



## UT2306

Power MOSFET

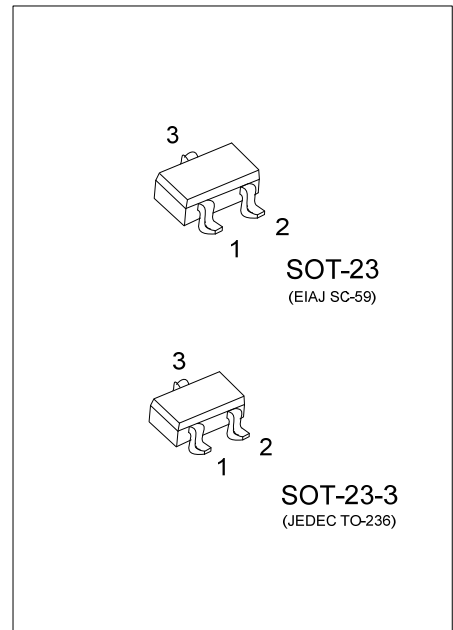
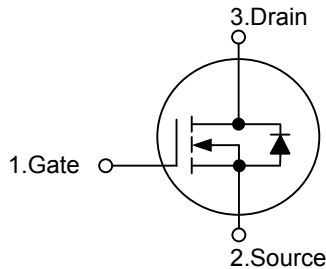
### N-CHANNEL ENHANCEMENT MODE

#### DESCRIPTION

The UTC **UT2306** is N-channel power MOSFET, designed with high density cell, with fast switching speed, ultra low on-resistance and excellent thermal and electrical capabilities.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

#### SYMBOL



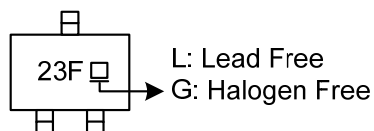
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2306L-AE2-R	UT2306G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT2306L-AE3-R	UT2306G-AE3-R	SOT-23	G	S	D	Tape Reel

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

<p>UT2306G-AE3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3, AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V <sub>DSS</sub>	30	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	3.5	A
Pulsed Drain Current (Note 1, 2)	I <sub>DM</sub>	14	A
Power Dissipation	SOT-23-3	0.83	W
	SOT-23	1.38	W
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature	T <sub>STG</sub>	-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 DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23-3	150	°C/W
	SOT-23	90	°C/W

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

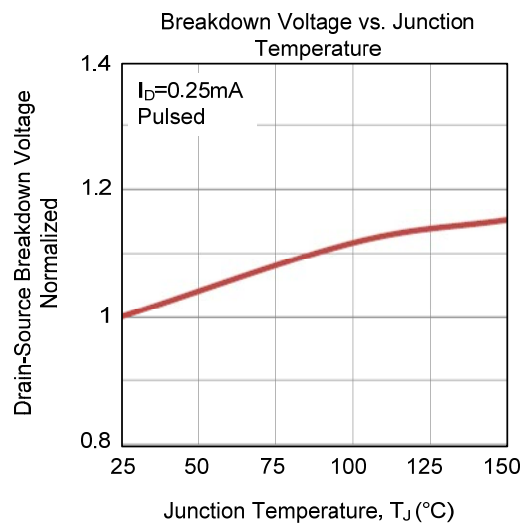
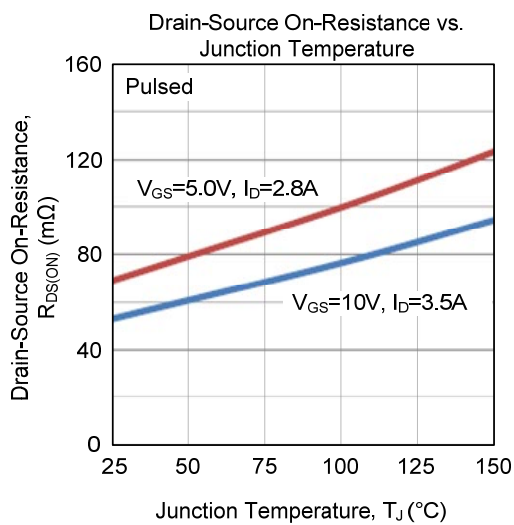
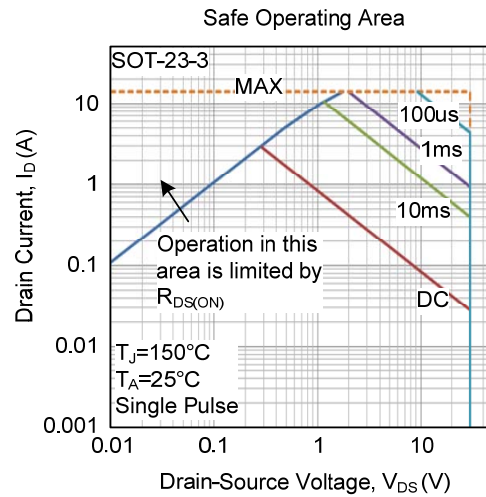
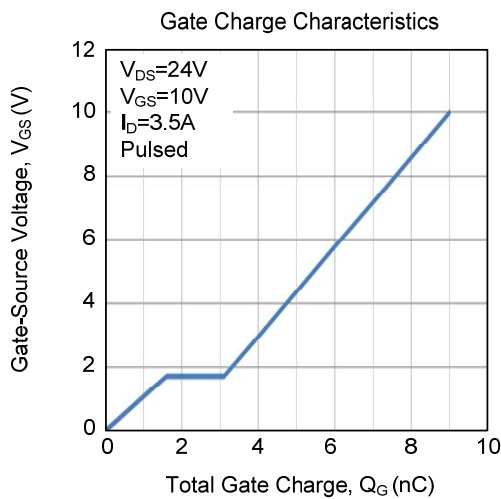
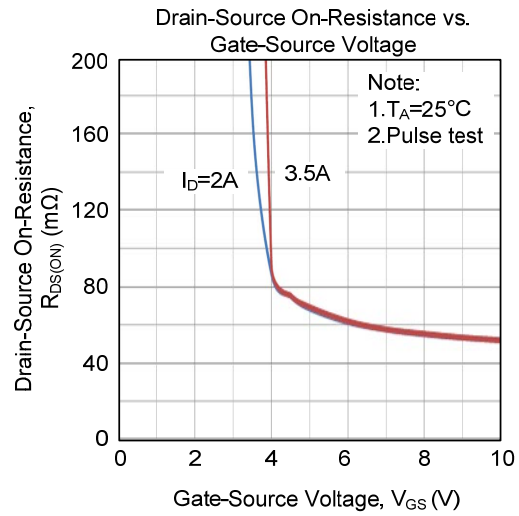
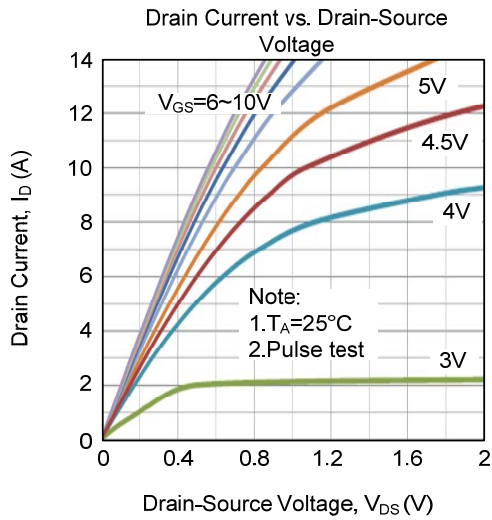
■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub> =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.0	V
Drain-Source On-State Resistance (Note 2)	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A			65	mΩ
		V <sub>GS</sub> =5V, I <sub>D</sub> =2.8A			90	
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz		142		pF
Output Capacitance	C <sub>OSS</sub>			51		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			32		pF
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A		9		nC
Gate-Source Charge	Q <sub>GS</sub>			1.6		nC
Gate-Drain Charge	Q <sub>GD</sub>			1.3		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =1A, R <sub>G</sub> =6Ω, R <sub>L</sub> =15Ω		5		ns
Turn-ON Rise Time	t <sub>R</sub>			14		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			10		ns
Turn-OFF Fall Time	t <sub>F</sub>			48		ns
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>				1.3	A
Drain-Source Diode Forward Voltage(Note2)	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1.25A		0.8	1.3	V

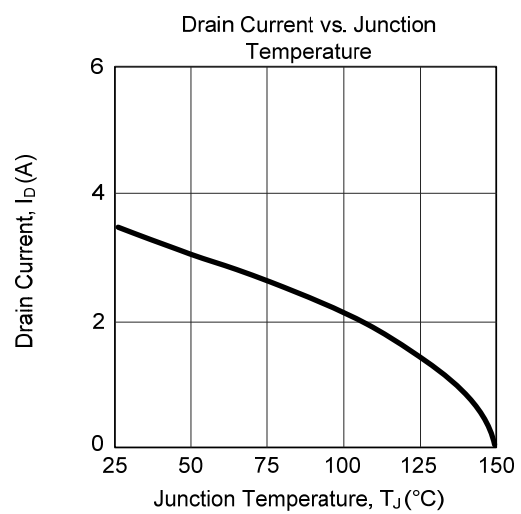
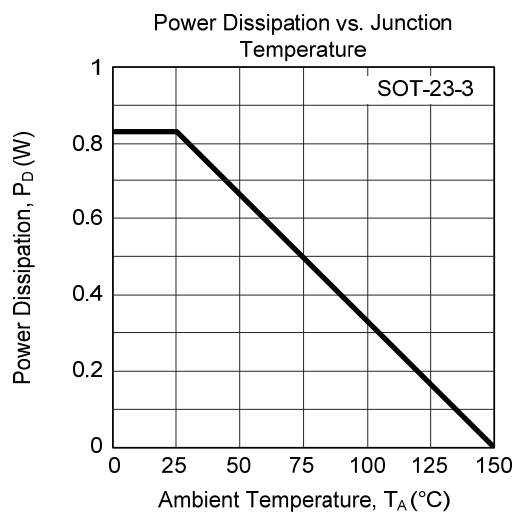
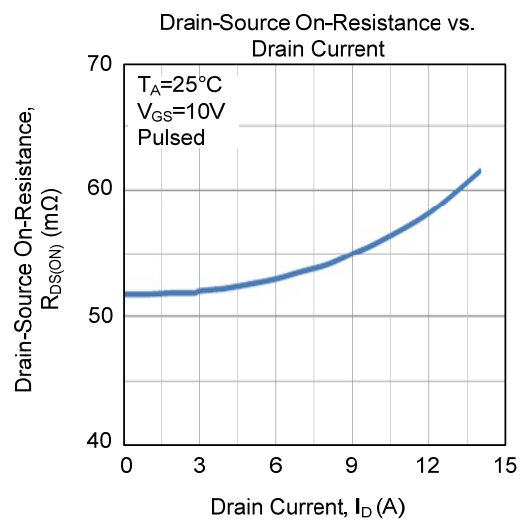
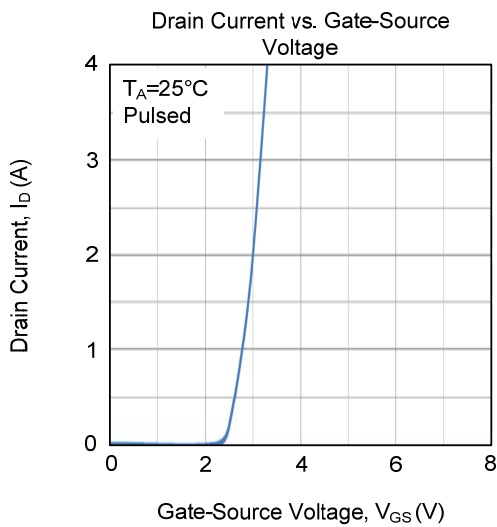
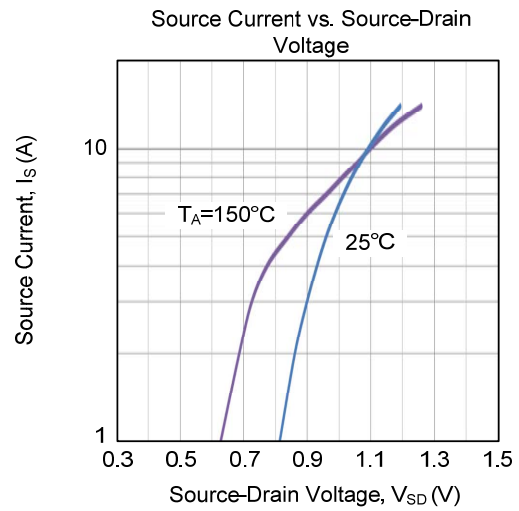
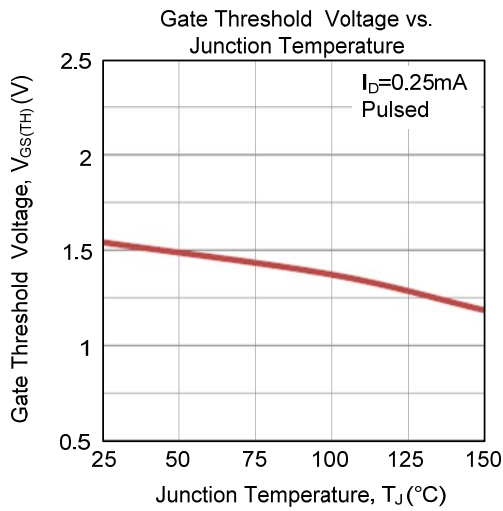
Notes: 1. Repetitive rating, pulse width limited by junction temperature.

2. Pulse width ≤300us, duty cycle ≤2%.

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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