



UF150N06M

Power MOSFET

150A, 60V N-CHANNEL POWER MOSFET

DESCRIPTION

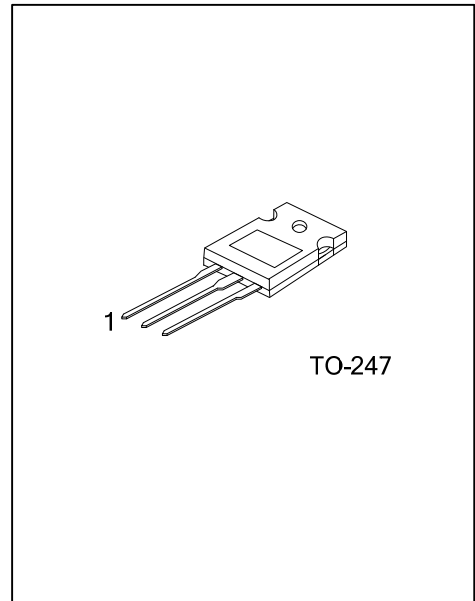
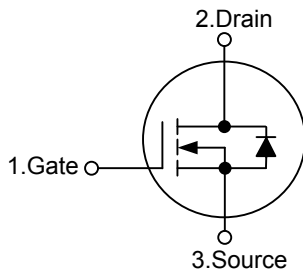
The UTC **UF150N06M** is a N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with ideal for low voltage inverter applications.

The UTC **UF150N06M** is suitable for high efficiency synchronous rectification in SMPS, UPS, hard switched and high frequency circuits.

FEATURES

- * $R_{DS(ON)} < m\Omega @ V_{GS}=10V, I_D=75A$
- * High Cell Density Trench Technology
- * High Power and Current Handling Capability

SYMBOL



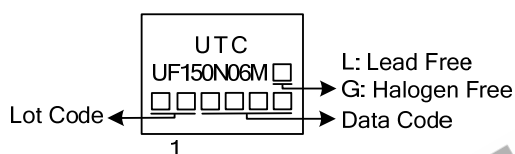
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF150N06ML-T47-T	UF150N06MG-T47-T	TO-247	G	D	S	Tube

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

<p>UF150N06MG-T47-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube</p> <p>(2) T47: TO-247</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	150	A
	Pulsed	I_{DM}	450	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	680	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	6.5	V/ns
Power Dissipation		P_D	231	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		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. $L = 0.1\text{mH}$, $I_{AS} = 116.7\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$
 4. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

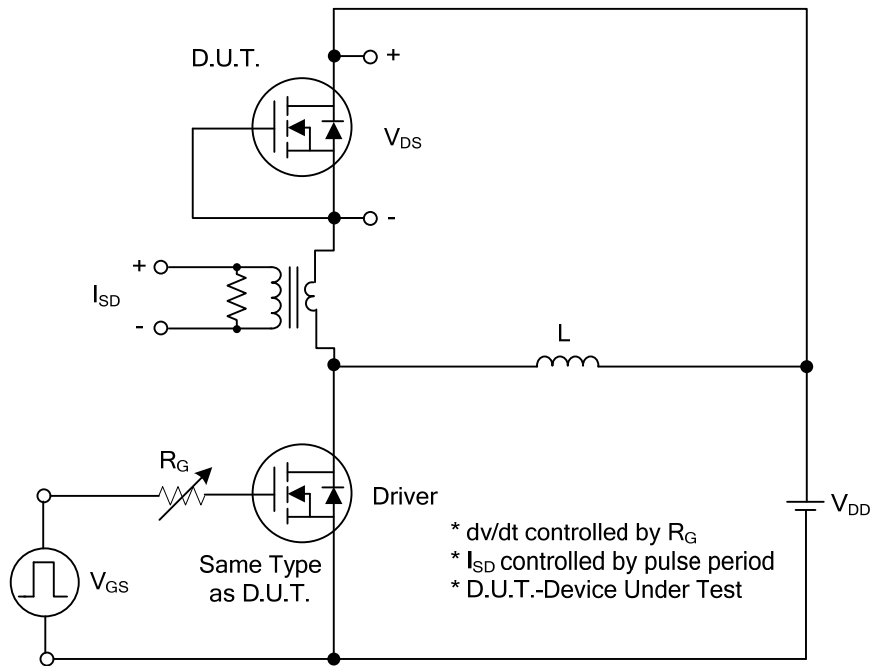
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	40	$^{\circ}\text{C}/\text{W}$
Junction to Case	θ_{JC}	0.35	$^{\circ}\text{C}/\text{W}$

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

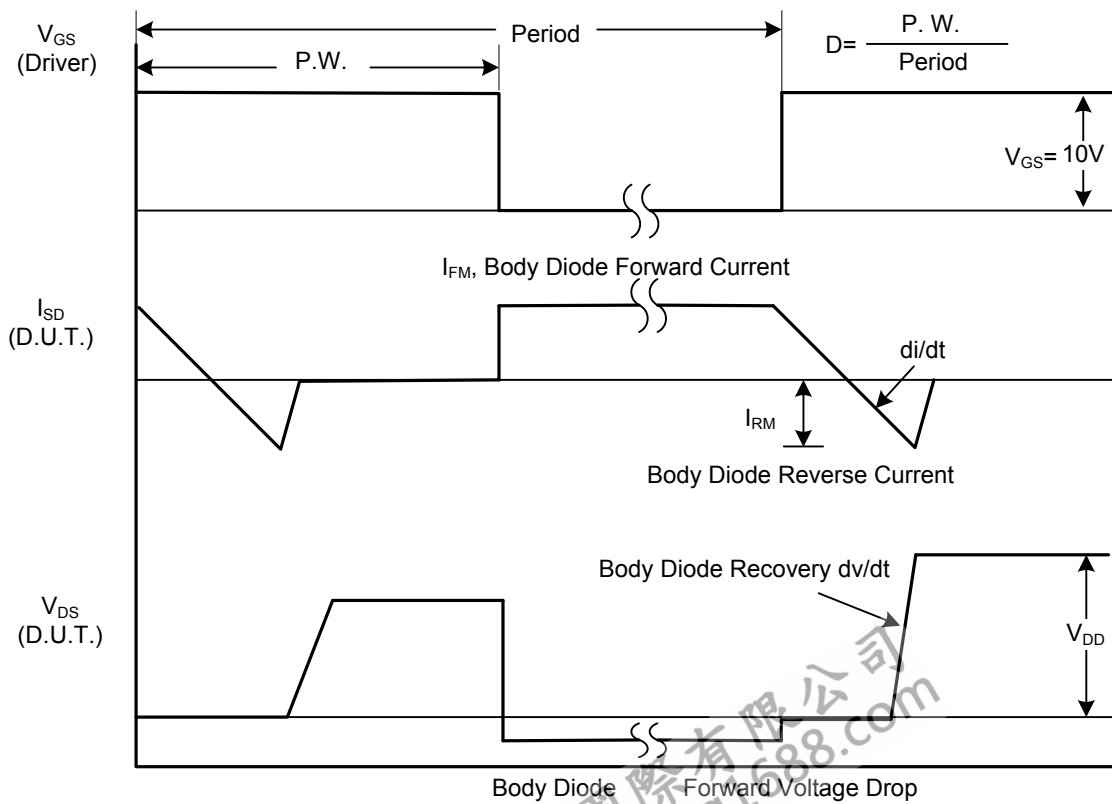
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}			+100	nA
	Reverse				-100	nA
ON CHARACTERISTICS (Note 1)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=75\text{A}$			6.0	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=75\text{A}$			9.0	m Ω
DYNAMIC PARAMETERS (Note 2)						
Input Capacitance	C_{ISS}	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$		7200		pF
Output Capacitance	C_{OSS}			2100		pF
Reverse Transfer Capacitance	C_{RSS}			540		pF
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge	Q_G	$V_{DS}=48\text{V}$, $V_{GS}=10\text{V}$, $I_D=60\text{A}$, $I_G=1\text{mA}$ (Note 1, 2)		174		nC
Gate Source Charge	Q_{GS}			34		nC
Gate Drain Charge	Q_{GD}			54		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=30\text{V}$, $V_{GS}=10\text{V}$, $I_D=60\text{A}$, $R_G = 25\Omega$ (Note 1, 2)		54		ns
Turn-ON Rise Time	t_R			130		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			504		ns
Turn-OFF Fall-Time	t_F			212		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Current	I_S				150	A
Maximum Body-Diode Pulsed Current	I_{SM}				450	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}$, $I_S=150\text{A}$			1.5	V
Body Diode Reverse Recovery Time	t_{rr}	$V_{GS}=0\text{V}$, $I_S=30\text{A}$		92		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$di/dt=100\text{A}/\mu\text{s}$ (Note 1)		300		nC

- Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
 2. Essentially independent of operating temperature.

TEST CIRCUITS AND WAVEFORMS

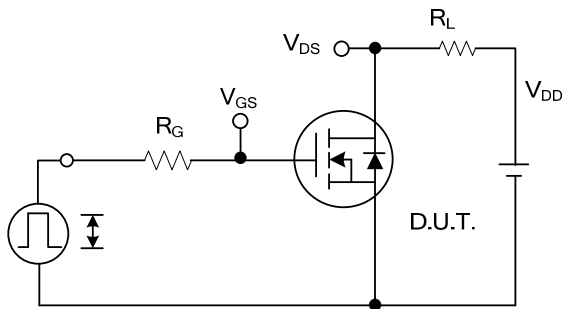


Peak Diode Recovery dv/dt Test Circuit

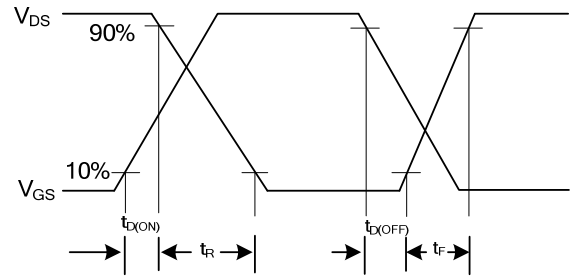


Peak Diode Recovery dv/dt Waveforms

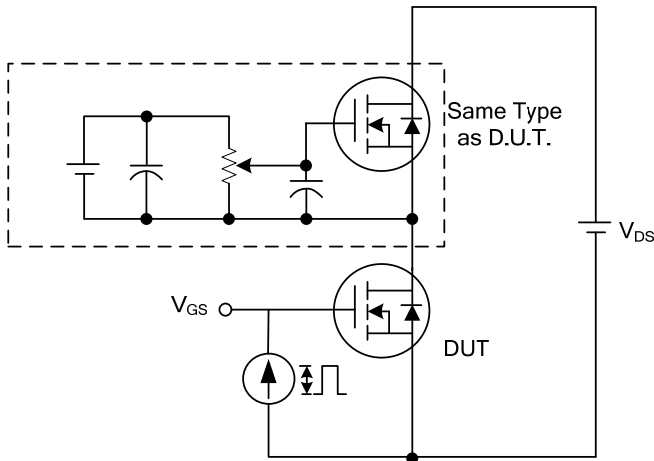
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



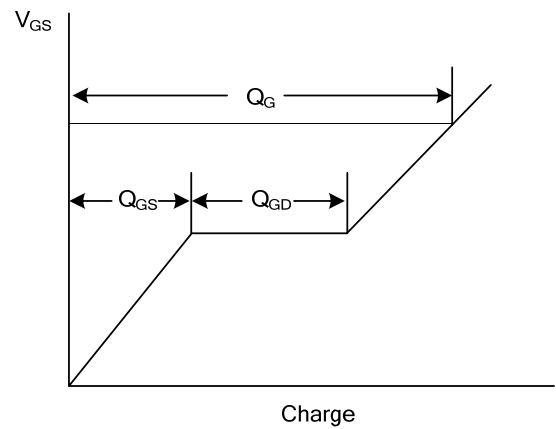
Switching Test Circuit



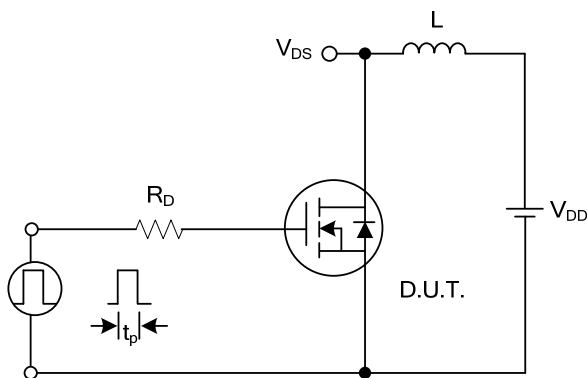
Switching Waveforms



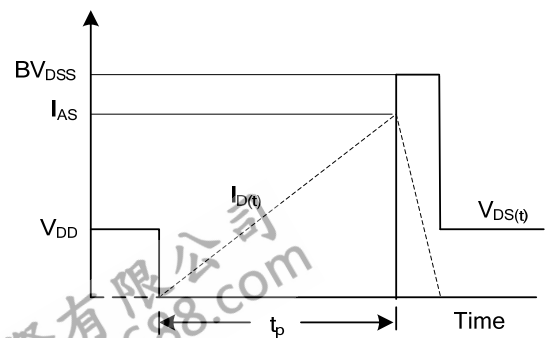
Gate Charge Test Circuit



Gate Charge Waveform

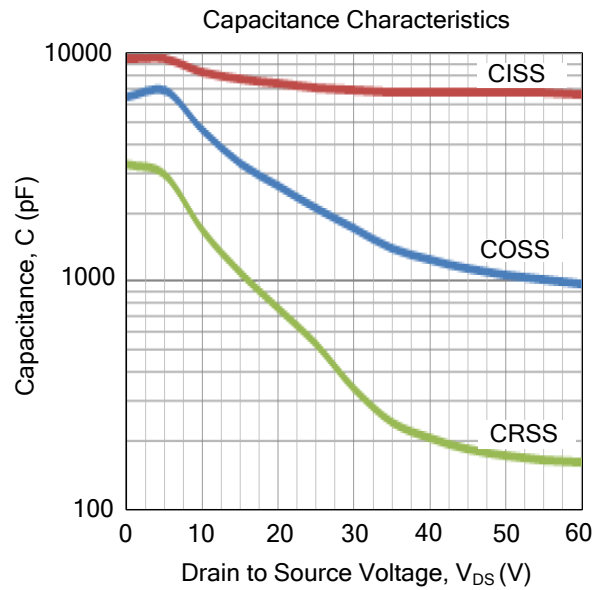
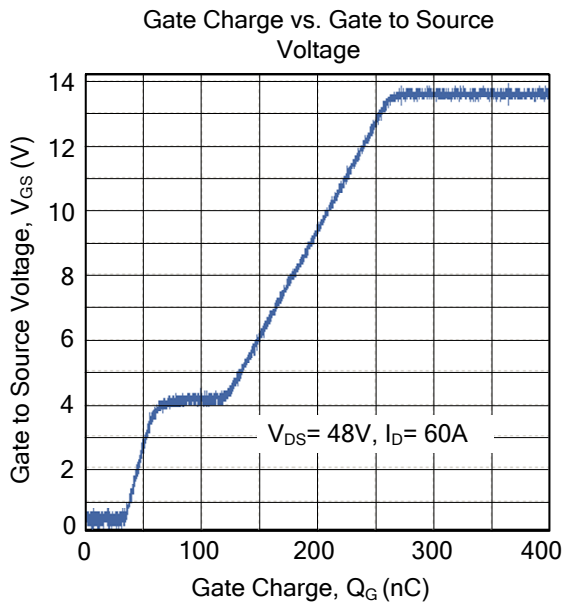


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



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