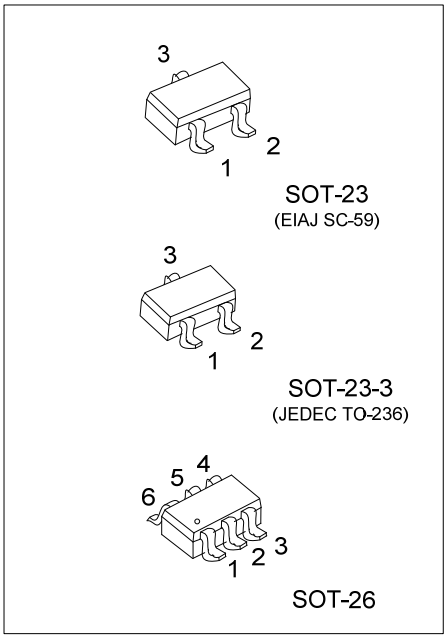
UT2305

Power MOSFET

4.2A, 20V P-CHANNEL POWER MOSFET

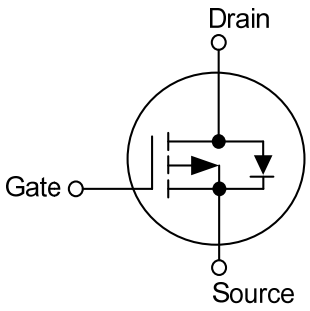


■ DESCRIPTION

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



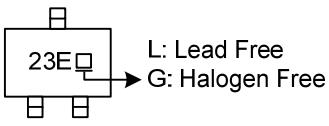
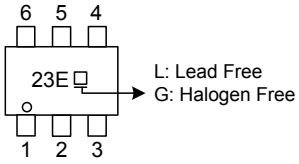
■ ORDERING INFORMATION

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

UT2305G-AE3-R (1)Packing Type (2)Package Type (3)Green Package	(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

■ MARKING

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

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■ 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°C)		I_D	-4.2	A
Pulsed Drain Current (Note 1, 2)		I_{DM}	-10	A
Power Dissipation (T_A=25°C)	SOT-23-3	P_D	0.83	W
	SOT-23		1.38	W
	SOT-26		1.1	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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	°C/W
	SOT-23		90	°C/W
	SOT-26		110	°C/W

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

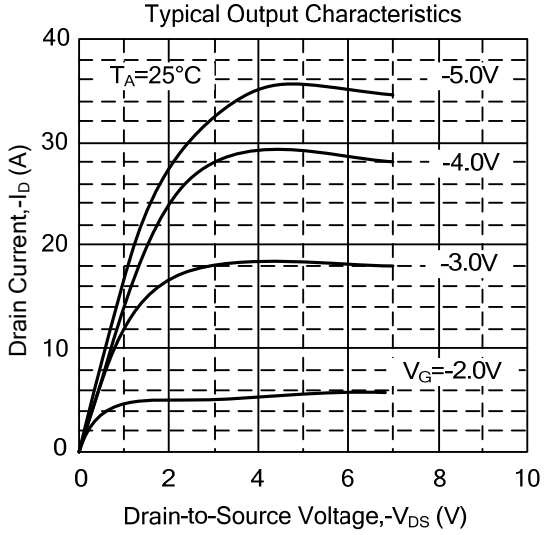
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

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	$\Delta BV_{DSS}/\Delta T_J$	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, dI/dt=100A/μs		27.7		ns
Reverse Recovery Charge	Q_{rr}			22		nC

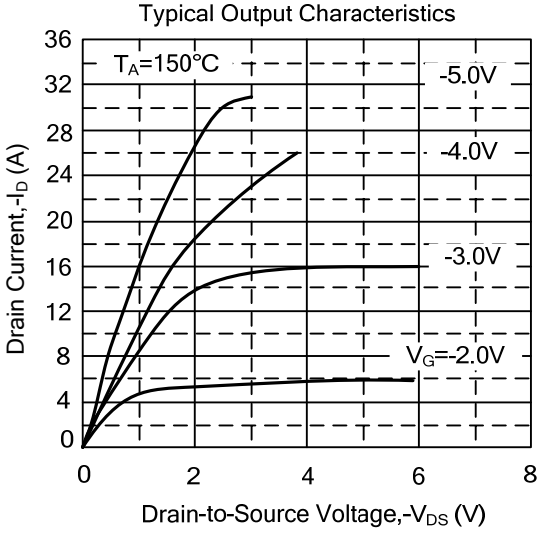
Notes: 1. Repetitive rating, pulse width limited by junction temperature.
2. Pulse width ≤300μs, duty cycle≤2%.

■ TYPICAL CHARACTERISTICS

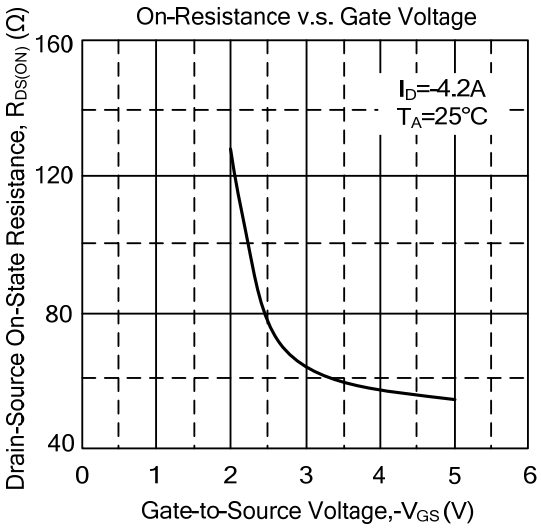
Typical Output Characteristics



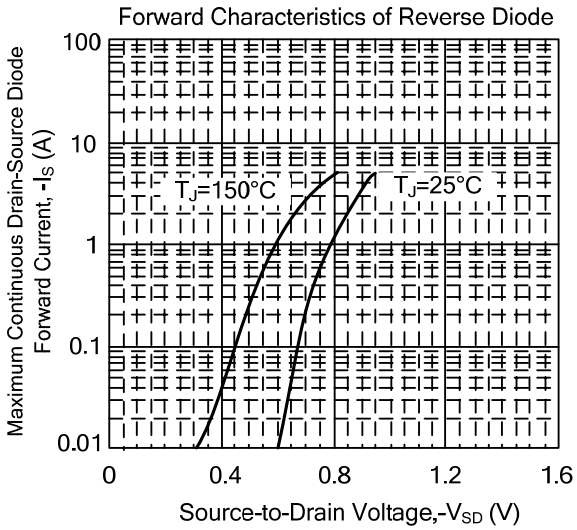
Typical Output Characteristics



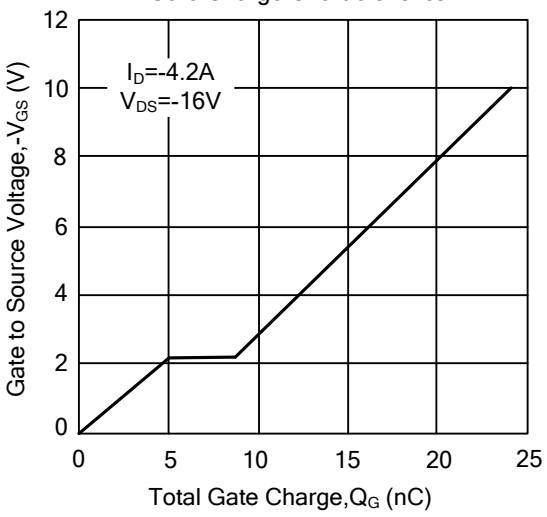
On-Resistance v.s. Gate Voltage



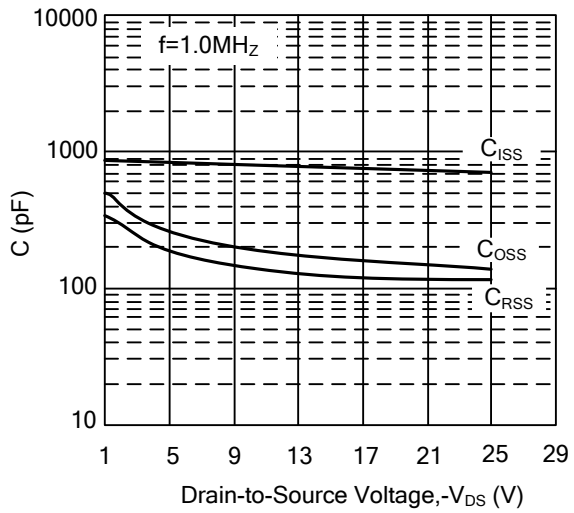
Forward Characteristics of Reverse Diode



Gate Charge Characteristics

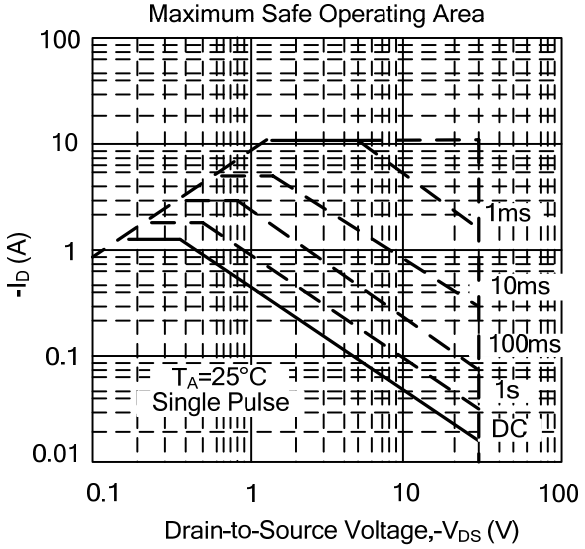


Typical Capacitance Characteristics

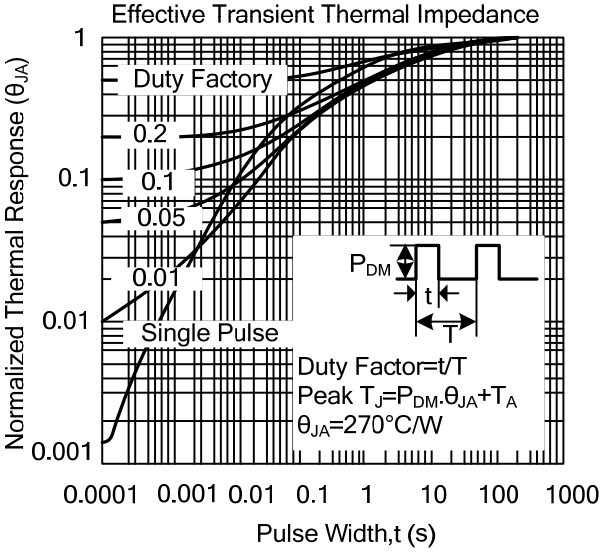


■ TYPICAL CHARACTERISTICS (Cont.)

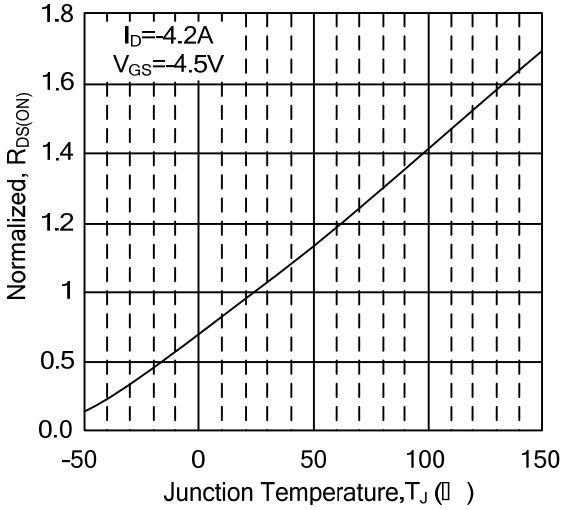
Maximum Safe Operating Area



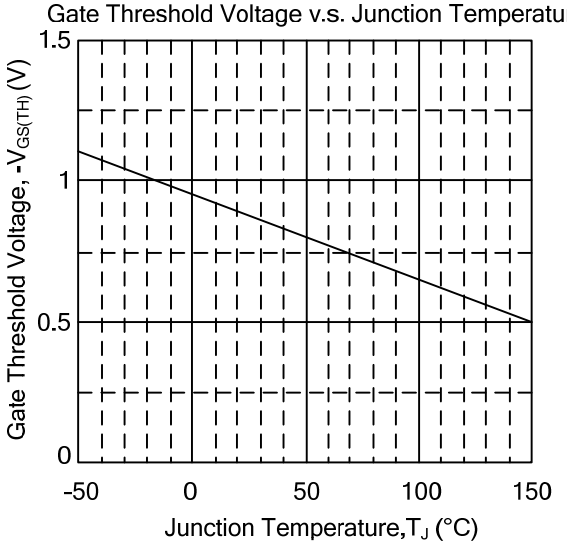
Effective Transient Thermal Impedance



Normalized On-Resistance v.s. Junction Temperature



Gate Threshold Voltage v.s. Junction Temperature



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