



## UT2316

Power MOSFET

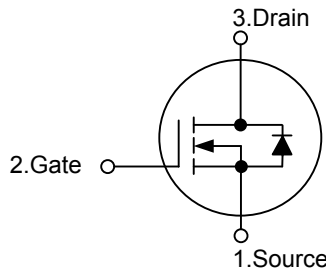
### N-CHANNEL ENHANCEMENT MODE

#### DESCRIPTION

The UTC **UT2316** is N-channel enhancement mode Power MOSFET, designed in serried ranks with fast switching speed, low on-resistance and favorable stabilization.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

#### SYMBOL



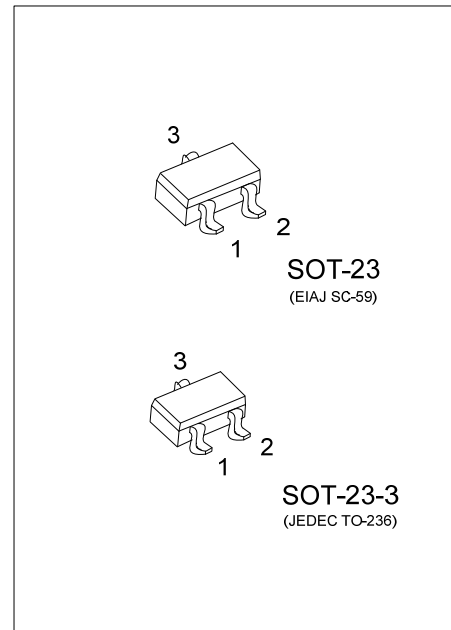
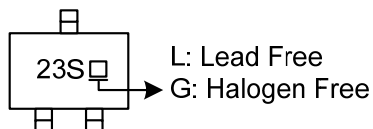
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2316L-AE2-R	UT2316G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT2316L-AE3-R	UT2316G-AE3-R	SOT-23	G	S	D	Tape Reel

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

<p>UT2316G-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</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	RATING	UNIT
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current (Note 3)	$I_D$	3.6	A
Pulsed Drain Current (Note 1, 2)	$I_{DM}$	16	A
Total Power Dissipation ( $T_A = 25^\circ\text{C}$ )	$P_D$	0.96	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

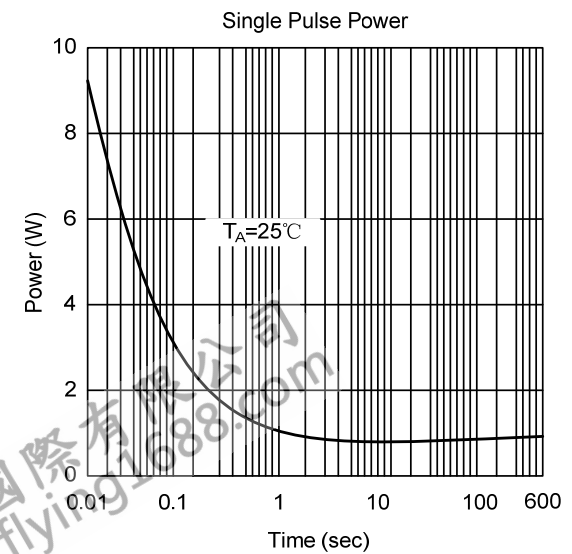
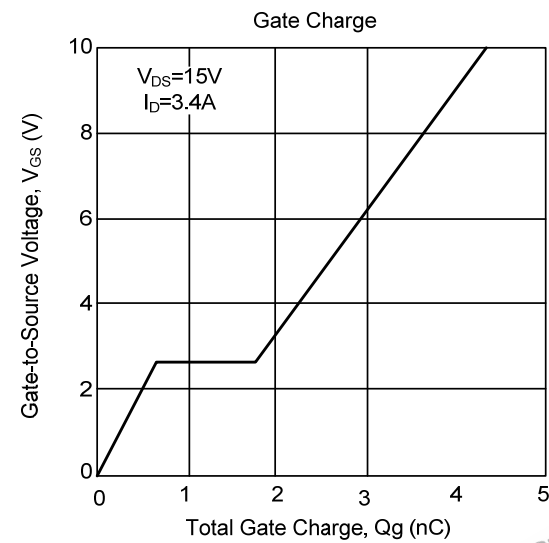
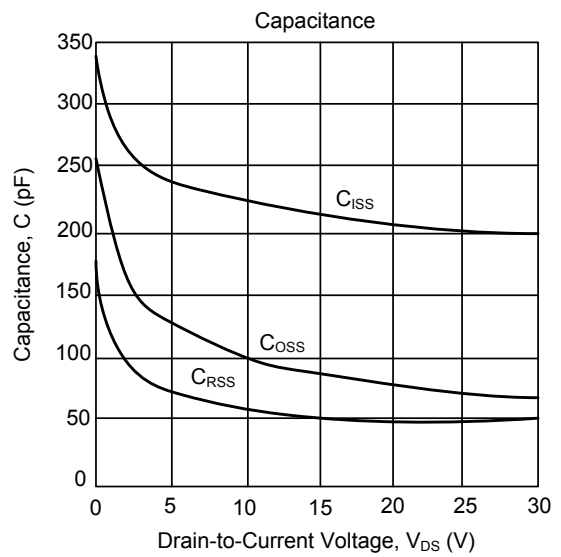
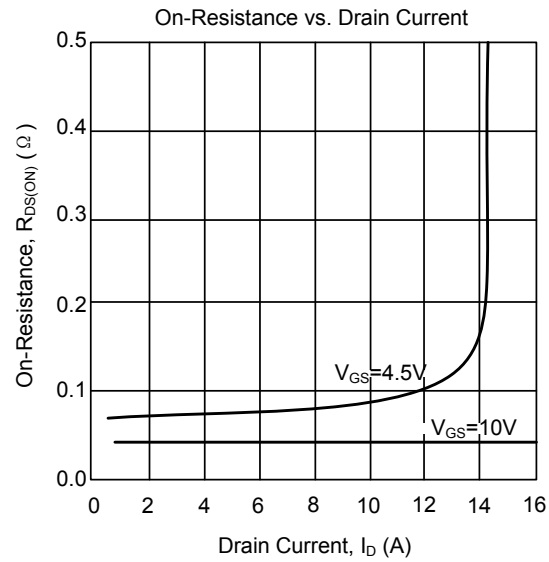
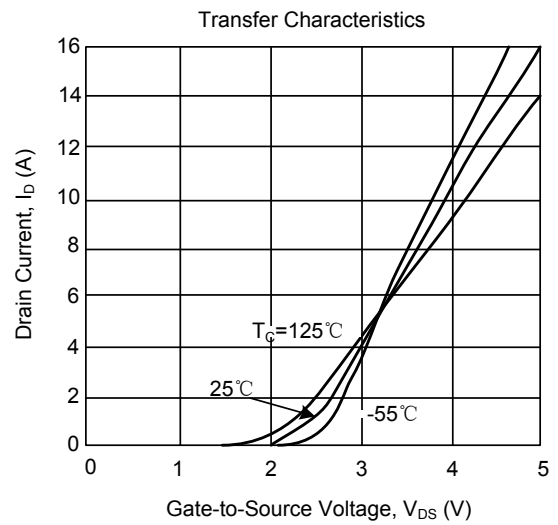
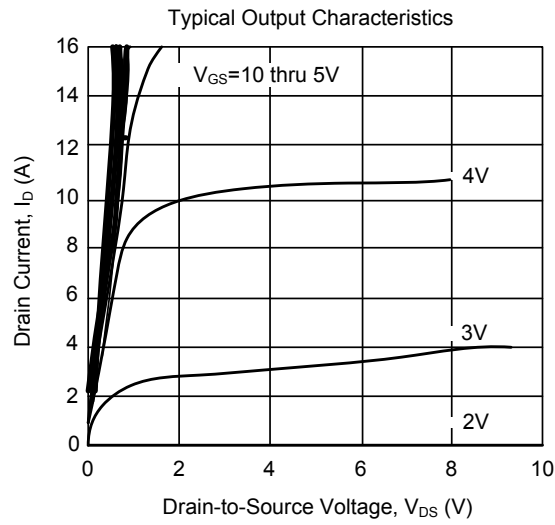
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 3)	$\theta_{JA}$	175	$^\circ\text{C/W}$

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

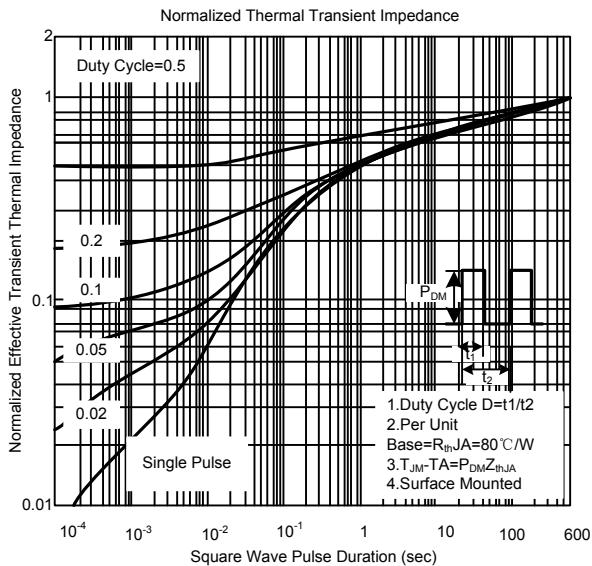
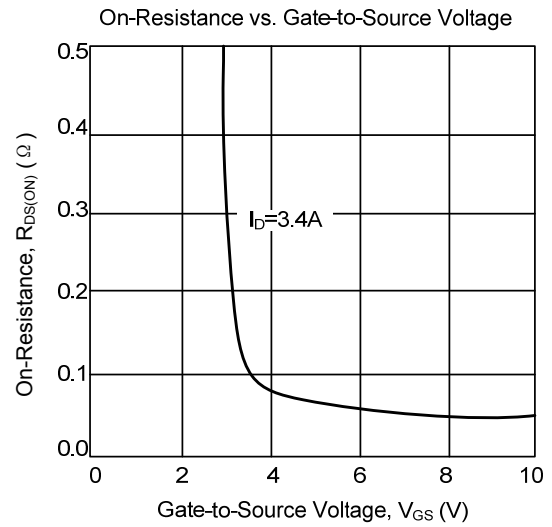
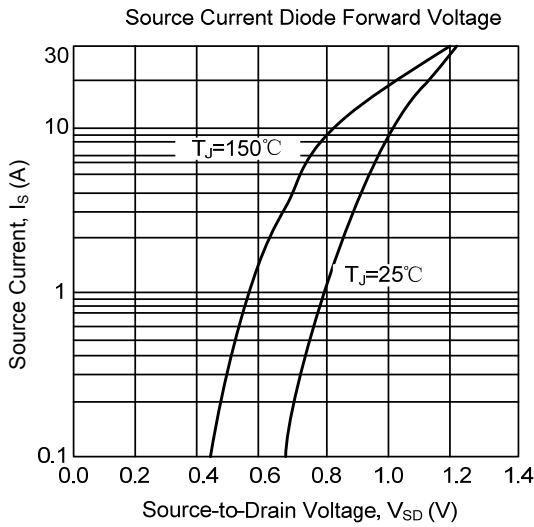
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=24\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.8			V
On-State Drain Current	$I_{D(ON)}$	$V_{DS} = 4.5\text{V}, V_{GS} = 10\text{V}$	6			A
		$V_{DS} = 4.5\text{V}, V_{GS} = 4.5\text{V}$	4			A
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=3.4\text{A}$		42	50	m $\Omega$
		$V_{GS}=4.5\text{V}, I_D=2.6\text{A}$		68	85	m $\Omega$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=15\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		215		pF
Output Capacitance	$C_{OSS}$			90		pF
Reverse Transfer Capacitance	$C_{RSS}$			55		pF
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	$Q_G$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=3.6\text{A}$		4.3	7	nC
Gate-Source Charge	$Q_{GS}$			0.65		nC
Gate-Drain Charge	$Q_{GD}$			1.2		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=15\text{V}, V_{GS}=10\text{V}, I_D=1\text{A}, R_G=6\Omega, R_L=15\Omega$		9	15	ns
Turn-ON Rise Time	$t_R$			9	15	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			14	20	ns
Turn-OFF Fall Time	$t_F$			6	12	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage(Note2)	$V_{SD}$	$V_{GS}=0\text{V}, I_S=0.8\text{A}$		0.88	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	$V_D=V_G=0\text{V}, V_S=1.2\text{V}$		0.8		A

- 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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