



## UT2301

Power MOSFET

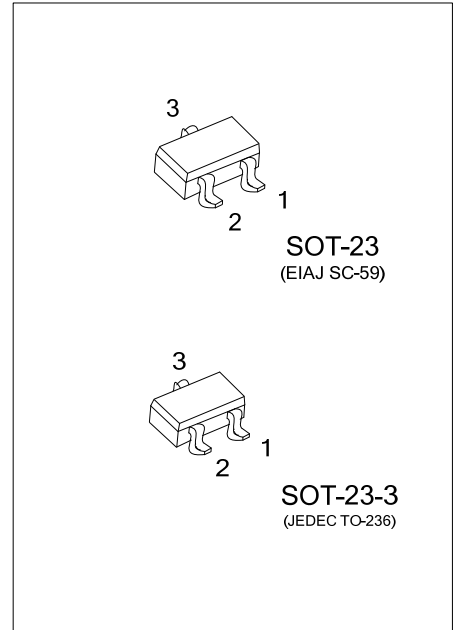
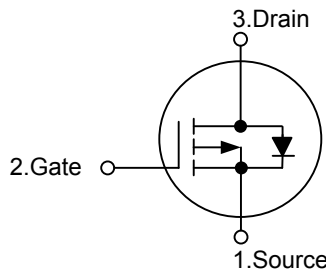
### Y2.8A, 20V P-CHANNEL ENHANCEMENT MODE POWER MOSFET

#### DESCRIPTION

The UTC **UT2301** is P-channel enhancement mode power MOSFET, designed in serried ranks. With fast switching speed, low on-resistance, favorable stabilization.

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

#### SYMBOL



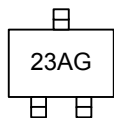
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT2301G-AE2-R	SOT-23-3	S	G	D	Tape Reel
UT2301G-AE3-R	SOT-23	S	G	D	Tape Reel

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

	<p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3, AE3: SOT-23</p> <p>(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	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	-20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	-2.8	A
Pulsed Drain Current (Note 1, 2)	$I_{DM}$	-10	A
Total Power Dissipation	$P_D$	1.14	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

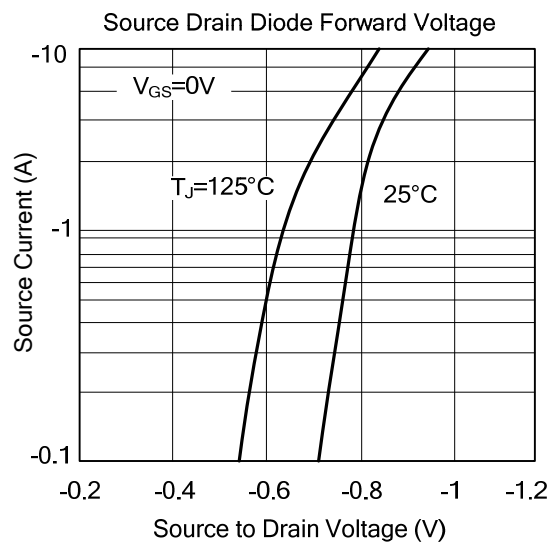
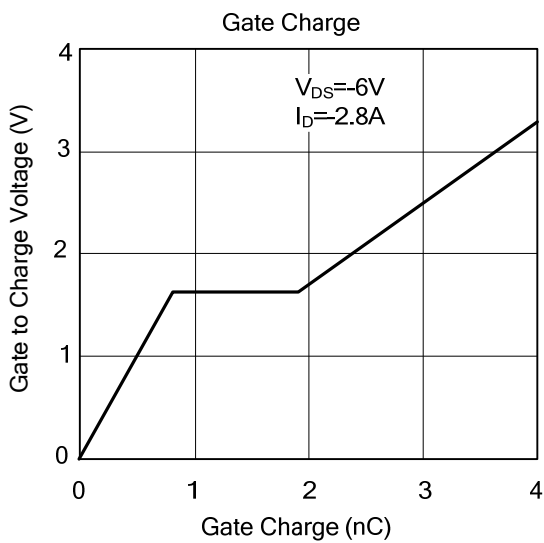
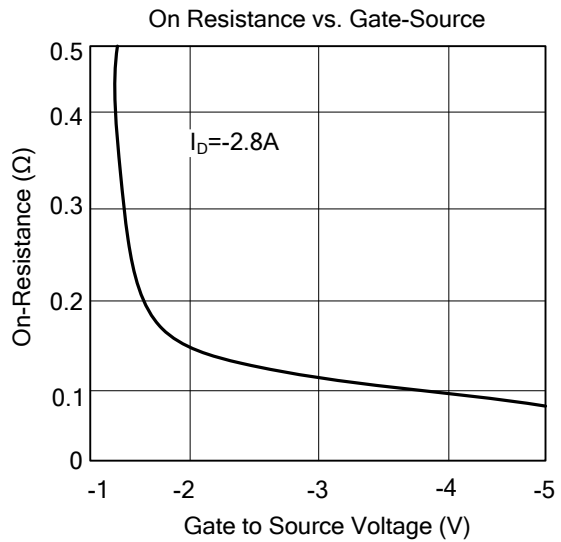
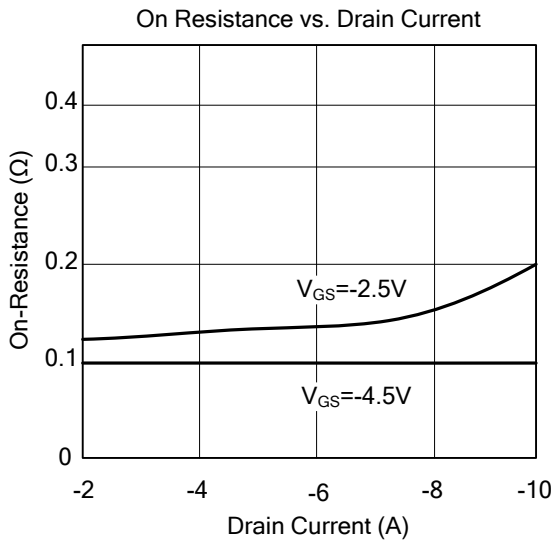
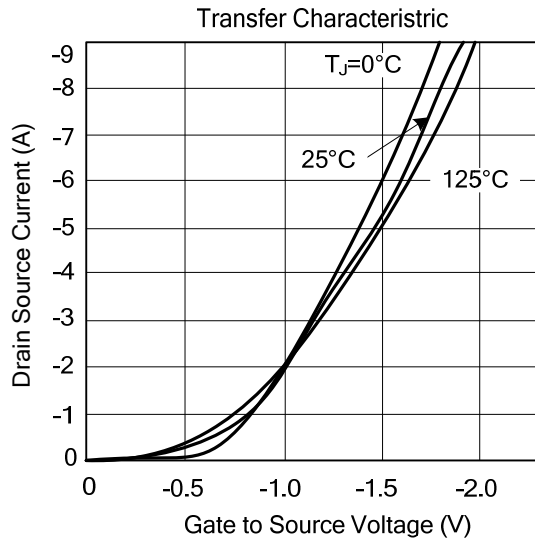
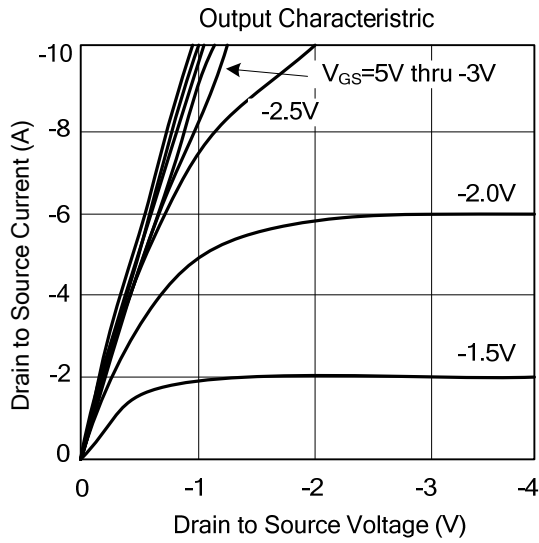
PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient (Note 3)	$\theta_{JA}$	110	$^\circ\text{C/W}$

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

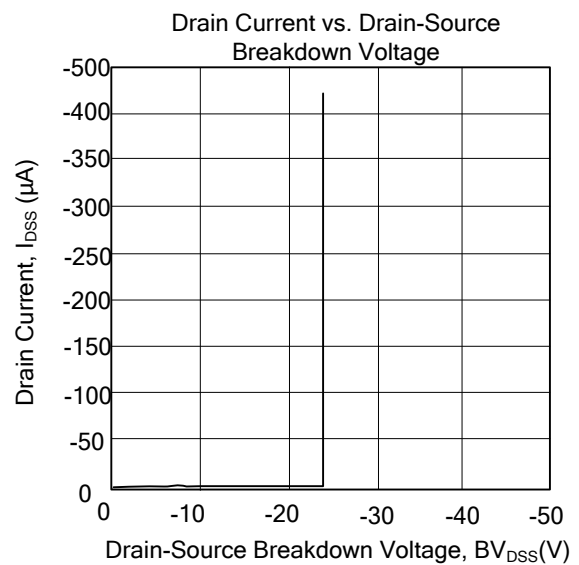
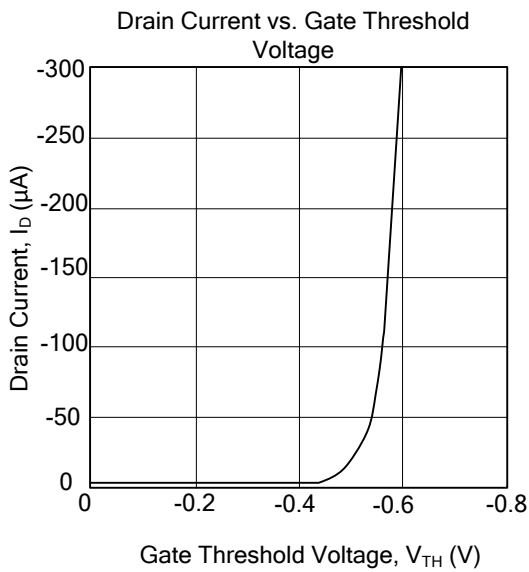
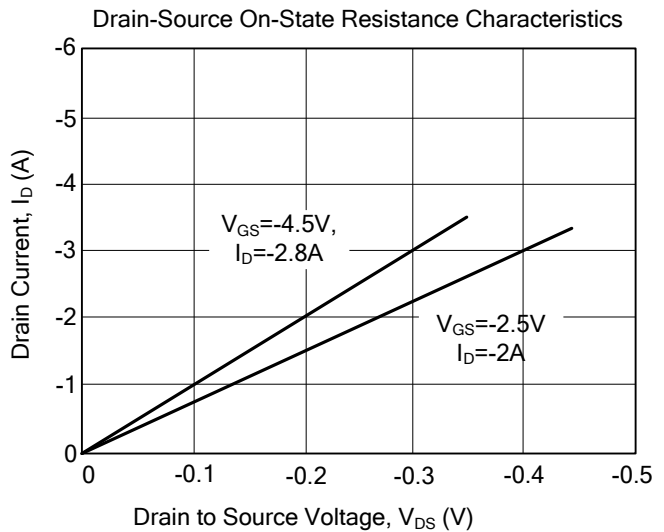
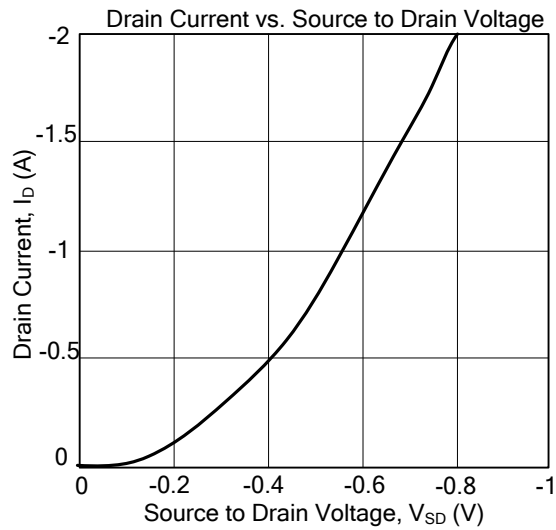
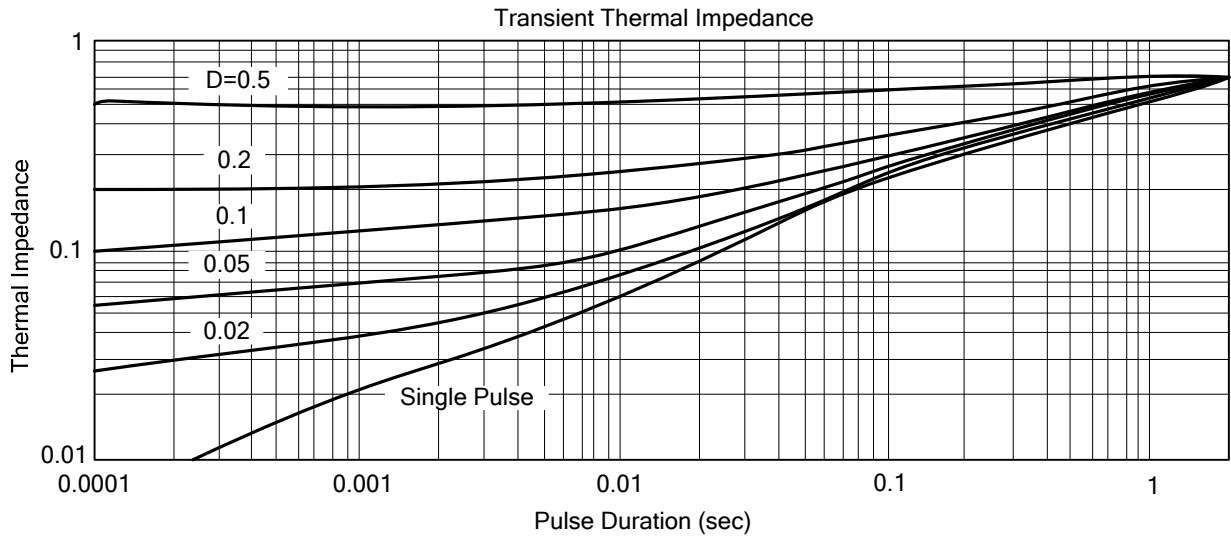
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-20			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-16\text{V}, V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.45			V
Static Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}, I_D=-2.8\text{A}$		95	130	m $\Omega$
		$V_{GS}=-2.5\text{V}, I_D=-2.0\text{A}$		122	190	m $\Omega$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=-6\text{V}, f=1.0\text{MHz}$		447		pF
Output Capacitance	$C_{OSS}$			127		pF
Reverse Transfer Capacitance	$C_{RSS}$			80		pF
<b>SWITCHING CHARACTERISTICS</b>						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=-6\text{V}, V_{GS}=-4.5\text{V}, I_D=-1\text{A}, R_G=6\Omega, R_L=6\Omega$		5	25	ns
Turn-ON Rise Time	$t_R$			19	60	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			95	110	ns
Turn-OFF Fall Time	$t_F$			65	80	ns
Total Gate Charge (Note 2)	$Q_G$	$V_{DS}=-6\text{V}, V_{GS}=-4.5\text{V}, I_D=-2.8\text{A}$		5.4	10	nC
Gate-Source Charge	$Q_{GS}$			0.8		nC
Gate-Drain Charge	$Q_{GD}$			1.1		nC
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage (Note 2)	$V_{SD}$	$V_{GS}=0\text{V}, I_S=-1.6\text{A}$		-0.8	-1.2	V
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				-1.6	A

- 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

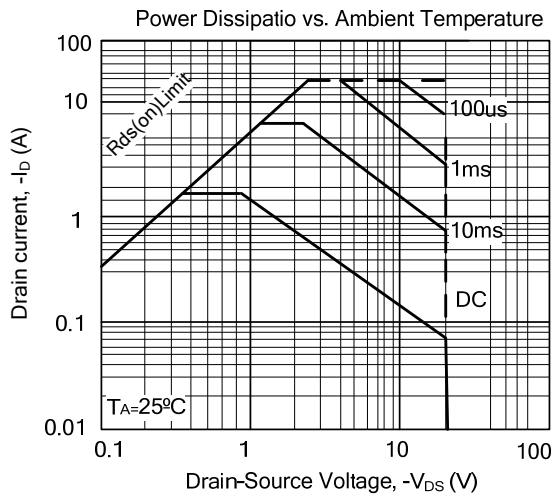
## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



### ■ TYPICAL CHARACTERISTICS(Cont.)



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