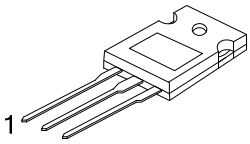
UF150N06M

Power MOSFET

150A, 60V N-CHANNEL POWER MOSFET



TO-247

■ DESCRIPTION

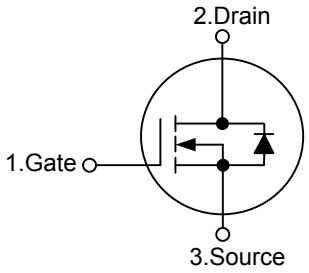
The UTC **UF150N06M** is a N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with ideal for low voltage inverter applications.

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

■ FEATURES

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

■ SYMBOL



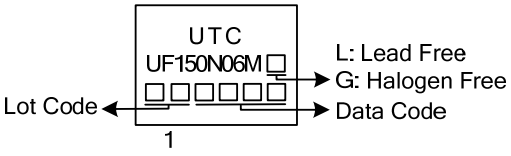
■ ORDERING INFORMATION

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

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

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_J=25°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	°C
Storage Temperature		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. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. L = 0.1mH, I_{AS} = 116.7A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
4. I_{SD} ≤ 30A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

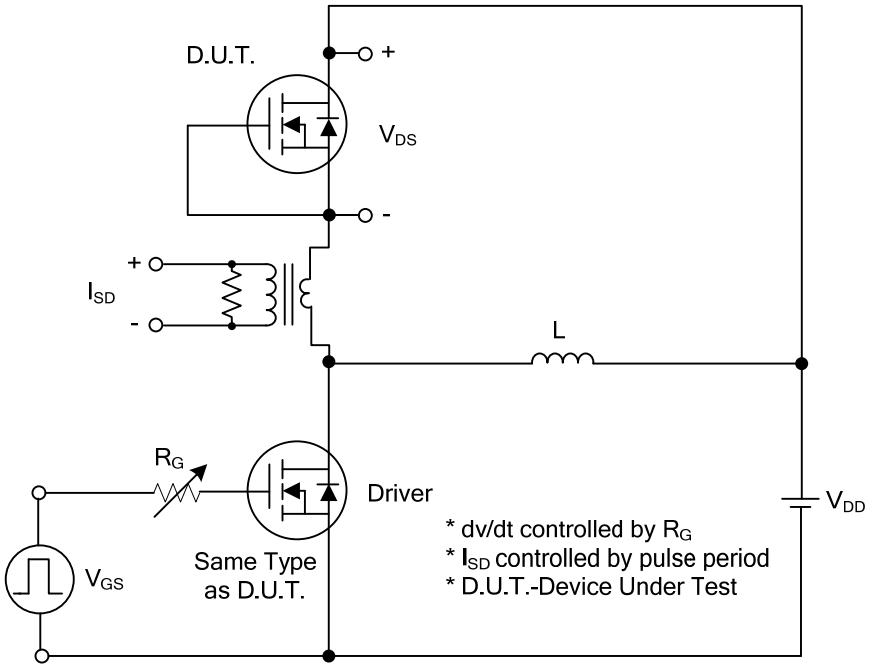
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	40	°C/W
Junction to Case	θ_{JC}	0.35	°C/W

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

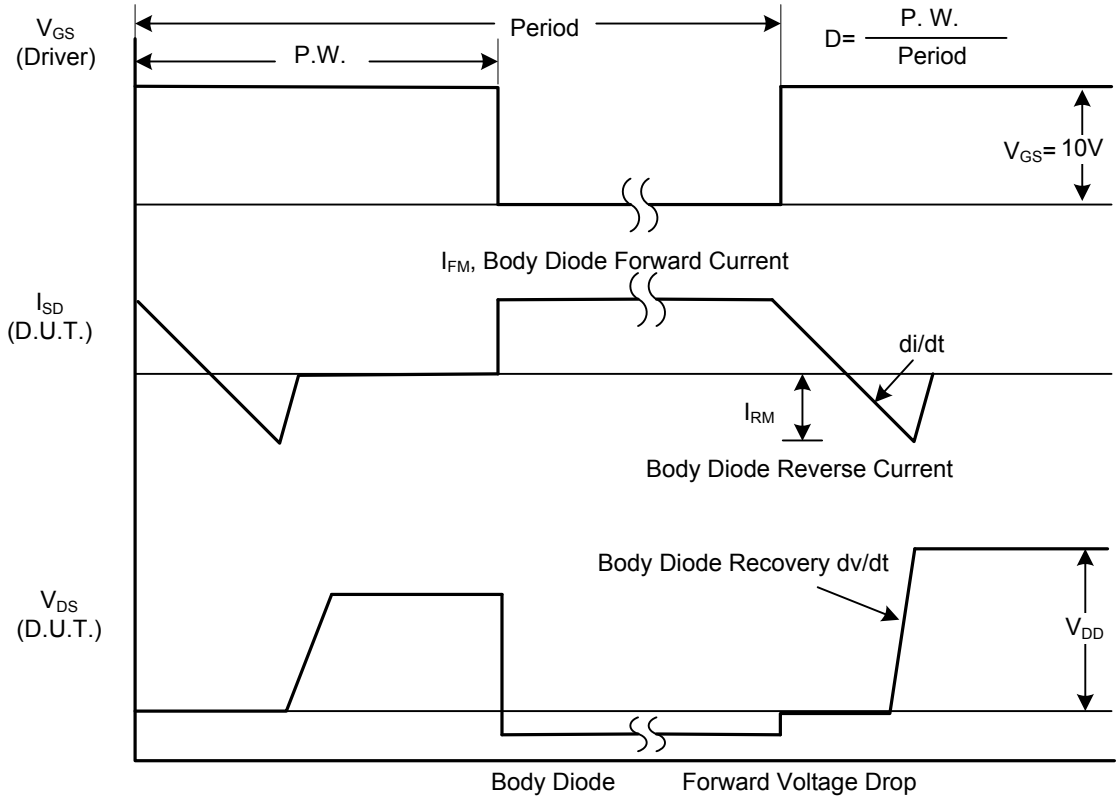
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS} =0V, I_D =250 μA	60			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=60V,V_{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{DS}=0V, V_{GS}=+20V			+100	nA
	Reverse		V_{DS}=0V, V_{GS}=-20V			-100	nA
ON CHARACTERISTICS(Note1)							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		3.0	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=75A			6.0	mΩ
			V_{GS}=4.5V, I_D=75A			9.0	mΩ
DYNAMIC PARAMETERS (Note 2)							
Input Capacitance		C_{ISS}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz		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}=48V, V_{GS}=10V, I_D=60A, I_G=1mA (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}=30V, V_{GS}=10V, I_D=60A, R_G = 25Ω (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}=0V, I_S=150A			1.5	V
Body Diode Reverse Recovery Time		t_{rr}	V_{GS}=0V, I_S=30A dI$_F$/dt=100A/μs (Note 1)		92		ns
Body Diode Reverse Recovery Charge		Q_{rr}			300		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

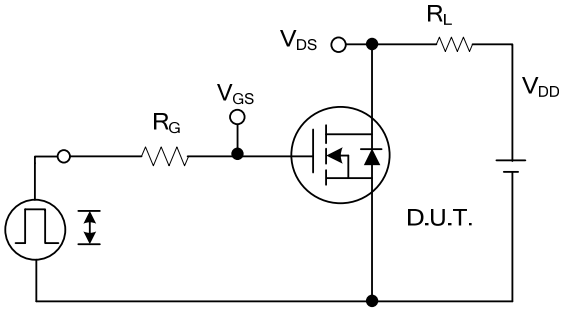


Peak Diode Recovery dv/dt Test Circuit

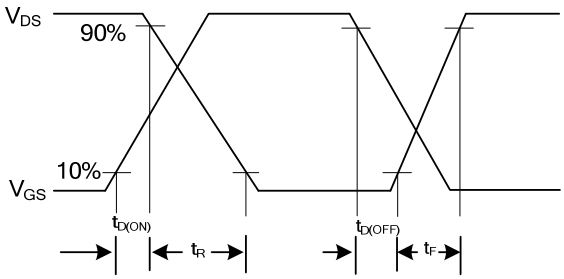


Peak Diode Recovery dv/dt Waveforms

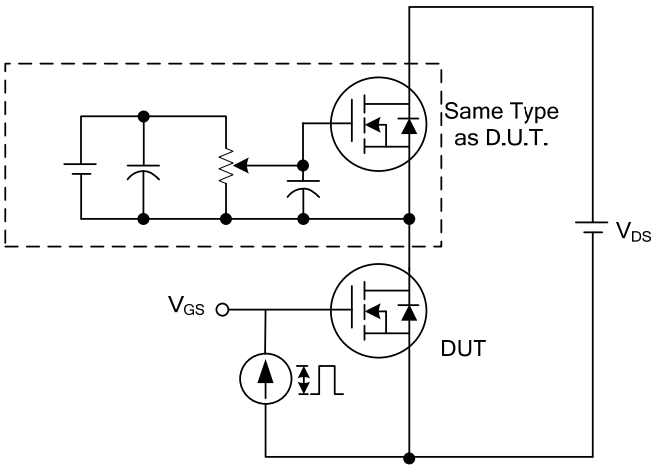
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



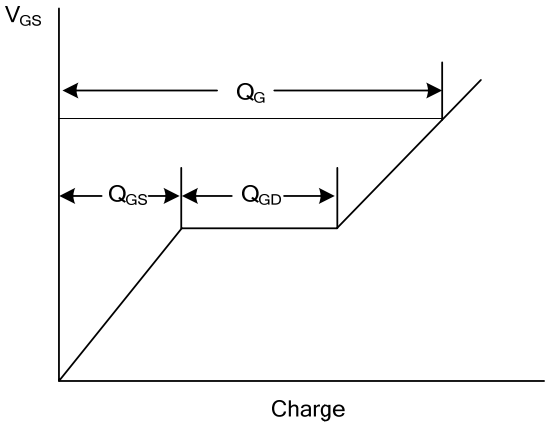
Switching Test Circuit



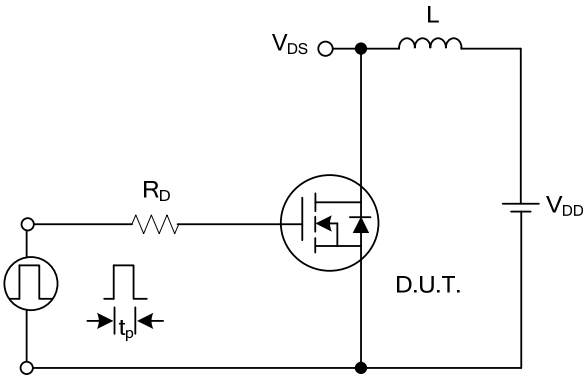
Switching Waveforms



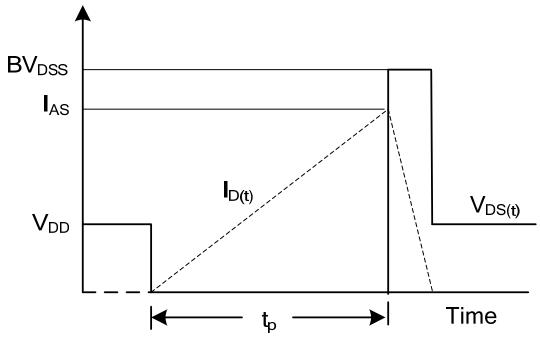
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS