



UT2305

Power MOSFET

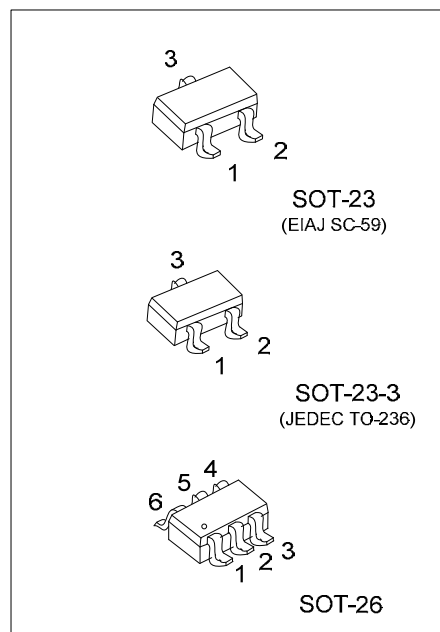
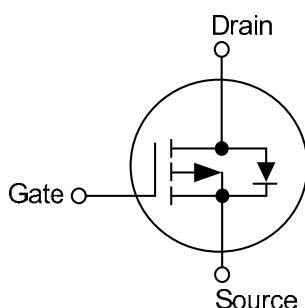
4.2A, 20V P-CHANNEL POWER MOSFET

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

		(1) R: Tape Reel (2) AE2: SOT-23-3, AE3: SOT-23, AG6: SOT-26 (3) G: Halogen Free and Lead Free, L: Lead Free
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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	P_D	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	θ_{JA}	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.

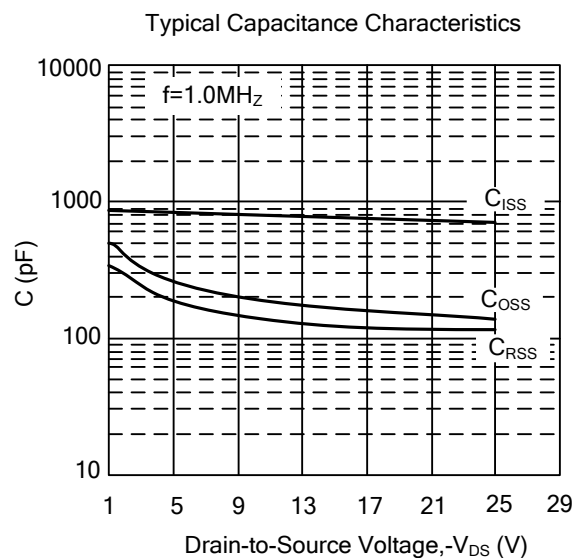
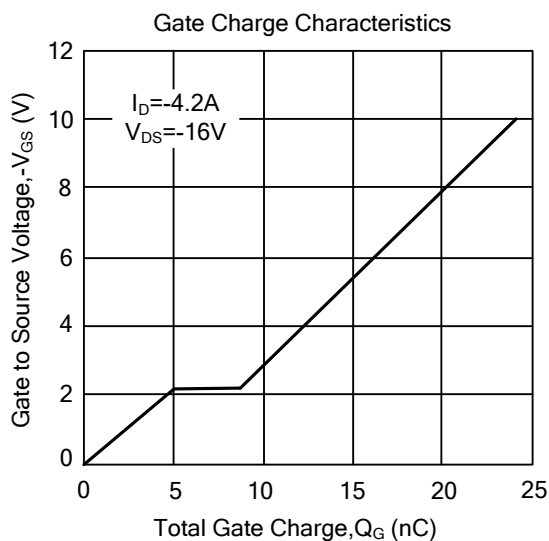
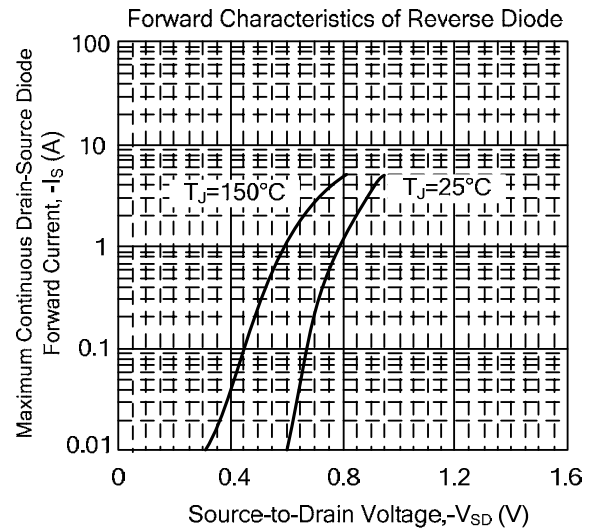
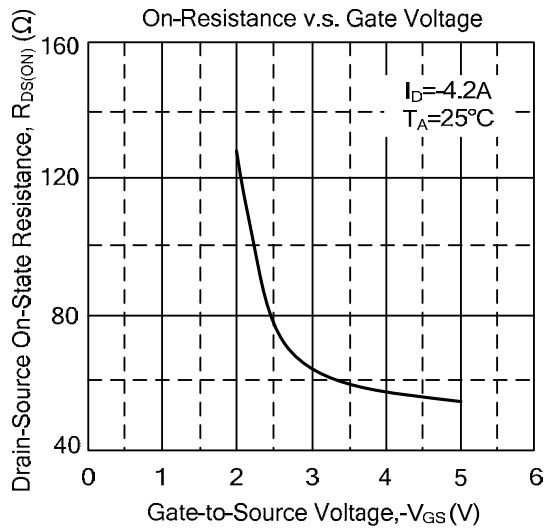
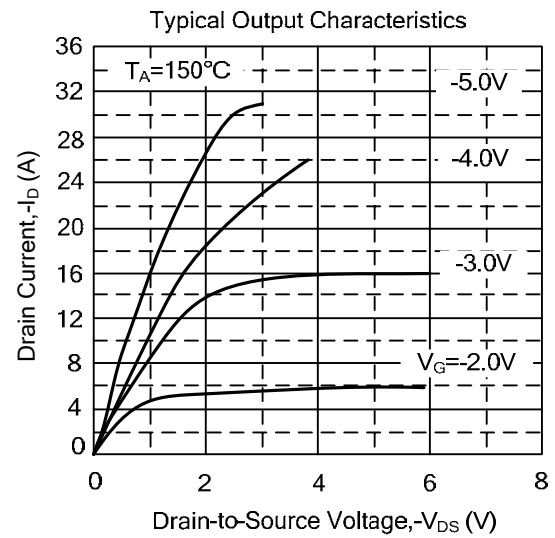
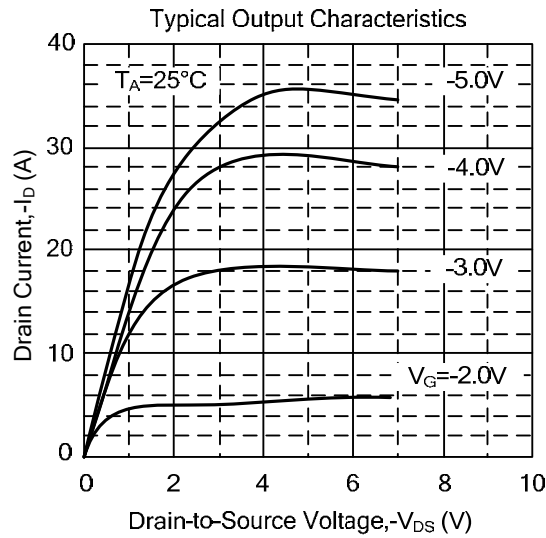
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =-1mA		-0.1		V/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250uA	-0.5		-1.2	V
Drain-Source On-State Resistance (Note 2)	R _{DS(ON)}	V _{GS} =-10V, I _D =-4.5A			53	mΩ
		V _{GS} =-4.5V, I _D =-4.2A			65	mΩ
		V _{GS} =-2.5V, I _D =-2.0A			100	mΩ
		V _{GS} =-1.8V, I _D =-1.0A			250	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-15V, f=1MHz		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 =-4.2A		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 =-1A, R _G =6Ω, R _D =15Ω		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 =-1.2A			-1.2	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =-4.2A,		27.7		ns
Reverse Recovery Charge	Q _{rr}	dI/dt=100A/μs		22		nC

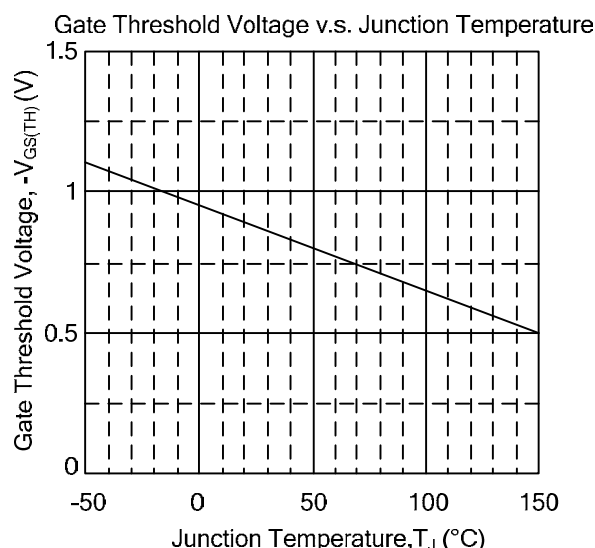
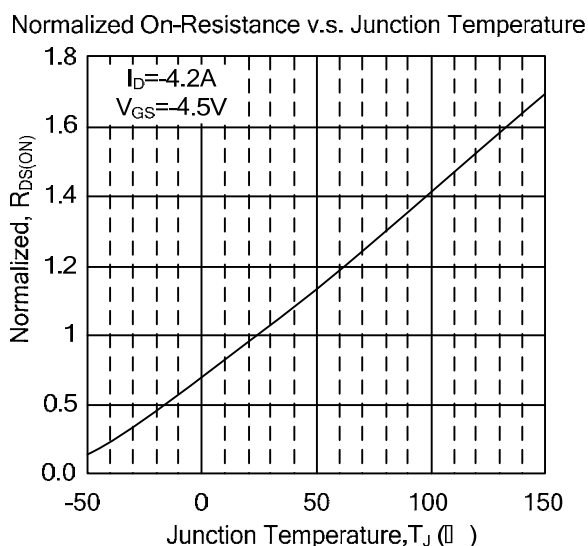
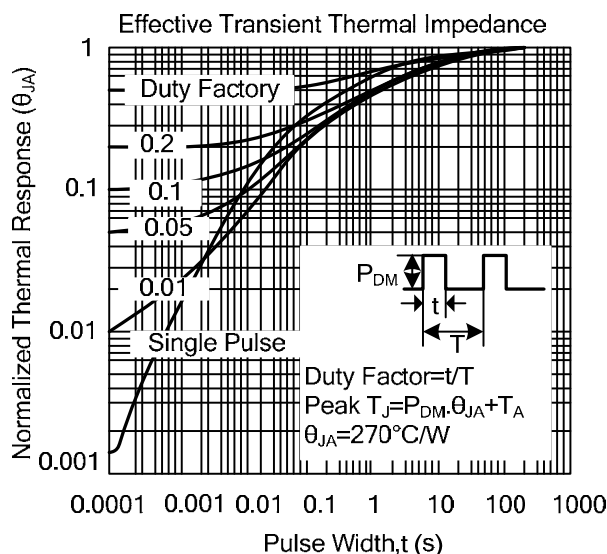
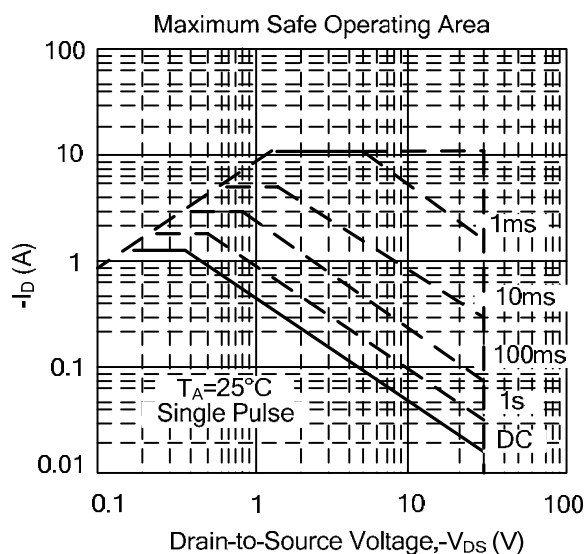
Notes: 1. Repetitive rating, pulse width limited by junction temperature.

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

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



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