



4N100

Preliminary

Power MOSFET

4A, 1000V N-CHANNEL POWER MOSFET

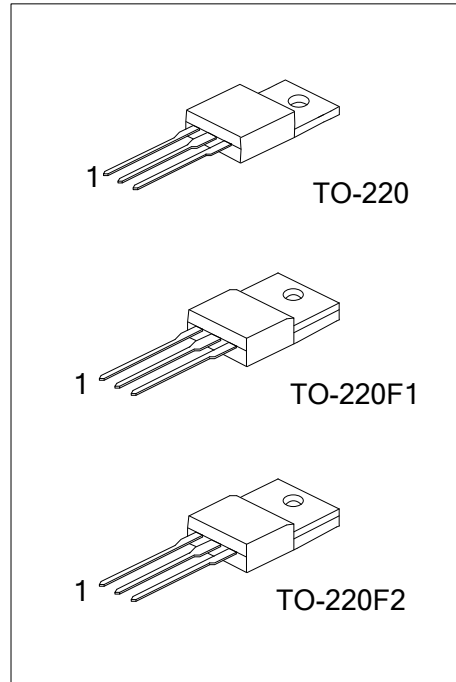
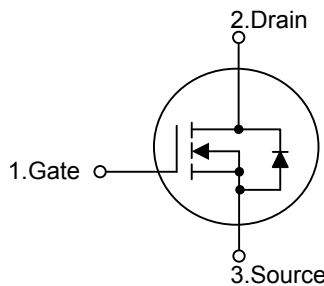
DESCRIPTION

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



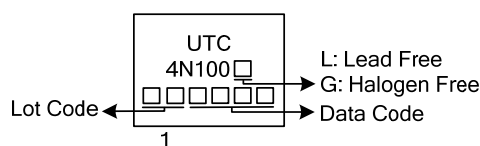
ORDERING INFORMATION

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>
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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}	± 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 $T_J=25^\circ\text{C}$

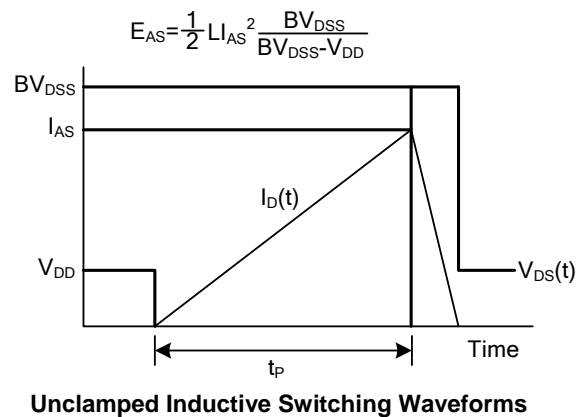
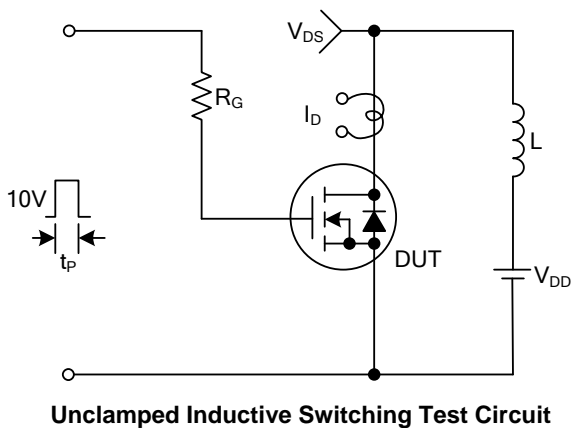
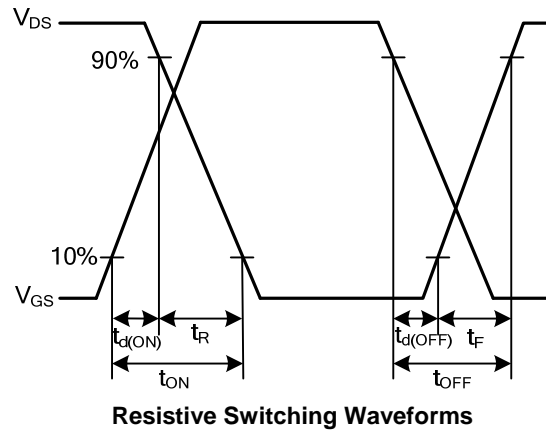
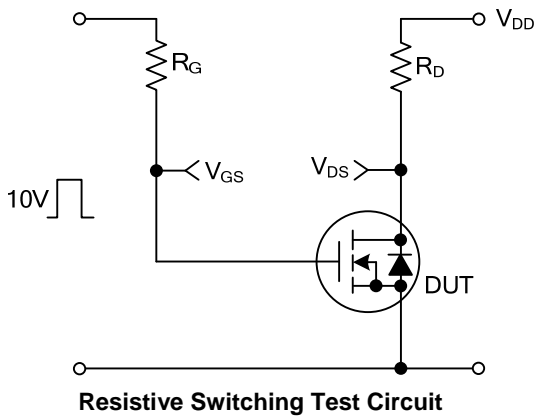
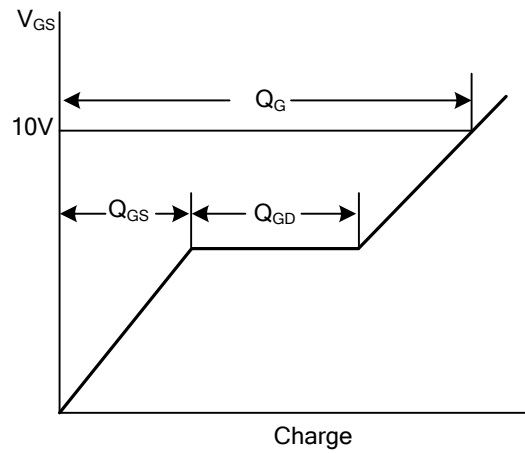
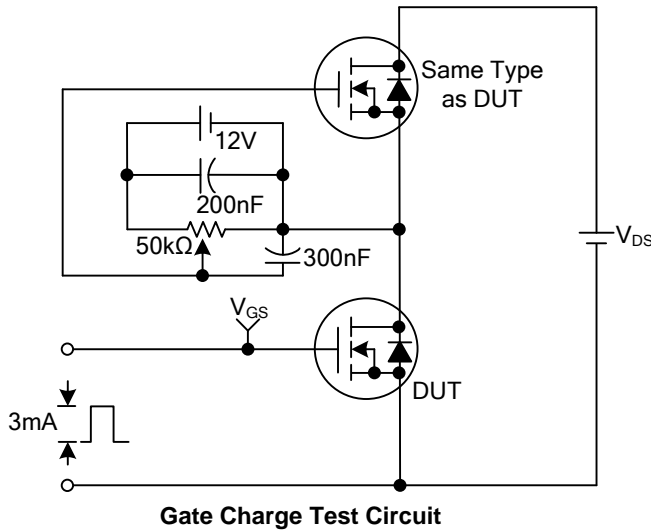
■ THERMAL DATA

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

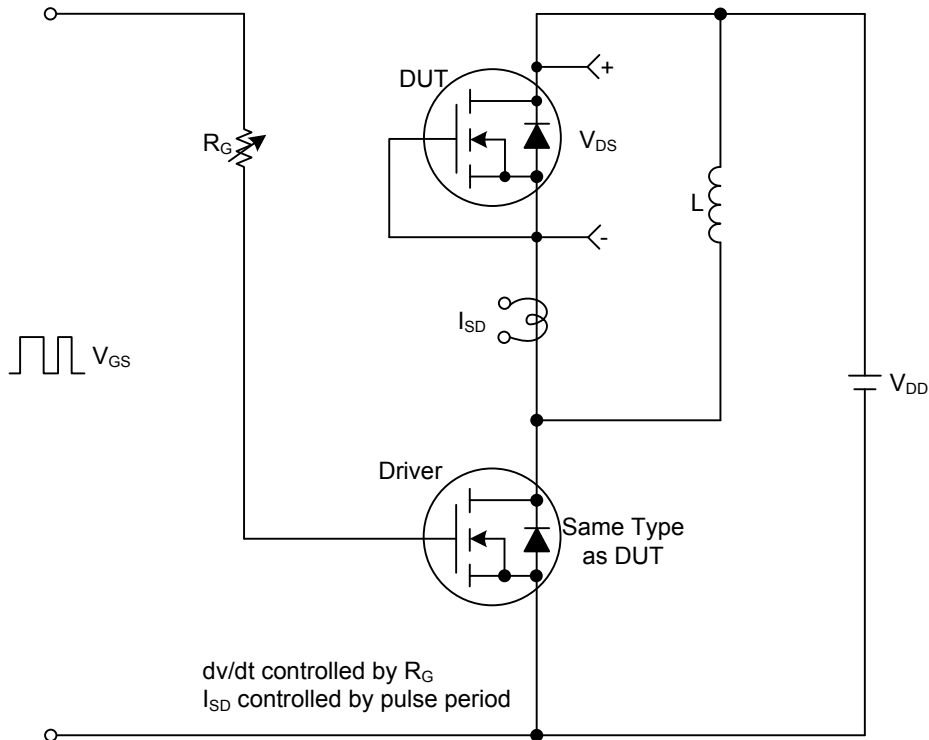
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
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	μA
		$V_{DS}=1000\text{V}$, $V_{GS}=0\text{V}$, $T_C=125^\circ\text{C}$			100	μA
Gate-Source Leakage Current	Forward	I_{GSS}			+100	nA
	Reverse				-100	nA
ON CHARACTERISTICS						
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	Ω
DYNAMIC PARAMETERS						
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	
SWITCHING PARAMETERS						
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	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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

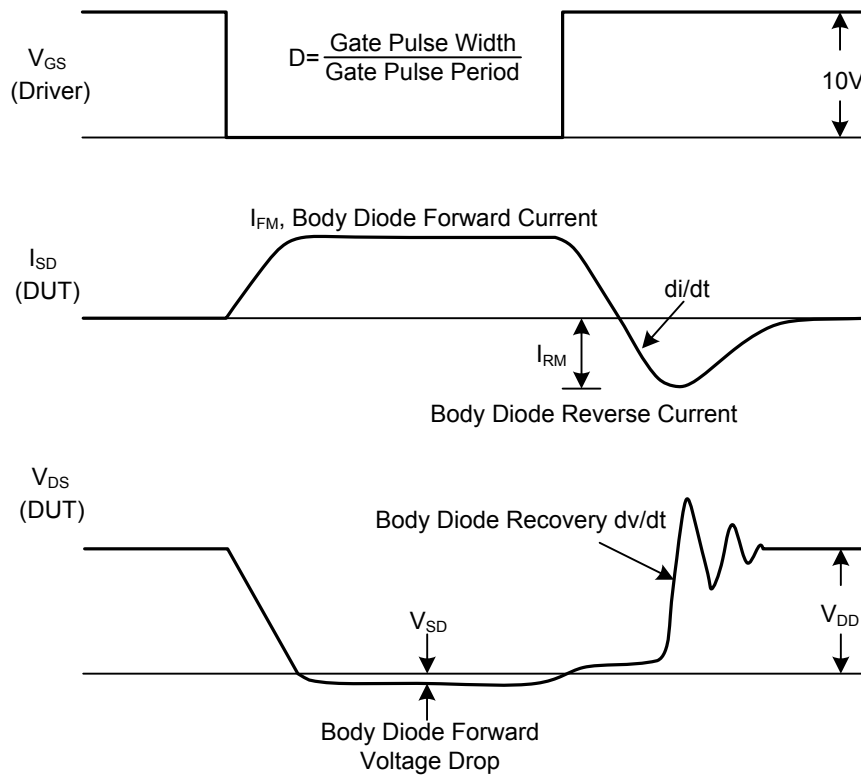
■ TEST CIRCUITS AND WAVEFORMS



■ TEST CIRCUITS AND WAVEFORMS(Cont.)



Peak Diode Recovery dv/dt Test Circuit & Waveforms



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