



## UT2305A

Power MOSFET

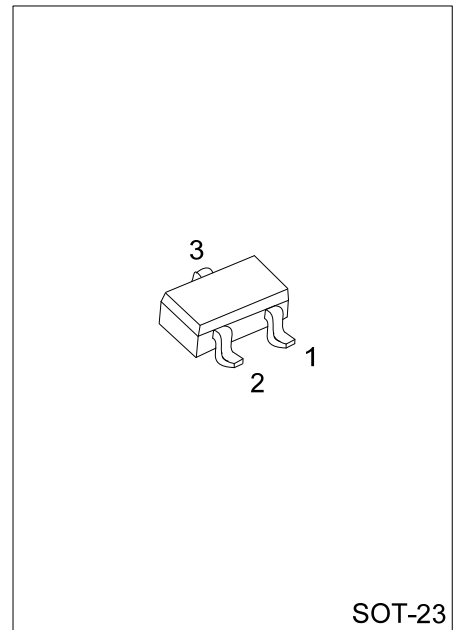
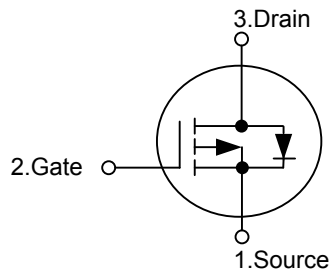
### P-CHANNEL ENHANCEMENT MODE

#### DESCRIPTION

The UTC **UT2305A** 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



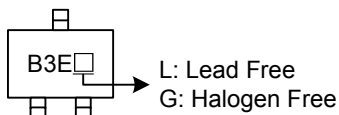
SOT-23

#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2305AL-AE3-R	UT2305AG-AE3-R	SOT-23	S	G	D	Tape Reel

<p>UT2305AL-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free, L: Lead Free</p>
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#### MARKING



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	$V_{DSS}$	- 30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current (Note 3) ( $T_a=25^\circ\text{C}$ )	$I_D$	-4.2	A
Pulsed Drain Current (Note 1, 2)	$I_{DM}$	-10	A
Total Power Dissipation ( $T_a=25^\circ\text{C}$ )	$P_D$	1.38	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 (Note 3)	$\theta_{JA}$			90	$^\circ\text{C/W}$

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

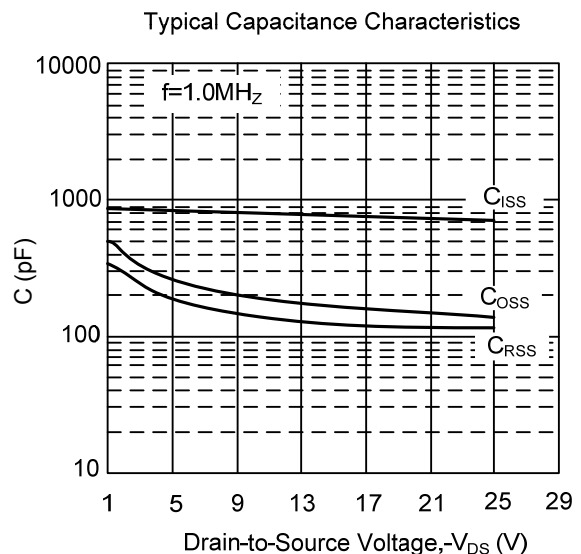
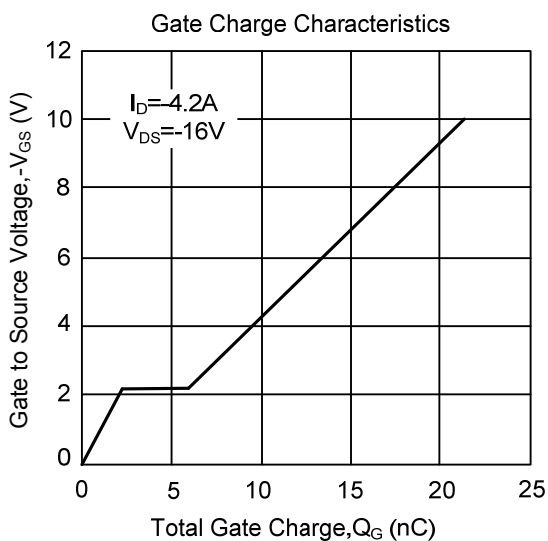
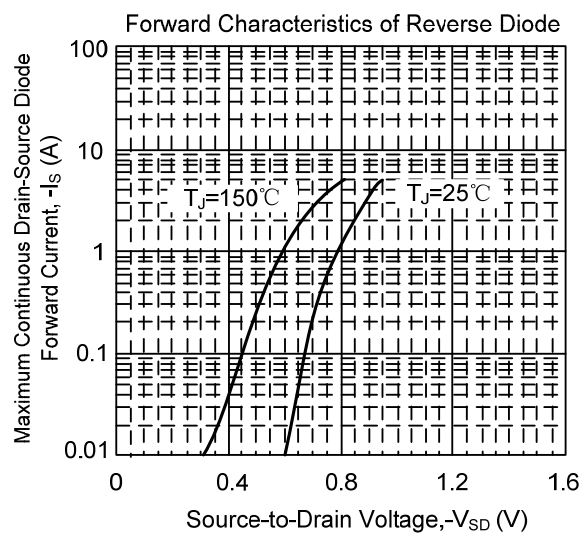
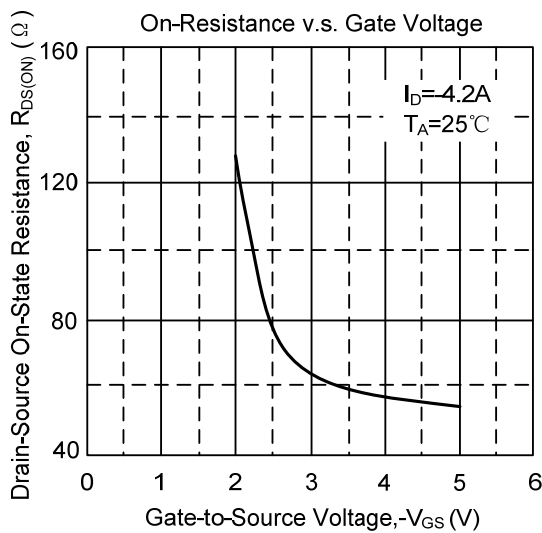
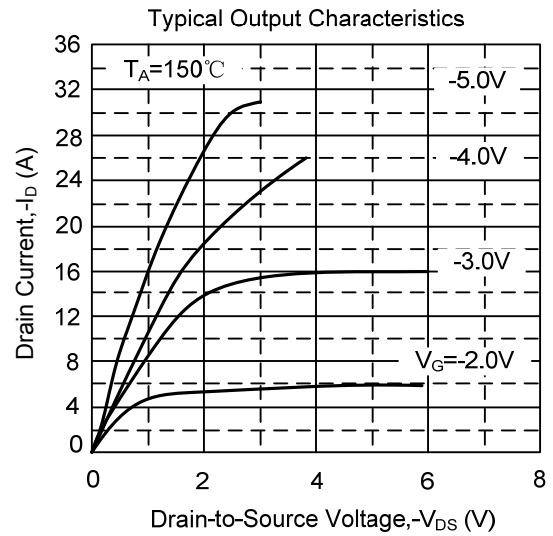
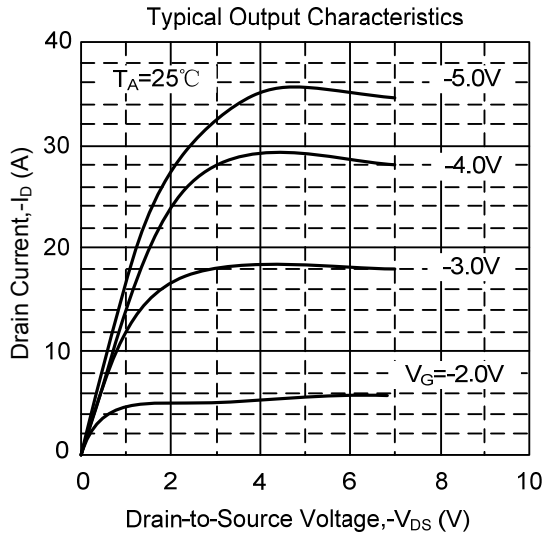
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-30\text{V}, V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12\text{V}, V_{DS}=0\text{V}$			$\pm 100$	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}, I_D=-1\text{mA}$		-0.1		$\text{V}/^\circ\text{C}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.5		-1.2	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-3.2\text{A}$			60	$\text{m}\Omega$
		$V_{GS}=-4.5\text{V}, I_D=-3.0\text{A}$			80	$\text{m}\Omega$
		$V_{GS}=-2.5\text{V}, I_D=-2.0\text{A}$			150	$\text{m}\Omega$
		$V_{GS}=-1.8\text{V}, I_D=-1.0\text{A}$			250	$\text{m}\Omega$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=-15\text{V}, f=1\text{MHz}$		740		pF
Output Capacitance	$C_{OSS}$			167		pF
Reverse Transfer Capacitance	$C_{RSS}$			126		pF
<b>SWITCHING CHARACTERISTICS</b>						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=-15\text{V}, V_{GS}=-10\text{V}, I_D=-4.2\text{A}, R_G=6\Omega, R_D=3.6\Omega$		5.9		ns
Turn-ON Rise Time	$t_R$			3.6		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			32.4		ns
Turn-OFF Fall Time	$t_F$			2.6		ns
Total Gate Charge (Note 2)	$Q_G$	$V_{DS}=-16\text{V}, V_{GS}=-4.5\text{V}, I_D=-4.2\text{A}$		10.6		nC
Gate-Source Charge	$Q_{GS}$			2.32		nC
Gate-Drain Charge	$Q_{GD}$			3.68		nC
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage(Note2)	$V_{SD}$	$V_{GS}=0\text{V}, I_S=-1.2\text{A}$			-1.2	V
Reverse Recovery Time	$t_{RR}$	$V_{GS}=0\text{V}, I_S=-4.2\text{A},$		27.7		ns
Reverse Recovery Charge	$Q_{RR}$	$dl/dt=100\text{A}/\mu\text{s}$		22		nC

Notes: 1. Pulse width limited by  $T_{J(MAX)}$

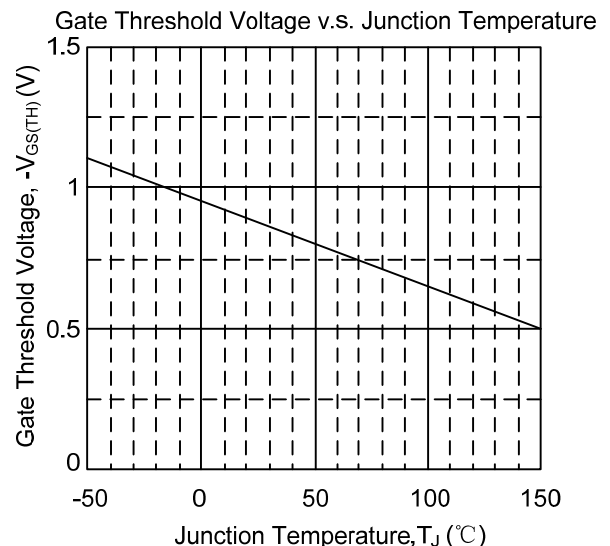
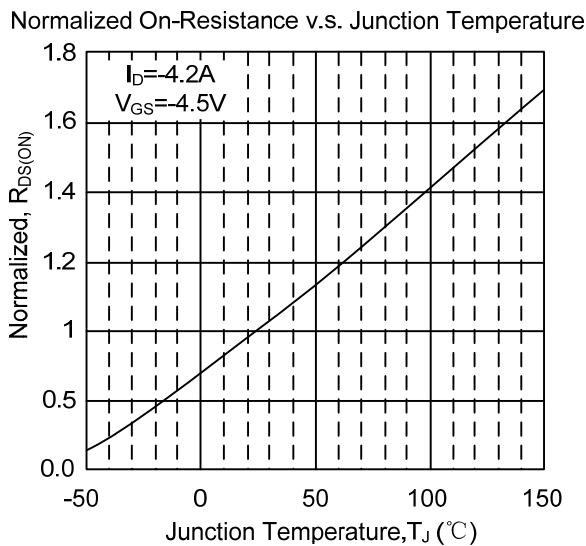
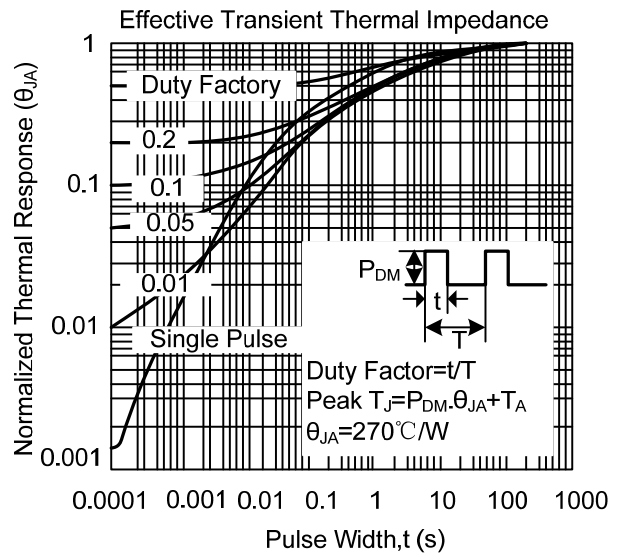
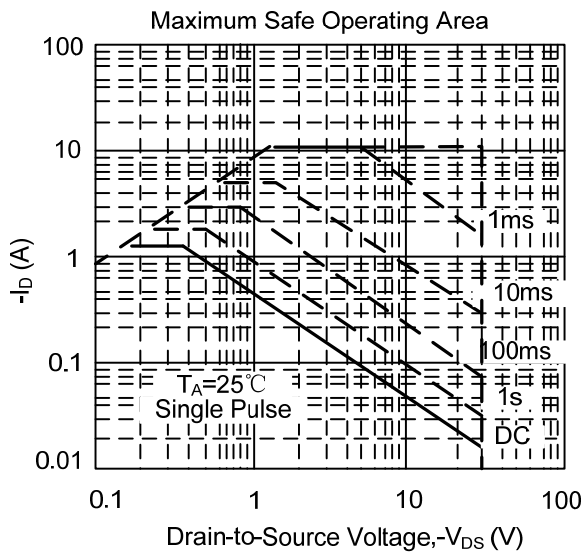
2. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board;  $270^\circ\text{C/W}$  when mounted on min.

## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS(Cont.)



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