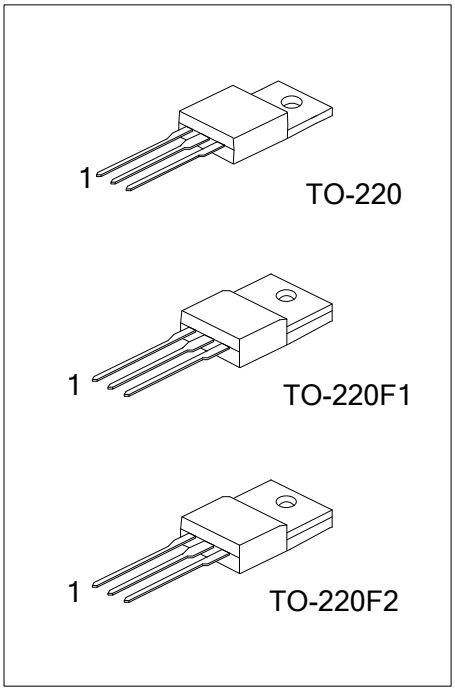
4A, 1000V N-CHANNEL POWER MOSFET



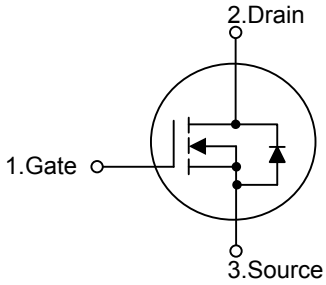
■ DESCRIPTION

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

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

■ SYMBOL



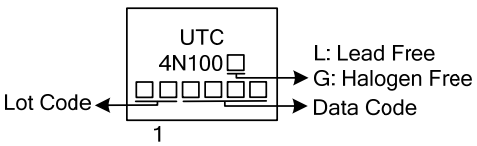
■ ORDERING INFORMATION

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

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

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	1000	V
Drain-Gate Voltage (R_{GS}=2k Ω)		V_{DGR}	1000	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	Continuous (T_C=25°C)	I_D	4	A
	Pulsed (T_C=25°C)	I_{DM}	8	A
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	320	mJ
Power Dissipation (T_C=25°C)	TO-220	P_D	140	W
	TO-220F1		38	W
	TO-220F2		40	W
Junction Temperature		T_J	-55~+150	°C
Storage Temperature Range		T_{STG}	-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. L=40mH, I_{AS}=4A, V_{DD}= 50V, R_G=25Ω, Starting T_J=25°C

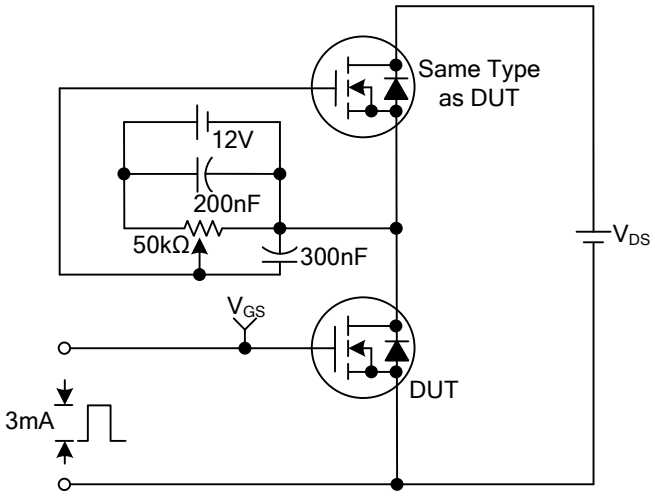
■ THERMAL DATA

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

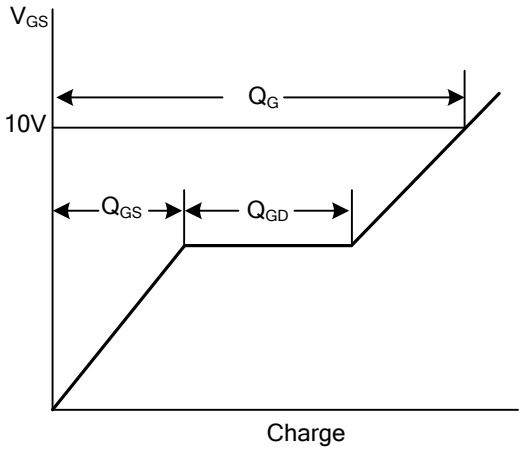
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=0.25mA, V_{GS}=0V, T_J=25°C	1000			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=1000V, V_{GS}=0V, T_J=25°C			10	μA
			V_{DS}=1000V, V_{GS}=0V, T_C=125°C			100	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+30V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-30V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	3		5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=2A			3.5	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		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}=30V, V_{GS}=10V, I_D=0.5A, R_{GS}=25Ω		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°C			4	A
Maximum Body-Diode Pulsed Current		I_{SM}	T_C=25°C			8	A
Drain-Source Diode Forward Voltage		V_{SD}	I_F=4A, V_{GS}=0V			1.4	V

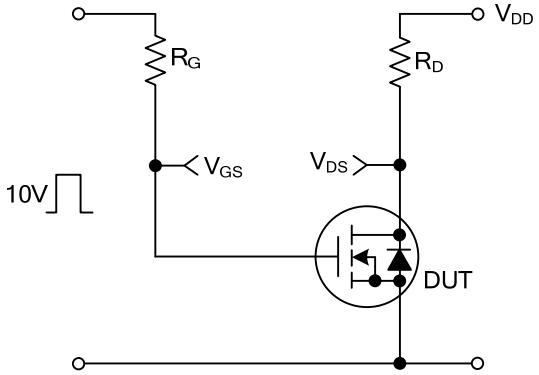
■ TEST CIRCUITS AND WAVEFORMS



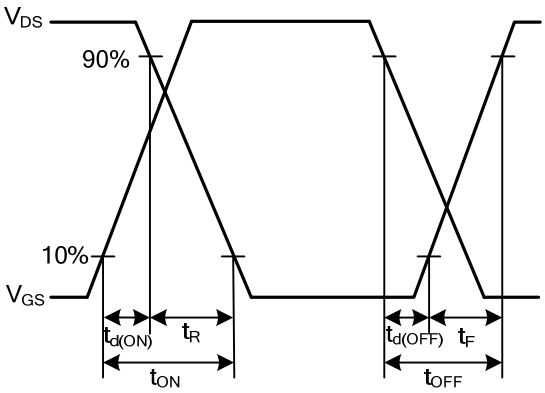
Gate Charge Test Circuit



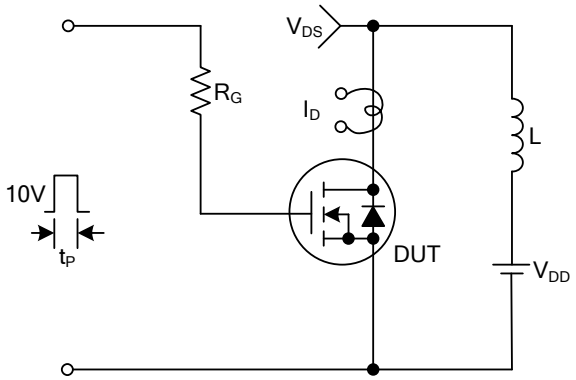
Gate Charge Waveforms



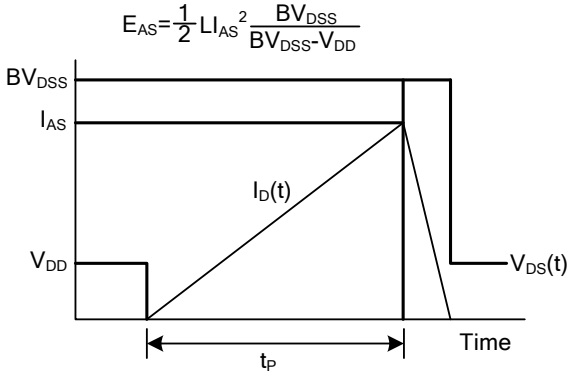
Resistive Switching Test Circuit



Resistive Switching Waveforms

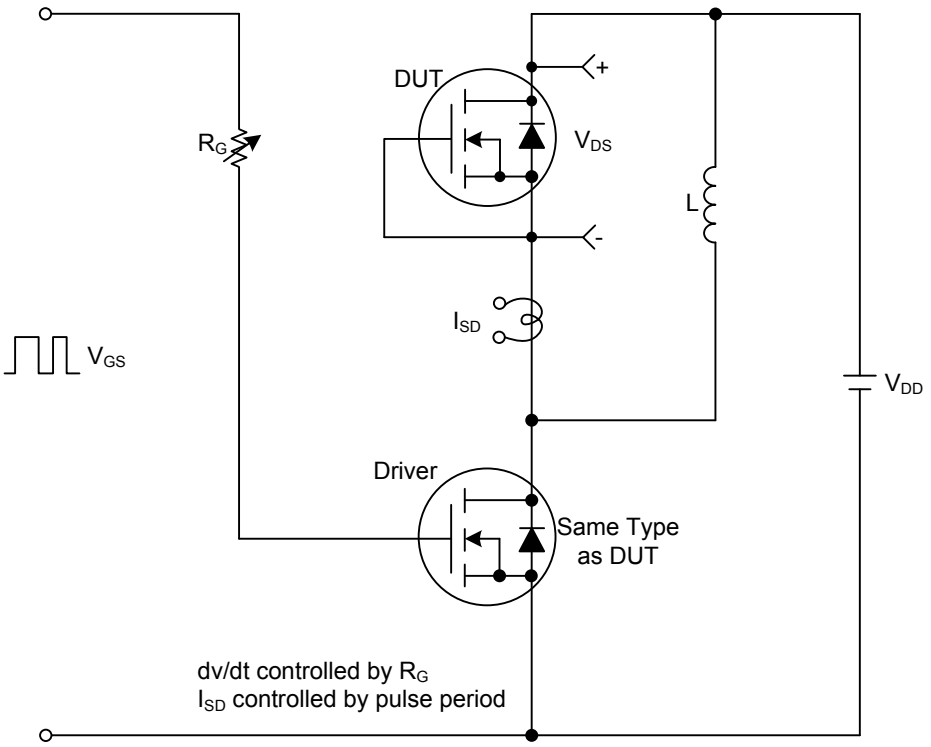


Unclamped Inductive Switching Test Circuit

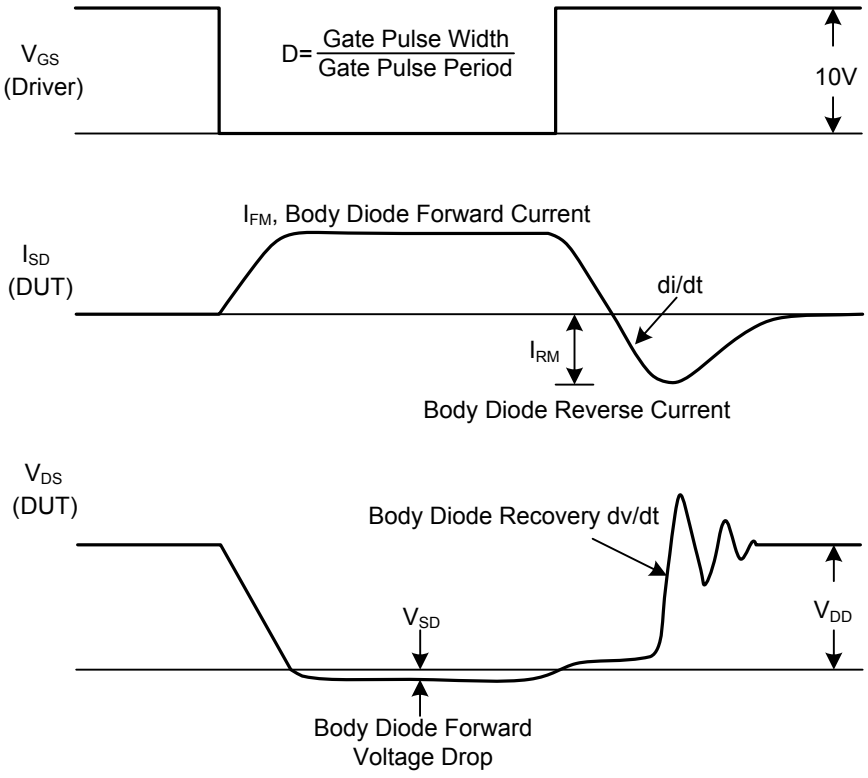


Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)



Peak Diode Recovery dv/dt Test Circuit & Waveforms



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