



## UT3400-H

Preliminary

Power MOSFET

### 5.8A, 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

#### DESCRIPTION

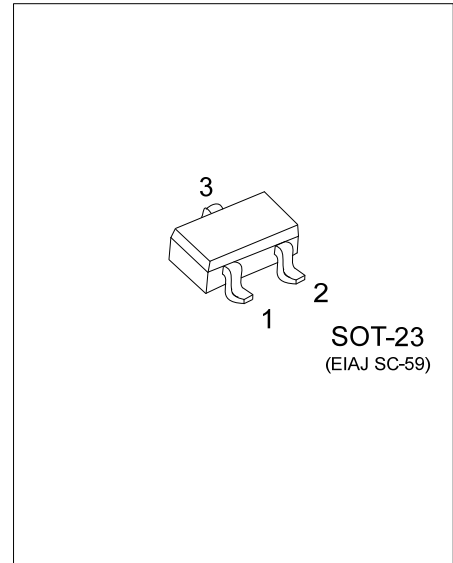
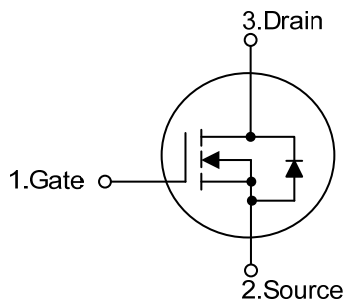
The UTC **UT3400-H** is an N-ch enhancement MOSFET providing the customers with perfect  $R_{DS(ON)}$  and low gate charge. This device can be operated with 2.5V low gate voltage.

The UTC **UT3400-H** is optimized for applications, such as a load switch or in PWM.

#### FEATURES

- \*  $R_{DS(ON)} \leq 32m\Omega @ V_{GS}=10V, I_D=5.8A$
- $R_{DS(ON)} \leq 35m\Omega @ V_{GS}=4.5V, I_D=5A$
- $R_{DS(ON)} \leq 52m\Omega @ V_{GS}=2.5V, I_D=4A$

#### SYMBOL



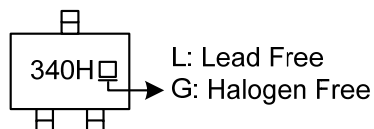
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3400L-AE3-R	UT3400G-AE3-R	SOT-23	G	S	D	Tape Reel

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

<p>UT3400G-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) AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±12	V
Continuous Drain Current	I <sub>D</sub>	5.3	A
Pulsed Drain Current (Note 2)	I <sub>DM</sub>	21.2	A
Power Dissipation	P <sub>D</sub>	1.56	W
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

Notes: 1. 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.

2. Pulse width limited by T<sub>J(MAX)</sub>

3. Pulse width ≤300μs, duty cycle≤0.5%

4. L = 50mH, I<sub>AS</sub> = 2A, V<sub>DD</sub> = 50V, R<sub>G</sub> = 25Ω, Starting T<sub>J</sub> = 25°C

5. I<sub>SD</sub> ≤ 7A, di/dt ≤ 200A/μs, V<sub>DD</sub> ≤ BV<sub>DSS</sub>, Starting T<sub>J</sub> = 25°C

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note)	θ <sub>JA</sub>	80	°C/W

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

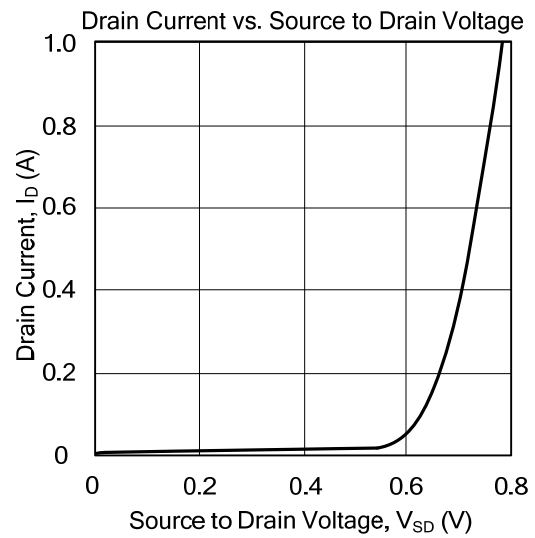
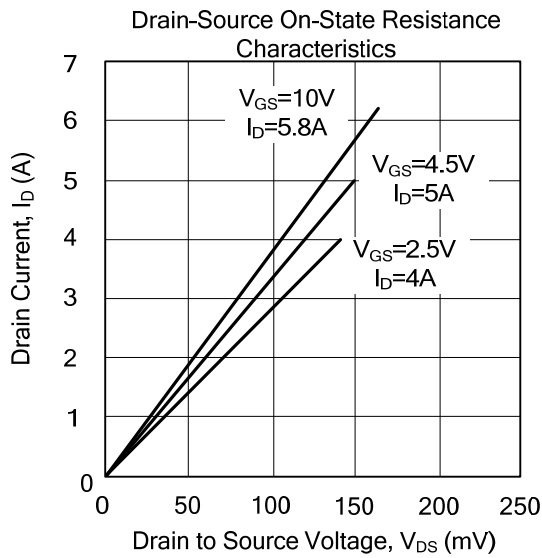
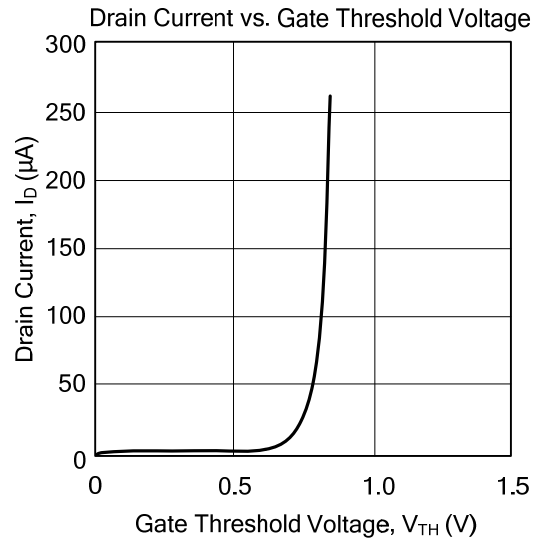
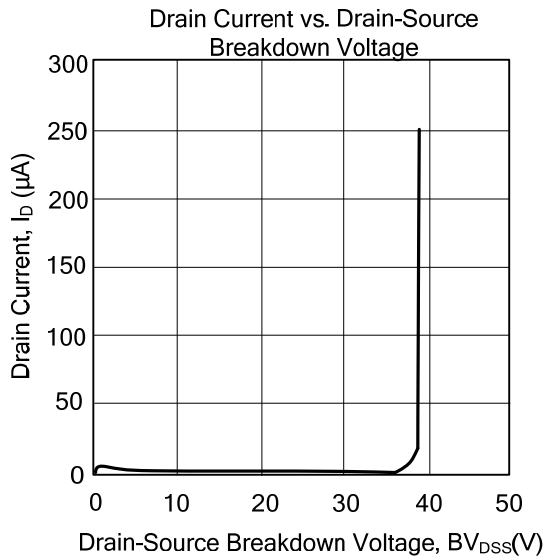
■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C, unless otherwise specified)

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>GS</sub> =±12V, V <sub>DS</sub> =0V			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	0.4	0.75	0.9	V
On-State Drain Current	I <sub>D(ON)</sub>	V <sub>DS</sub> =5V, V <sub>GS</sub> =4.5V	30			A
Drain to Source On-state Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =5.8A		28	32	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A		30	35	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4 A		36	52	mΩ
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f =1MHz		695		pF
Output Capacitance	C <sub>OSS</sub>			45		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			36		pF
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f =1MHz		1.5	3.0	Ω
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =4A		8.4	12	nC
Gate Source Charge	Q <sub>GS</sub>			1	2	nC
Gate Drain Charge	Q <sub>GD</sub>			2.2	4	nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =1A R <sub>G</sub> =25Ω		4.5	9	ns
Turn-ON Rise Time	t <sub>R</sub>			13	25	ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			27	51	ns
Turn-OFF Fall-Time	t <sub>F</sub>			8.3	16	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Diode Continuous Forward Current ( Note 1)	I <sub>S</sub>				5.3	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V			1	V

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Pulse width ≤300μs, duty cycle≤0.5%

■ TYPICAL CHARACTERISTICS



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