



UT2305

Power MOSFET

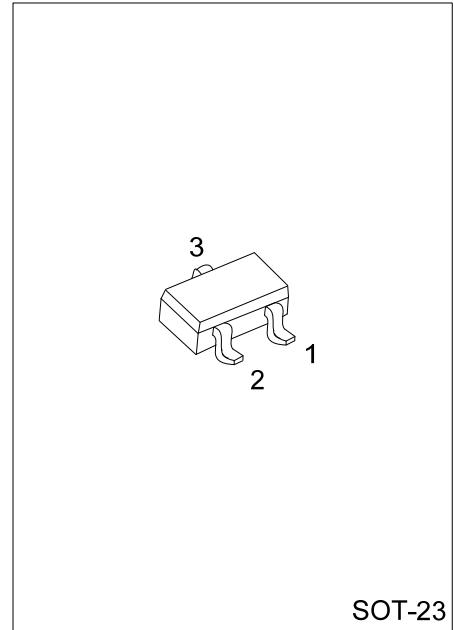
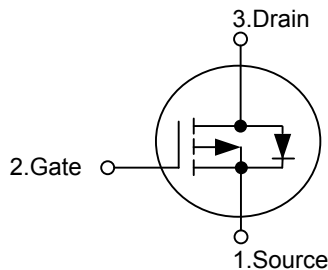
P-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The UTC **UT2305** 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



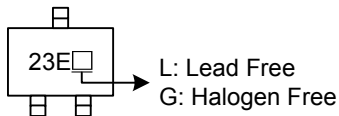
SOT-23

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2305L-AE3-R	UT2305G-AE3-R	SOT-23	S	G	D	Tape Reel

<p>UT2305L-AE3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	V_{DS}	- 20	V
Gate-Source Voltage	V_{GS}	± 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)	θ_{JA}			90	$^\circ\text{C/W}$

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

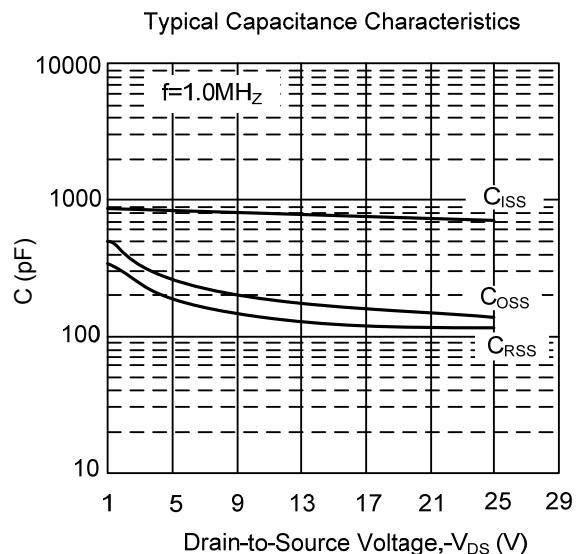
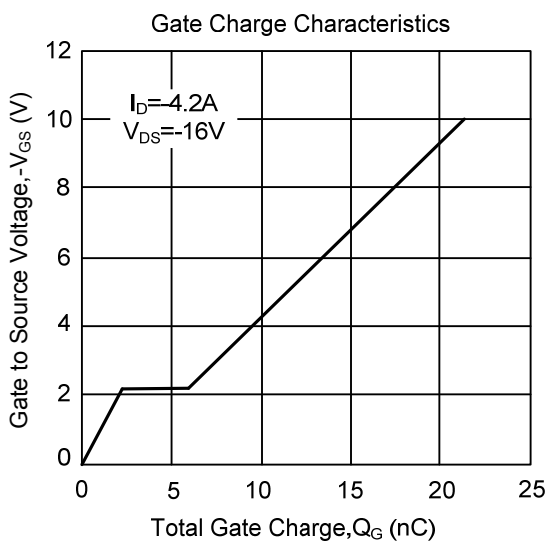
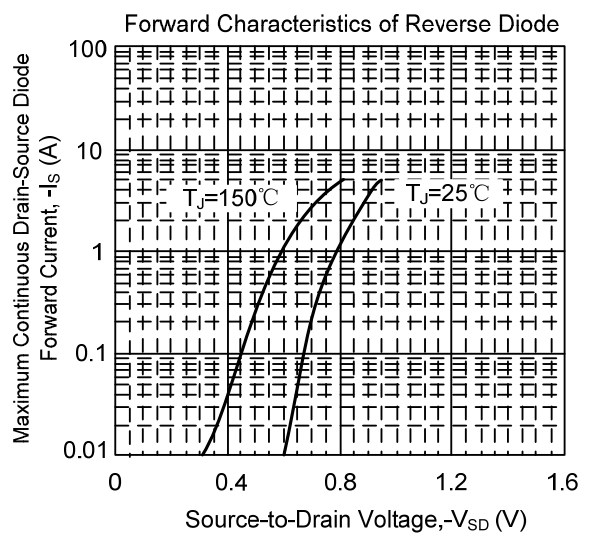
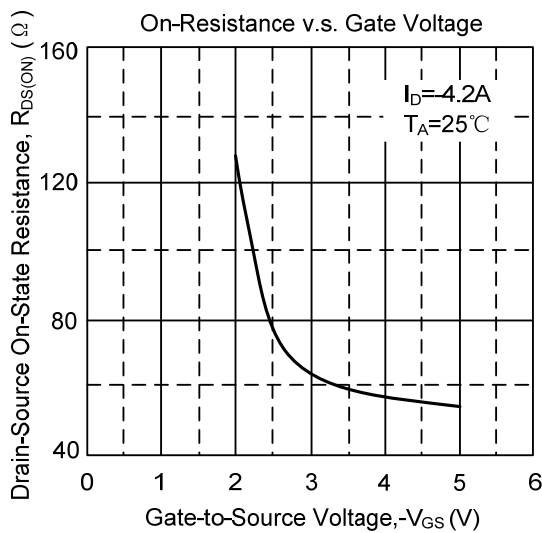
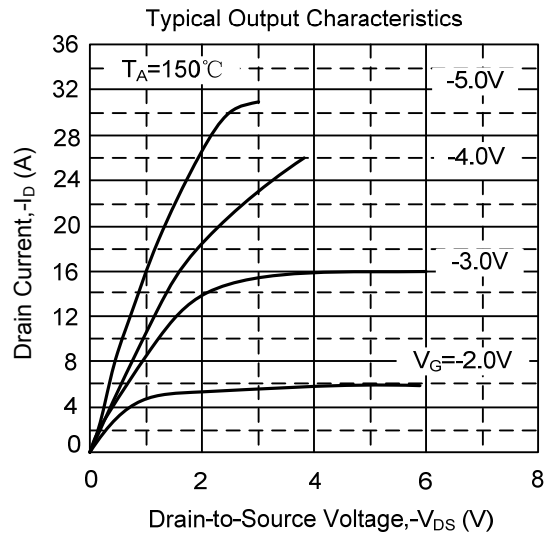
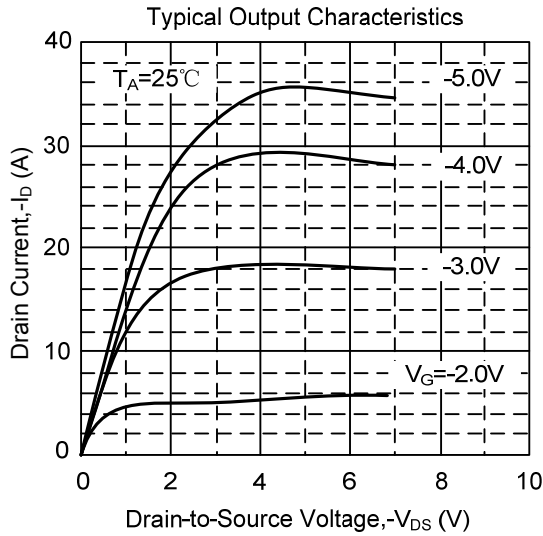
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-20			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-20\text{V}, V_{GS}=0\text{V}$			-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12\text{V}, V_{DS}=0\text{V}$			±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		$\text{V}/^\circ\text{C}$
ON CHARACTERISTICS						
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)	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-4.5\text{A}$			53	$\text{m}\Omega$
		$V_{GS}=-4.5\text{V}, I_D=-4.2\text{A}$			65	$\text{m}\Omega$
		$V_{GS}=-2.5\text{V}, I_D=-2.0\text{A}$			100	$\text{m}\Omega$
		$V_{GS}=-1.8\text{V}, I_D=-1.0\text{A}$			250	$\text{m}\Omega$
DYNAMIC CHARACTERISTICS						
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
SWITCHING CHARACTERISTICS						
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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 $T_{J(MAX)}$

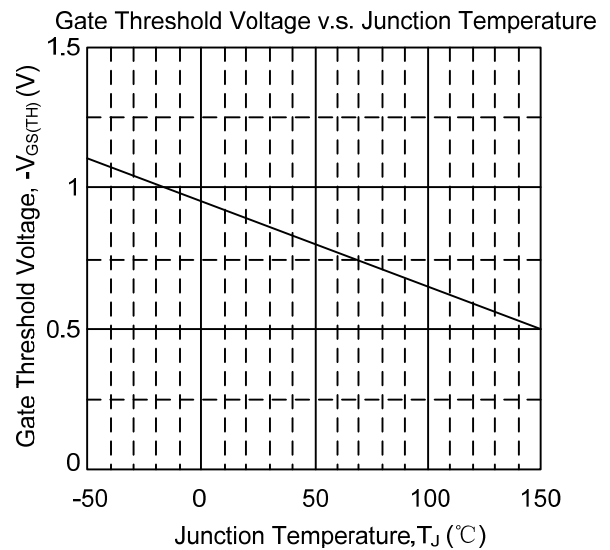
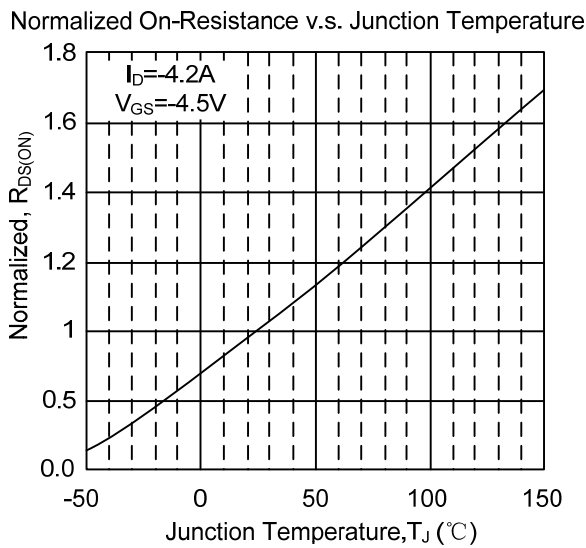
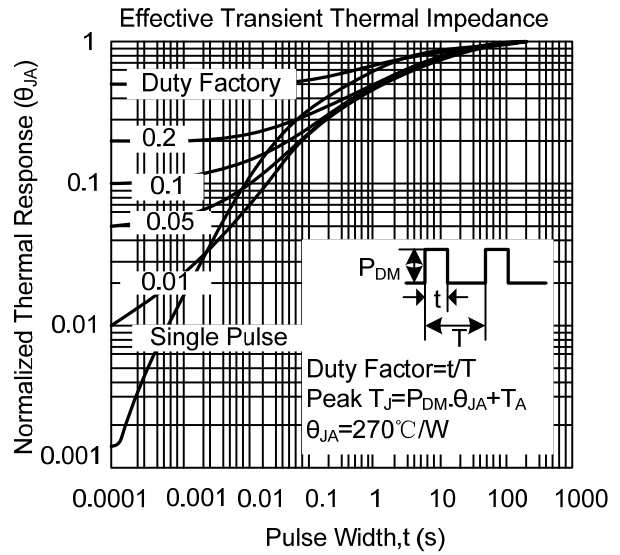
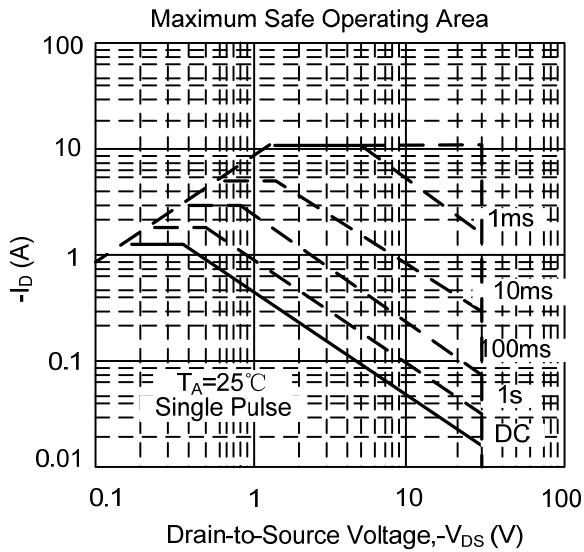
2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

3. Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on min.

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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