{ V}, I_D = -1.6\text{ A}$		7.5	8.5	nC
Gate Source Charge	$Q_{GS}$	$V_{DS} = -10\text{ V}, I_D = -1.6\text{ A}$		1.2		nC
Gate Drain Charge	$Q_{GD}$			2.2		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS} = -4.5\text{ V}, V_{DS} = -10\text{ V}, R_G = 6.0\Omega, I_D = -1.6\text{ A}$		7.5		ns
Turn-ON Rise Time	$t_R$			12.6		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			30.2		ns
Turn-OFF Fall-Time	$t_F$			21.0		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				-2.4	A
Drain-Source Diode Forward Voltage(Note2)	$V_{SD}$	$V_{GS} = 0\text{ V}, I_S = -2.4\text{ A}$		-0.82	-1.2	V
Reverse Recovery Time	trr	$V_{GS} = 0\text{ V}, dI_{SD}/dt = 100\text{ A}/\mu\text{s}, I_S = -1.6\text{ A}$		12.8	15	ns
Reverse Recovery Charge	$Q_{rr}$			1008		nC

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

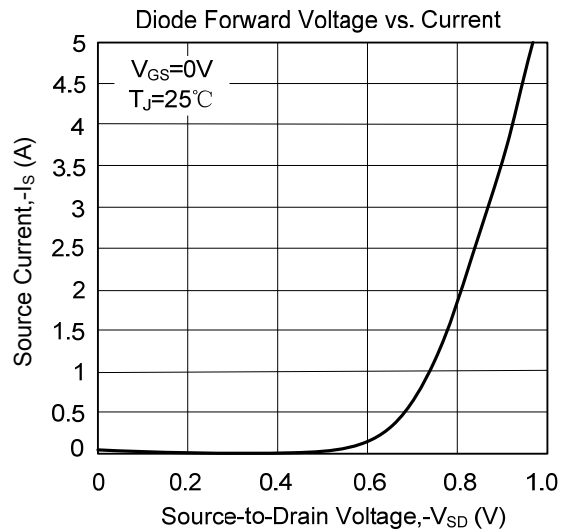
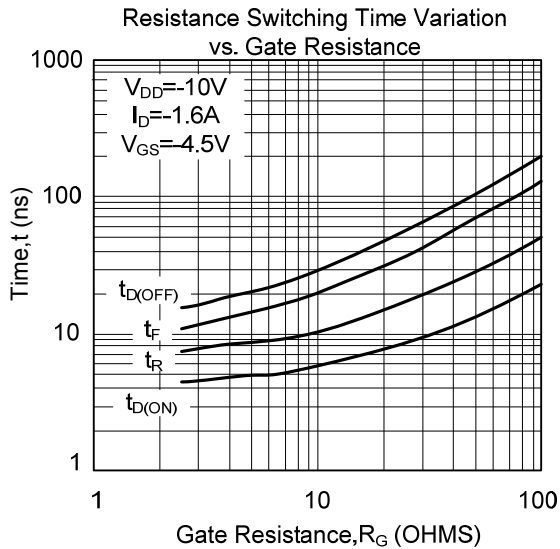
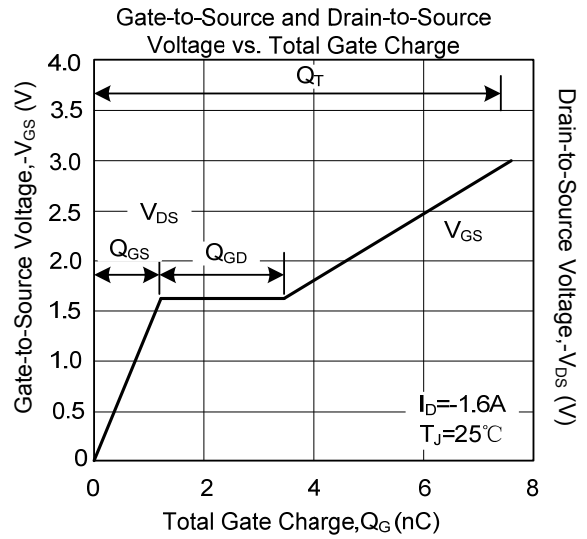
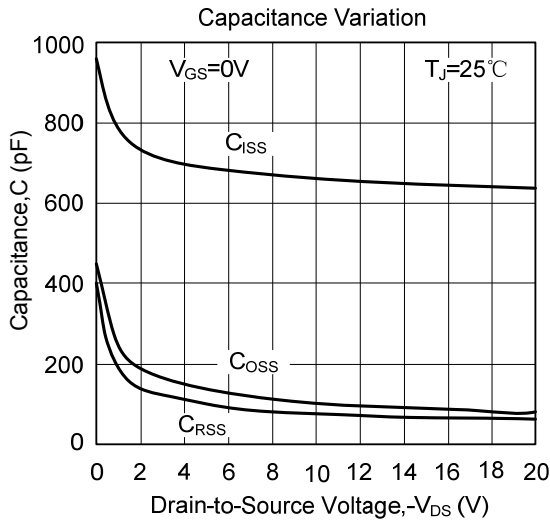
2. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board.

## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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