



## 4N100

Preliminary

Power MOSFET

### 4A, 1000V N-CHANNEL POWER MOSFET

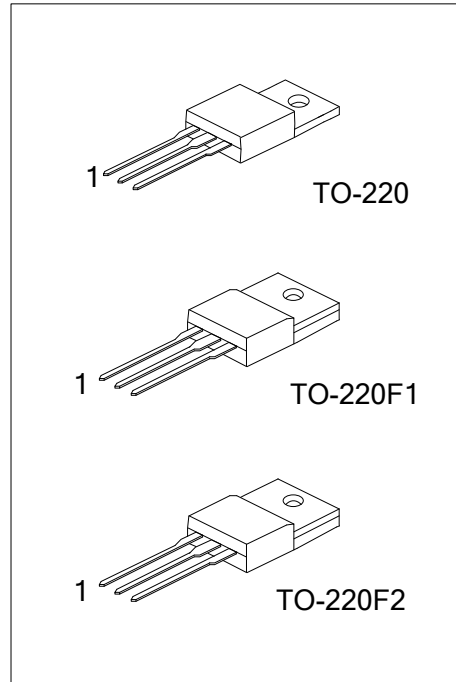
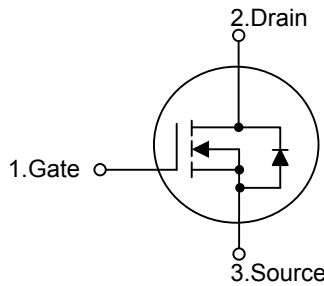
#### DESCRIPTION

The UTC **4N100** is an N-channel MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and high breakdown voltage.

#### FEATURES

- \*  $R_{DS(ON)} < 3.5\Omega @ V_{GS}=10V, I_D=2A$
- \* High switching speed
- \* High breakdown voltage

#### SYMBOL



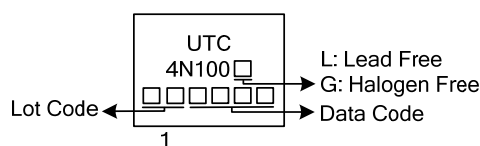
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
4N100L-TA3-T	4N100G-TA3-T	TO-220	G	D	S	Tube
4N100L-TF1-T	4N100G-TF1-T	TO-220F1	G	D	S	Tube
4N100L-TF2-T	4N100G-TF2-T	TO-220F2	G	D	S	Tube

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

<p>4N100G-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220, TF1: TO-220F1, TF2: TO-220F2</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
--	--

#### MARKING



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	1000	V
Drain-Gate Voltage ( $R_{GS}=2k\ \Omega$ )		$V_{DGR}$	1000	V
Gate-Source Voltage		$V_{GSS}$	$\pm 30$	V
Drain Current	Continuous ( $T_C=25^\circ\text{C}$ )	$I_D$	4	A
	Pulsed ( $T_C=25^\circ\text{C}$ )	$I_{DM}$	8	A
Single Pulsed Avalanche Energy (Note 2)		$E_{AS}$	320	mJ
Power Dissipation ( $T_C=25^\circ\text{C}$ )	TO-220	$P_D$	140	W
	TO-220F1		38	W
	TO-220F2		40	W
Junction Temperature		$T_J$	-55~+150	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-55~+150	$^\circ\text{C}$

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.  $L=40\text{mH}$ ,  $I_{AS}=4\text{A}$ ,  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$

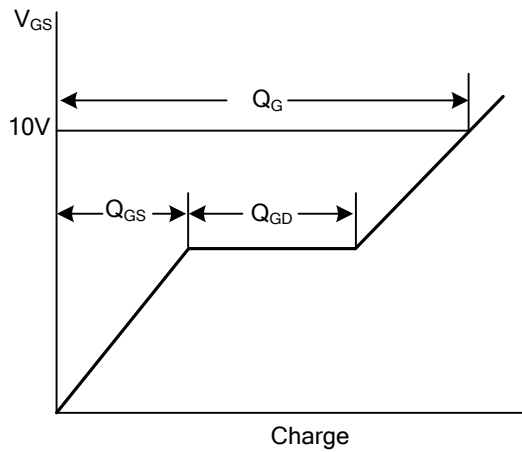
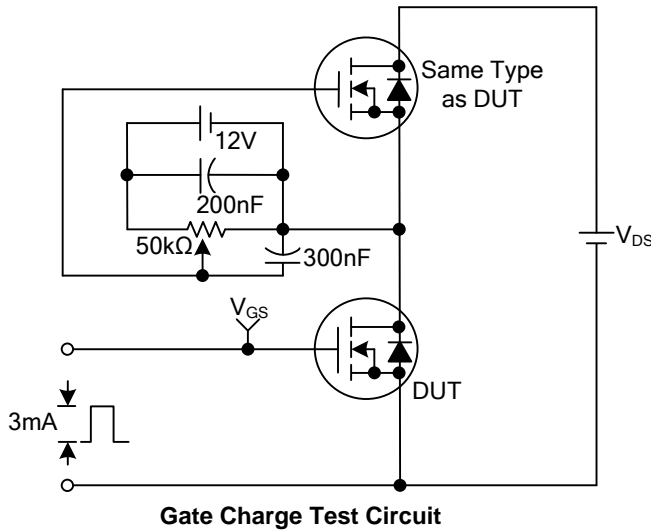
### ■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F1	$\theta_{JA}$	62.5	$^\circ\text{C/W}$
	TO-220F2			
Junction to Case	TO-220	$\theta_{JC}$	0.89	$^\circ\text{C/W}$
	TO-220F1		3.25	
	TO-220F2		3.1	

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

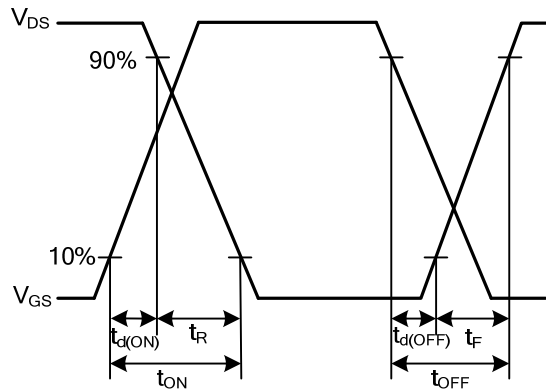
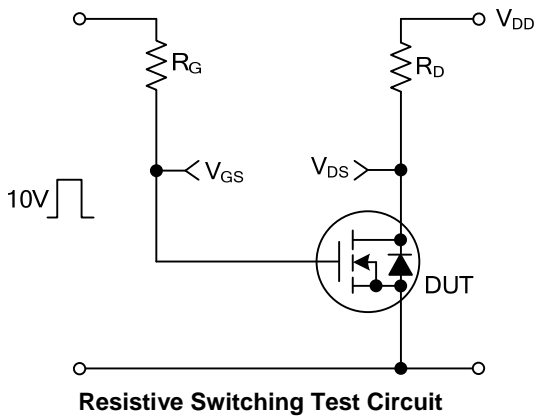
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=0.25\text{mA}$ , $V_{GS}=0\text{V}$ , $T_J=25^\circ\text{C}$	1000			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=1000\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=25^\circ\text{C}$			10	$\mu\text{A}$
		$V_{DS}=1000\text{V}$ , $V_{GS}=0\text{V}$ , $T_C=125^\circ\text{C}$			100	$\mu\text{A}$
Gate-Source Leakage Current	Forward	$I_{GSS}$			+100	nA
	Reverse				-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	3		5	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=2\text{A}$			3.5	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		1100	1500	pF
Output Capacitance	$C_{OSS}$		90	150	pF	
Reverse Transfer Capacitance	$C_{RSS}$		13	25	pF	
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=0.5\text{A}$ , $R_{GS}=25\Omega$		85		ns
Rise Time	$t_R$		115		ns	
Turn-OFF Delay Time	$t_{D(OFF)}$		180		ns	
Fall-Time	$t_F$		100		ns	
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$	$T_C=25^\circ\text{C}$			4	A
Maximum Body-Diode Pulsed Current	$I_{SM}$	$T_C=25^\circ\text{C}$			8	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_F=4\text{A}$ , $V_{GS}=0\text{V}$			1.4	V

■ TEST CIRCUITS AND WAVEFORMS



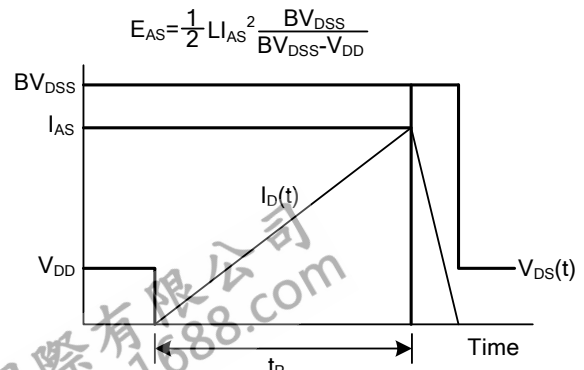
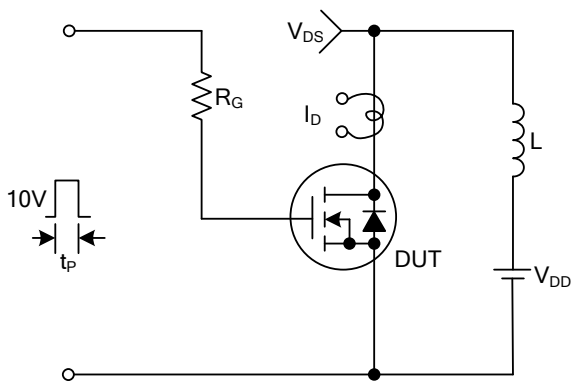
Gate Charge Test Circuit

Gate Charge Waveforms



Resistive Switching Test Circuit

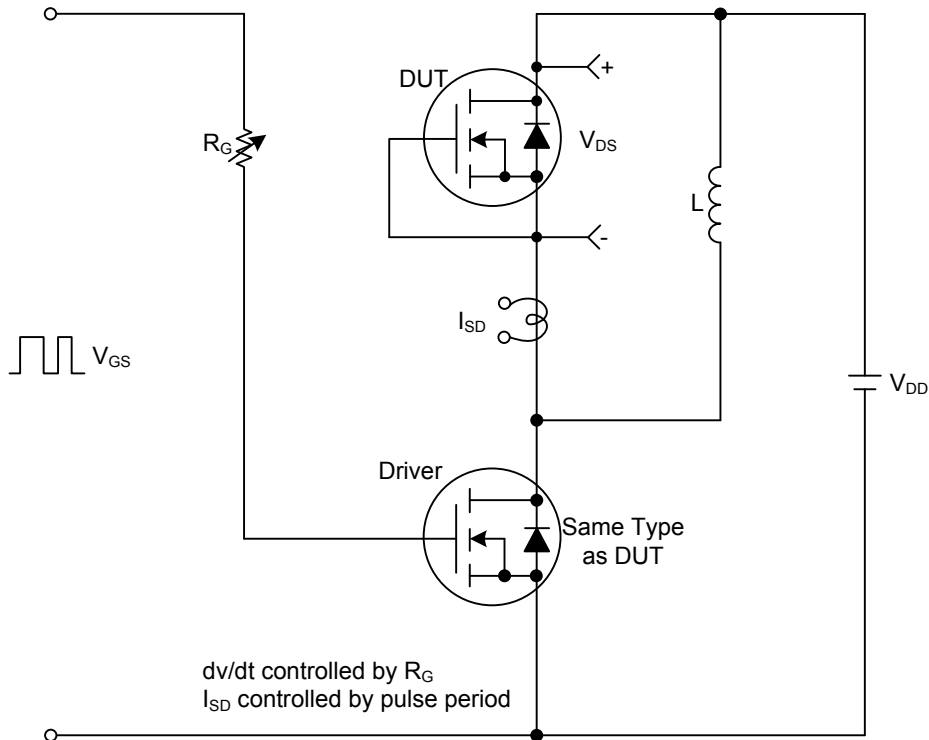
Resistive Switching Waveforms



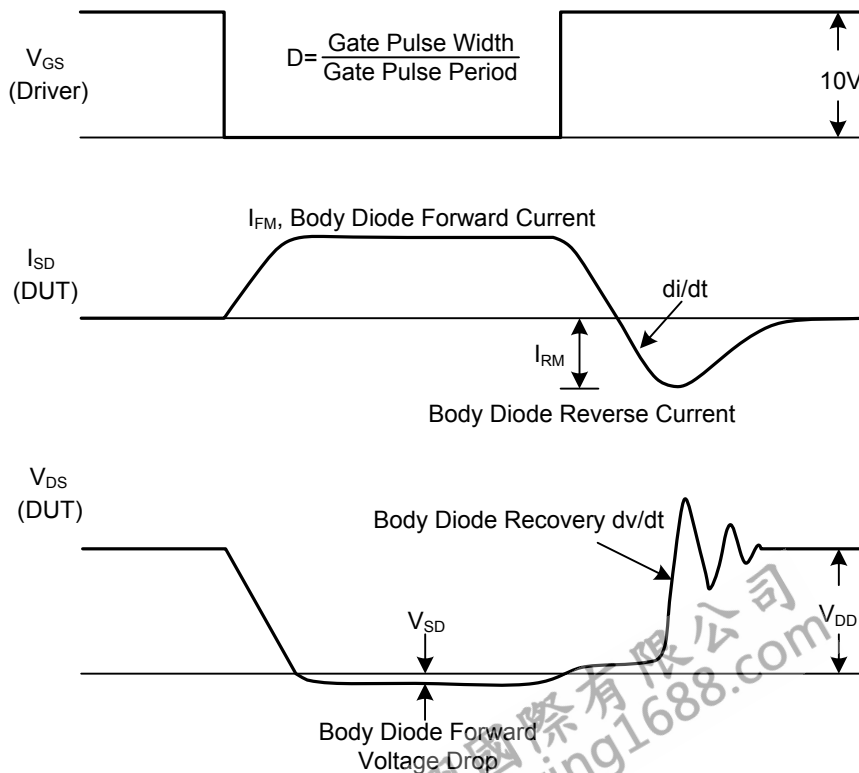
Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)



Peak Diode Recovery dv/dt Test Circuit & Waveforms



FLYiNG 汎翊國際有限公司  
www.flying1688.com

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.