

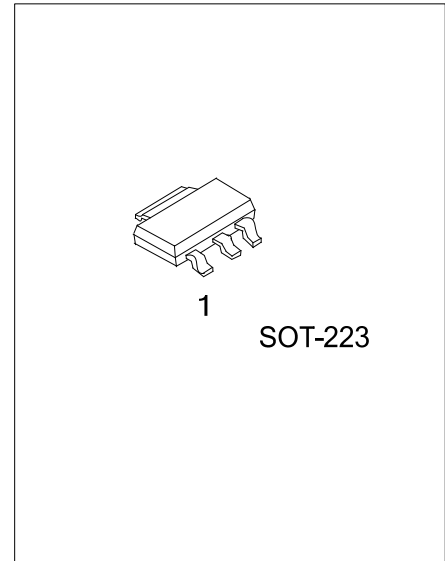


## UTT3N10-H

Preliminary

Power MOSFET

### 2.5A, 100V N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



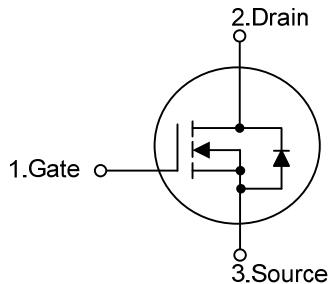
#### DESCRIPTION

The UTC **UTT3N10-H** is an N-channel logic level enhancement mode field effect transistor, it uses UTC's advanced technology to provide the customers with high switching speed and low gate charge.

#### FEATURES

- \*  $R_{DS(on)} < 225m\Omega @ V_{GS} = 10V, I_D = 1.25A$
- \*  $R_{DS(on)} < 360m\Omega @ V_{GS} = 4.5V, I_D = 125A$
- \* High switching speed
- \* Low grade

#### SYMBOL



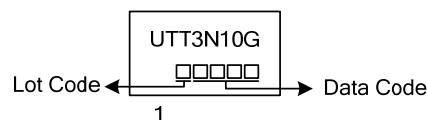
#### ORDERING INFORMATION

Order Number	Package	Pin Assignment			Packing
		1	2	3	
UTT3N10G-AA3-R	SOT-223	G	D	S	Tape Reel

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

UTT3N10G-AA3-R <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AA3: SOT-223</li> <li>(3) G: Halogen Free and Lead Free</li> </ul>
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#### MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V <sub>DSS</sub>	+100	V	
Gate-Source Voltage		V <sub>GSS</sub>	±20	V	
Drain Current	Continuous (Note 1)	I <sub>D</sub>	T <sub>A</sub> =25°C	2.5	A
			T <sub>A</sub> =70°C	2.0	A
	Pulsed (Note 2)		I <sub>DM</sub>	10	A
Single Pulsed Avalanche Energy		E <sub>AS</sub>	12	mJ	
Power Dissipation (Note 1)	T <sub>A</sub> =25°C	P <sub>D</sub>	3	W	
	T <sub>A</sub> =70°C		1.9		
Junction Temperature		T <sub>J</sub>	-55~+150	°C	
Storage Temperature Range		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 CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case (Note 1)	θ <sub>JC</sub>	12	°C/W
Junction to Ambient (Note 1)	θ <sub>JA</sub>	42	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	100			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V			1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V			+100	nA
		V <sub>GS</sub> =-20V, 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	1	1.6	2.5	V
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =1.25A		180	225	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =1A		265	360	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =20V, I <sub>D</sub> =1.25A		2.3		S
<b>DYNAMIC PARAMETERS (Note 3)</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1.0MHz		550		pF
Output Capacitance	C <sub>OSS</sub>			30		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			19		pF
<b>SWITCHING PARAMETERS (Note 3)</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =1.3A I <sub>G</sub> =100μA		65		nC
Gate to Source Charge	Q <sub>GS</sub>			2.5		nC
Gate to Drain Charge	Q <sub>GD</sub>			2.2		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =0.5A, R <sub>G</sub> =25Ω, V <sub>GS</sub> =10V		25		ns
Rise Time	t <sub>R</sub>			12		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			150		ns
Fall-Time	t <sub>F</sub>			55		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.8	1.2	V

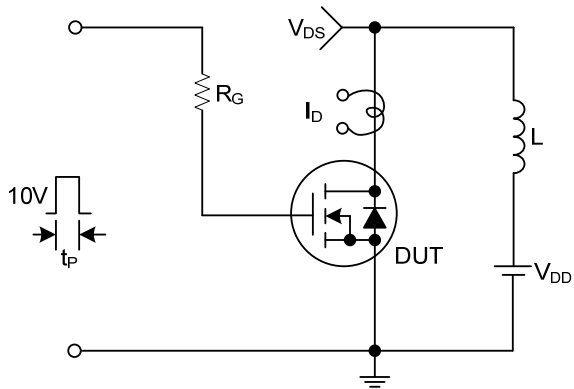
Note: 1. Surface Mounted on FR4 Board, t ≤ 10sec.

2. Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 2%

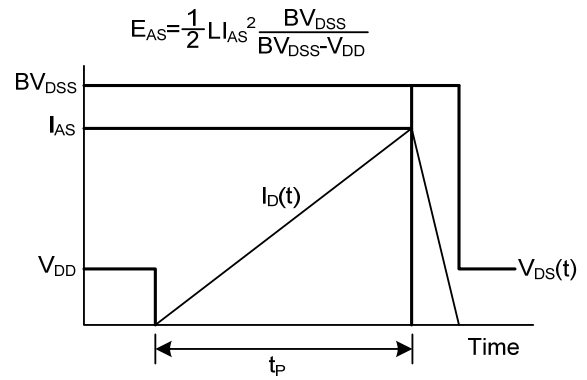
3. Guaranteed by design, not subject to production testing

4. Starting T<sub>J</sub>=25°C, L=0.5mH, V<sub>DD</sub>=50V

■ TEST CIRCUITS AND WAVEFORMS



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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