



**UF5N08**

*Power MOSFET*

**5A, 80V N-CHANNEL  
ENHANCEMENT MODE  
POWER MOSFET**

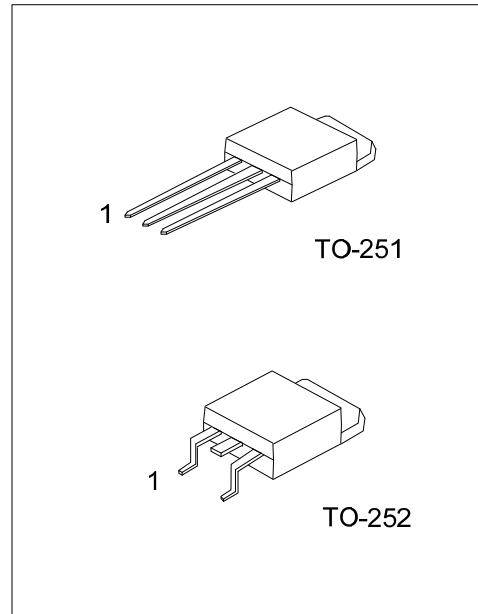
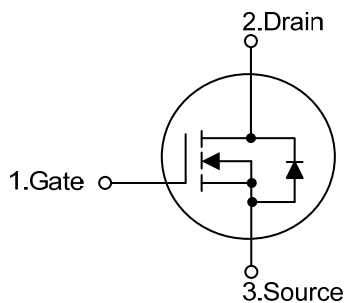
■ DESCRIPTION

The UTC **UF5N08** is a N-channel power MOSFET providing very low on-resistance. It has high efficiency and perfect cost-effectiveness. It can be generally applied in the commercial and industrial fields.

■ FEATURES

- \*  $R_{DS(ON)} < 0.21\Omega @ V_{GS}=10V, I_D=2.5A$
- \* Simple drive requirement

■ SYMBOL



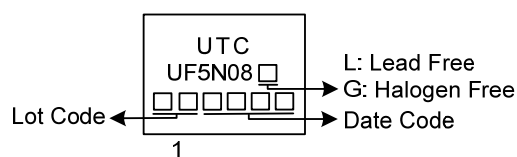
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF5N08L-TM3-T	UF5N08G-TM3-T	TO-251	G	D	S	Tube
UF5N08L-TN3-R	UF5N08G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UF5N08G-TM3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TM3: TO-251, TN3: TO-252</p> <p>(3) G: Halogen Free and Lead Free L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATING ( $T_C=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	80	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	5	A
	Pulsed (Note 2)	$I_{DM}$	15	A
Avalanche Energy (Note 3)	Single Pulsed (Note 3)	$E_{AS}$	10	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	18	V/ns
Power Dissipation		$P_D$	32	W
Junction Temperature		$T_J$	+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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3.  $L = 0.1 \text{ mH}$ ,  $I_{AS} = 14 \text{ A}$ ,  $V_{DD} = 50 \text{ V}$ ,  $R_G = 25 \Omega$ , Starting  $T_J = 25^{\circ}\text{C}$ .

4.  $I_{SD} \leq 5.0 \text{ A}$ ,  $di/dt \leq 200 \text{ A}/\mu\text{s}$ ,  $V_{DD} \leq V_{(BR)DSS}$ ,  $T_J = 25^{\circ}\text{C}$ .

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	110	$^{\circ}\text{C}/\text{W}$
Junction to Case	$\theta_{JC}$	3.9	$^{\circ}\text{C}/\text{W}$

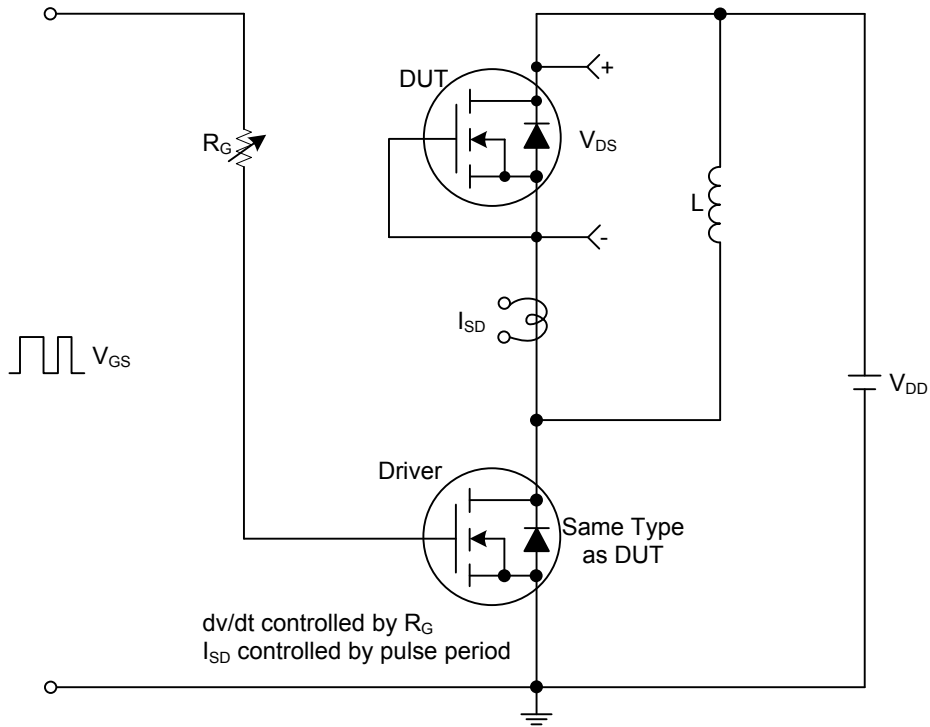
■ ELECTRICAL CHARACTERISTICS ( $T_J=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0\text{V}$ , $I_D=250\mu\text{A}$	80			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=80\text{V}$ , $V_{GS}=0\text{V}$			10	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	2.0		4.0	V
Drain to Source On-state Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=2.5\text{A}$			0.21	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25\text{V}$ , $V_{GS}=0\text{V}$ , $f=1.0\text{MHz}$		255		pF
Output Capacitance	$C_{OSS}$			50		pF
Reverse Transfer Capacitance	$C_{RSS}$			9		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge (Note 1)	$Q_G$	$V_{DS}=64\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=5\text{A}$ , $I_G=1\text{mA}$ (Note 1, 2)		11.3		nC
Gate Source Charge	$Q_{GS}$			5.8		nC
Gate Drain Charge	$Q_{GD}$			1.8		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	$V_{DD}=40\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=5\text{A}$ , $R_G=25\Omega$ (Note 1, 2)		2.4		ns
Turn-ON Rise Time	$t_R$			15.4		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			3.4		ns
Turn-OFF Fall-Time	$t_F$			2.4		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				5	A
Maximum Body-Diode Pulsed Current	$I_{SM}$				15	A
Drain-Source Diode Forward Voltage (Note 1)	$V_{SD}$	$I_S=5.0\text{A}$ , $V_{GS}=0\text{V}$			1.4	V
Reverse Recovery Time (Note 1)	$t_{rr}$	$I_S=5.0\text{A}$ , $V_{GS}=0\text{V}$ , $dI/dt=100\text{A}/\mu\text{s}$		75		ns
Reverse Recovery Charge	$Q_{rr}$			72		nC

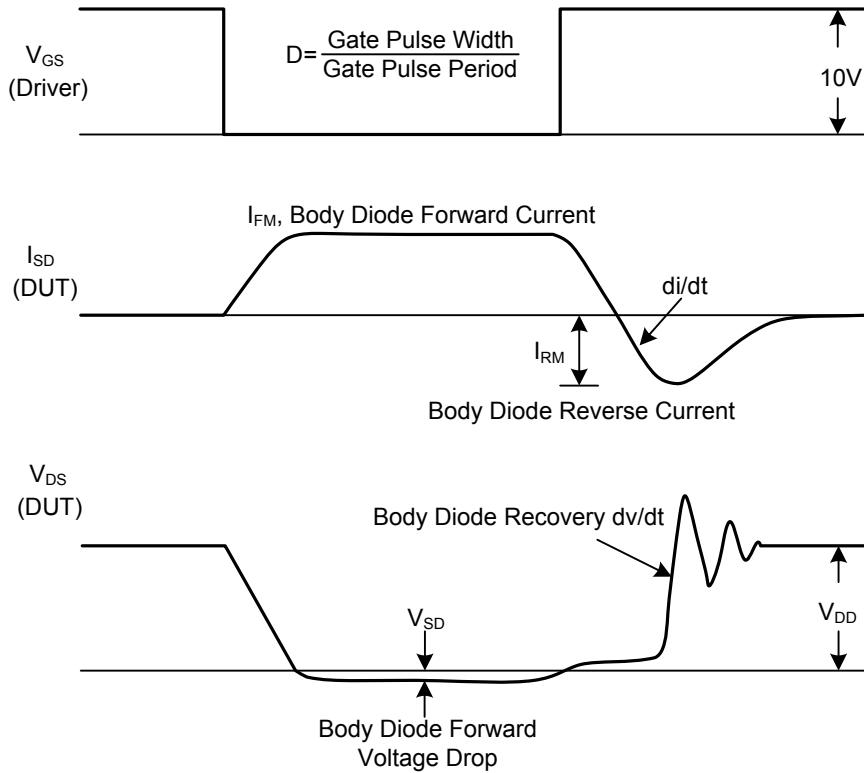
Notes: 1. Pulse Test : Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$ .

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS



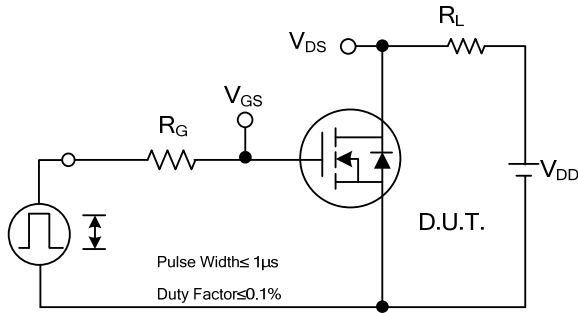
Peak Diode Recovery dv/dt Test Circuit



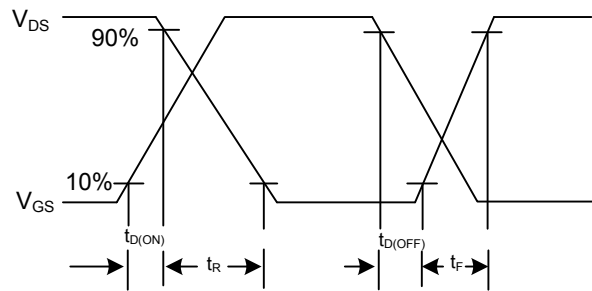
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

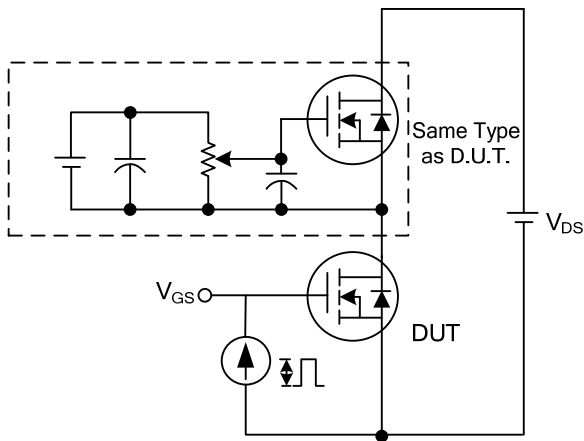
## TEST CIRCUITS AND WAVEFORMS



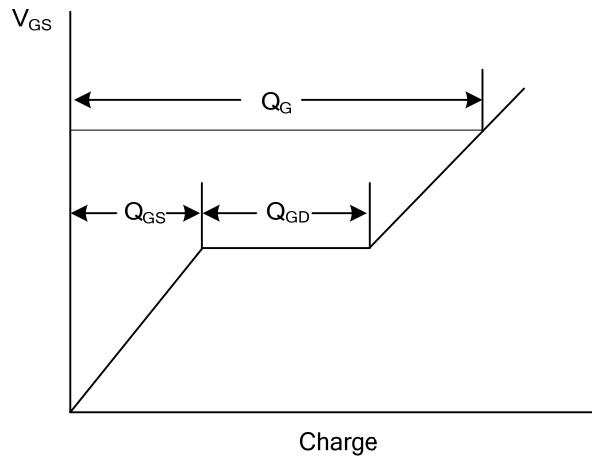
**Switching Test Circuit**



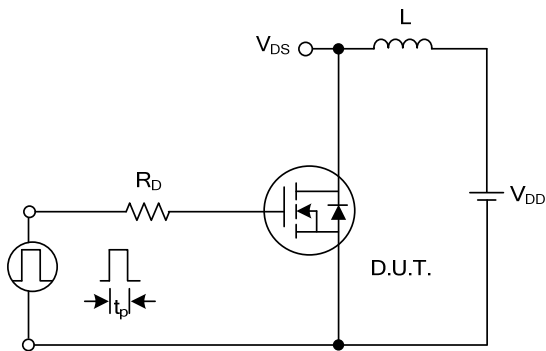
**Switching Waveforms**



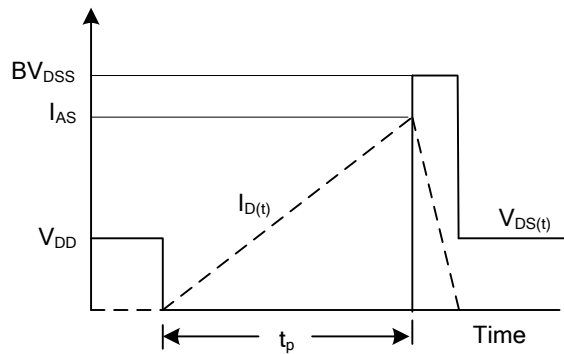
**Gate Charge Test Circuit**



**Gate Charge Waveform**

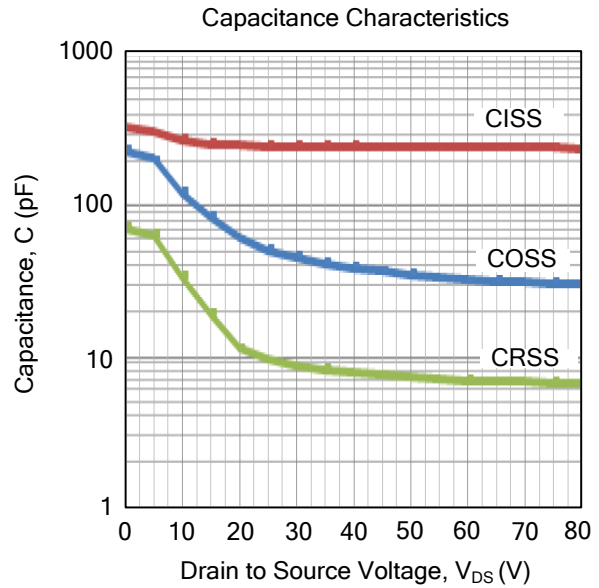
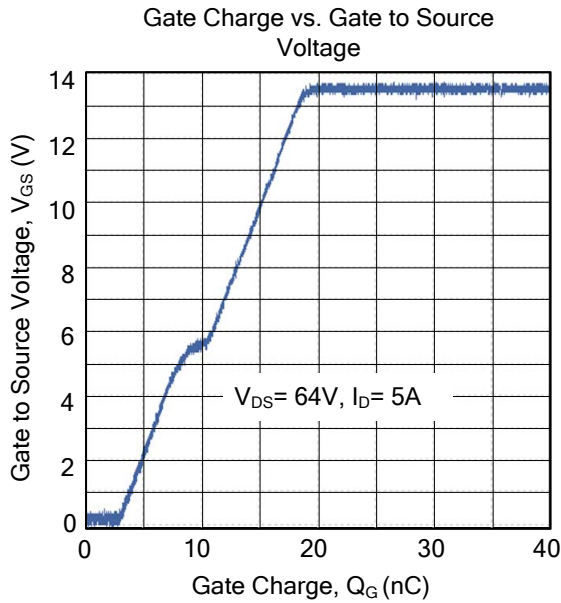


**Unclamped Inductive Switching Test Circuit**



**Unclamped Inductive Switching Waveforms**

### TYPICAL CHARACTERISTICS



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