



UT2305

Power MOSFET

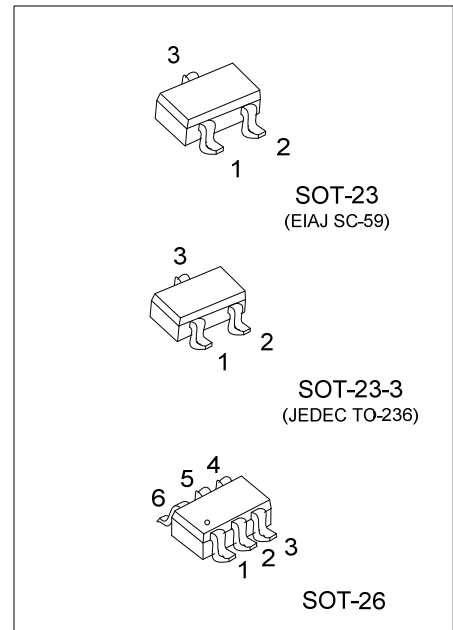
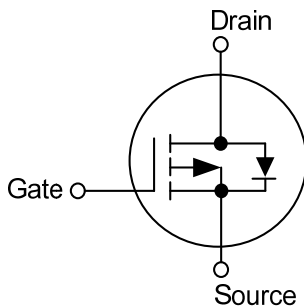
4.2A, 20V P-CHANNEL POWER MOSFET

■ 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



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT2305L-AE2-R	UT2305G-AE2-R	SOT-23-3	G	S	D	-	-	-	Tape Reel
UT2305L-AE3-R	UT2305G-AE3-R	SOT-23	G	S	D	-	-	-	Tape Reel
UT2305L-AL3-R	UT2305G-AG3-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

<p>UT2305G-AE3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3, AE3: SOT-23, AG6: SOT-26</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-23 / SOT-23-3	SOT-26

■ 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
Power Dissipation ($T_A=25^\circ\text{C}$)	SOT-23-3	0.83	W
	SOT-23	1.38	W
	SOT-26	1.1	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 (Note 3)	SOT-23-3	150	$^\circ\text{C/W}$
	SOT-23	90	$^\circ\text{C/W}$
	SOT-26	110	$^\circ\text{C/W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

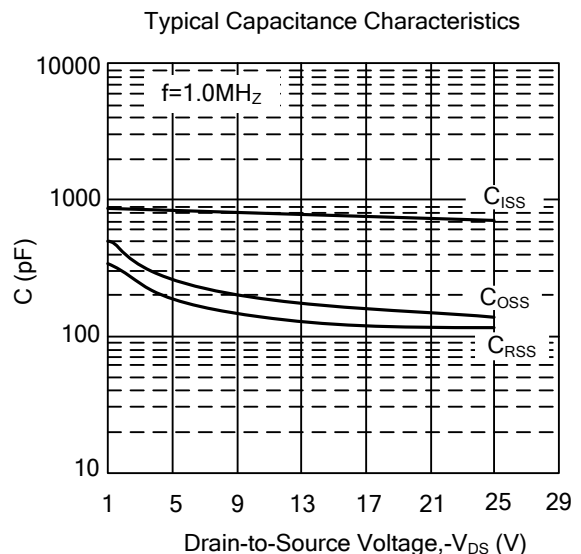
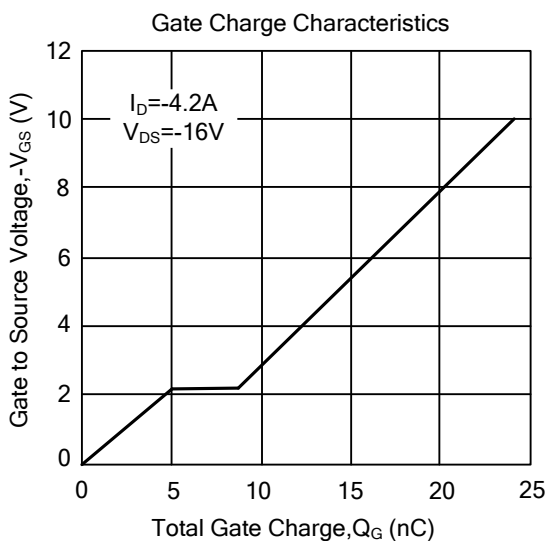
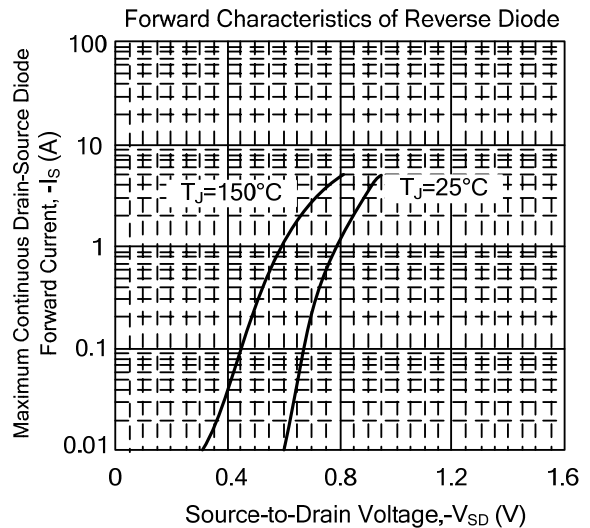
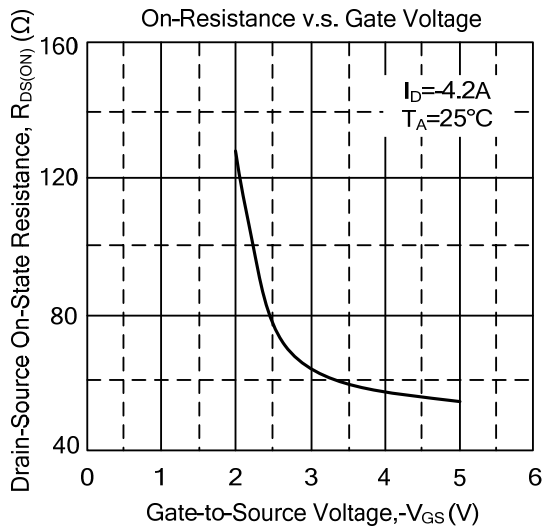
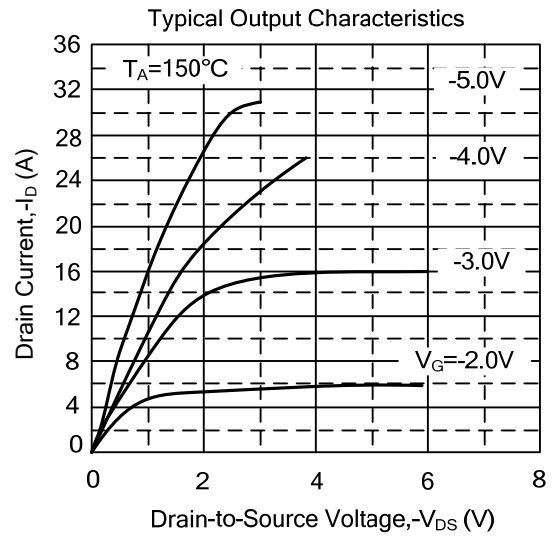
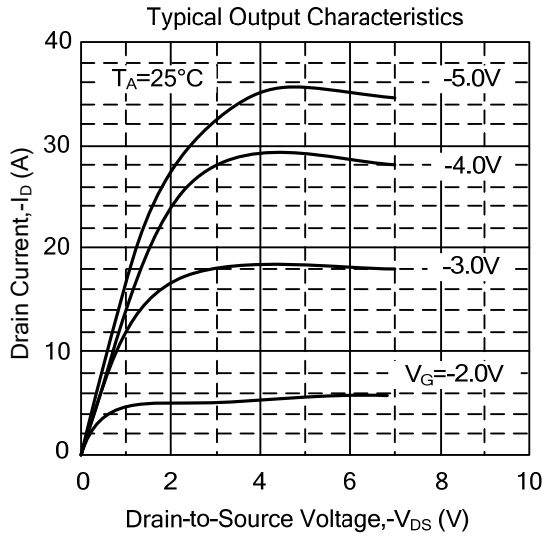
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu\text{A}$	-20			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 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)	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-4.5\text{A}$			53	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=-4.2\text{A}$			65	$\text{m}\Omega$
		$V_{GS}=-2.5V, I_D=-2.0\text{A}$			100	$\text{m}\Omega$
		$V_{GS}=-1.8V, I_D=-1.0\text{A}$			250	$\text{m}\Omega$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=-15V, f=1\text{MHz}$		900		pF
Output Capacitance	C_{OSS}			116		pF
Reverse Transfer Capacitance	C_{RSS}			120		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q_G	$V_{DS}=-16V, V_{GS}=-4.5V, I_D=-4.2\text{A}$		30		nC
Gate-Source Charge	Q_{GS}			5		nC
Gate-Drain Charge	Q_{GD}			2.5		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=-15V, V_{GS}=-10V, I_D=-1\text{A}, R_G=6\Omega, R_D=15\Omega$		12		ns
Turn-ON Rise Time	t_R			36		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			326		ns
Turn-OFF Fall Time	t_F			200		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	$V_{GS}=0V, I_S=-1.2\text{A}$			-1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=-4.2\text{A},$		27.7		ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=100\text{A}/\mu\text{s}$		22		nC

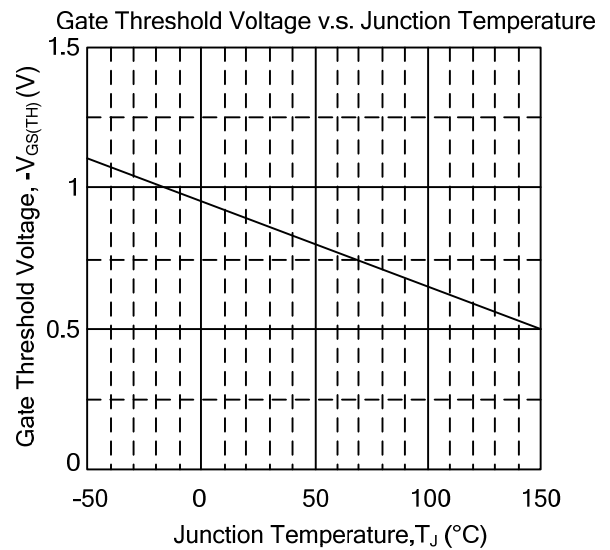
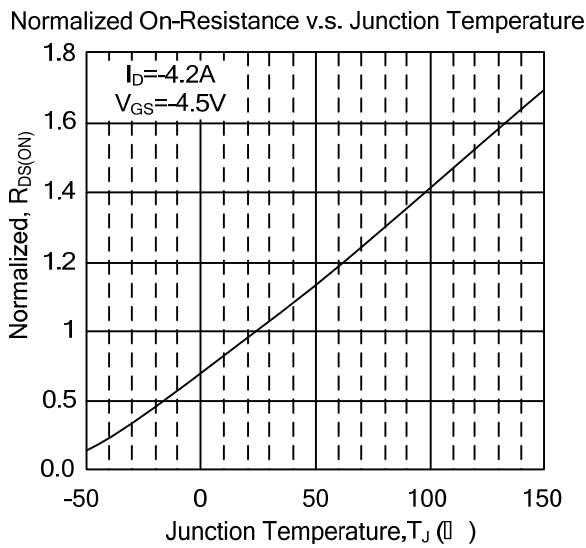
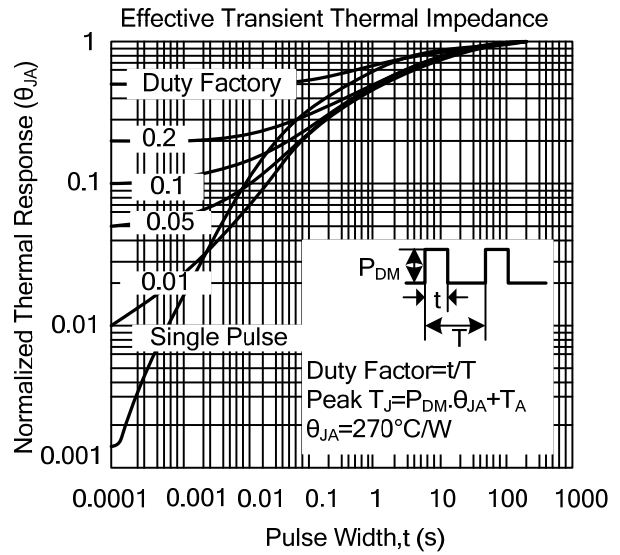
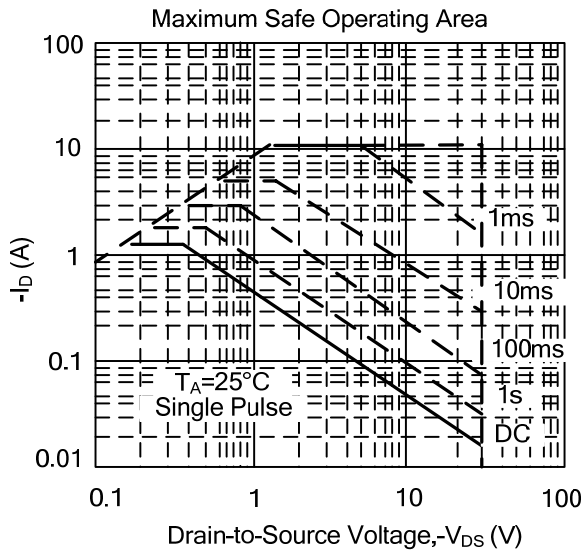
Notes: 1. Repetitive rating, pulse width limited by junction temperature.

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

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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