



UF150N06

Power MOSFET

150A, 60V N-CHANNEL POWER MOSFET

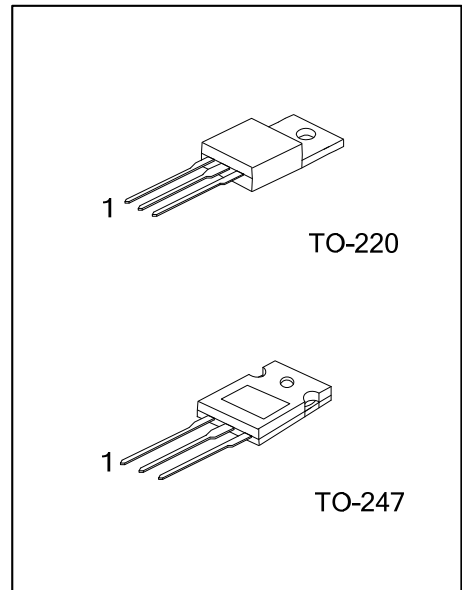
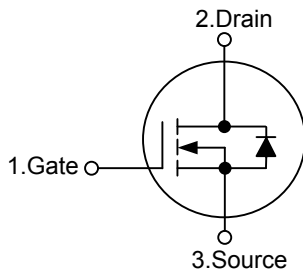
DESCRIPTION

The UTC **UF150N06** is a high voltage MOSFET and is designed to have better characteristics, such as fast switching time, low gate charge, low on-state resistance and have a high rugged avalanche characteristics. This power MOSFET is usually used at high speed switching applications in power supplies, PWM motor controls, high efficient DC to DC converters and bridge circuits.

FEATURES

- * Fast switching speed
- * $R_{DS(ON)} < 8.0m\Omega @ V_{GS} = 10V, I_D = 75A$
- * 100% avalanche tested
- * Improved dv/dt capability

SYMBOL



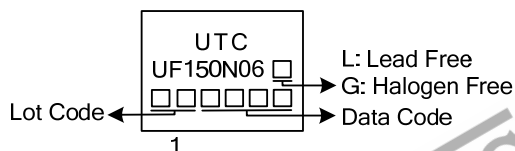
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF150N06L-TA3-T	UF150N06G-TA3-T	TO-220	G	D	S	Tube
UF150N06L-T47-T	UF150N06G-T47-T	TO-247	G	D	S	Tube

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

<p>UF150N06G-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, 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}	600	A
Avalanche Current (Note 2)		I_{AR}	150	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	1125	mJ
Peak Diode Recovery dv/dt		dv/dt	3.7	V/ns
Power Dissipation	TO-220	P_D	231	W
	TO-247		355	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. $L = 0.1\text{mH}$, $I_{AS} = 150\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, 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	TO-220	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
	TO-247		40	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220	θ_{JC}	0.54	$^{\circ}\text{C}/\text{W}$
	TO-247		0.35	$^{\circ}\text{C}/\text{W}$

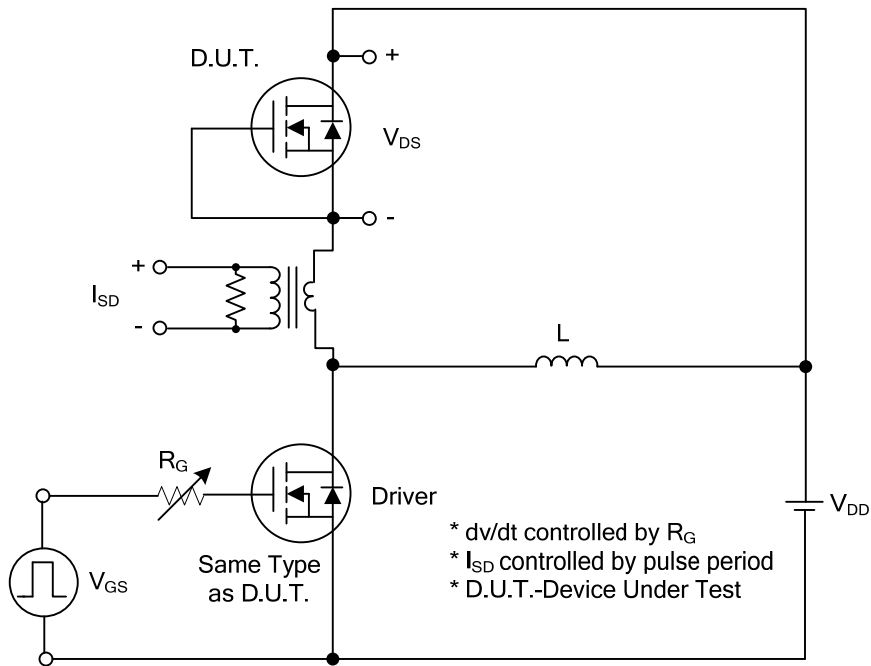
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise noted)

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	V _{DS} =0V, V _{GS} =+20V			+100	nA
	Reverse		V _{DS} =0V, V _{GS} =-20V			-100
ON CHARACTERISTICS (Note1)						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =75A			8.0	mΩ
DYNAMIC PARAMETERS (Note 2)						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		4800		pF
Output Capacitance	C _{OSS}			1265		pF
Reverse Transfer Capacitance	C _{RSS}			125		pF
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge	Q _G	V _{DS} =50V, V _{GS} =10V, I _D =1.3A, I _G =100μA (Note 1, 2)		475		nC
Gate Source Charge	Q _{GS}			26		nC
Gate Drain Charge	Q _{GD}			54		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =30V, V _{GS} =10V, I _D =0.5A, R _G = 25Ω (Note 1, 2)		120		ns
Turn-ON Rise Time	t _R			270		ns
Turn-OFF Delay Time	t _{D(OFF)}			1300		ns
Turn-OFF Fall-Time	t _F			645		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Current	I _S				150	A
Maximum Body-Diode Pulsed Current	I _{SM}				600	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		84		ns
Body Diode Reverse Recovery Charge	Q _{RR}	dI _F /dt=100A/μs (Note 1)		240		nC

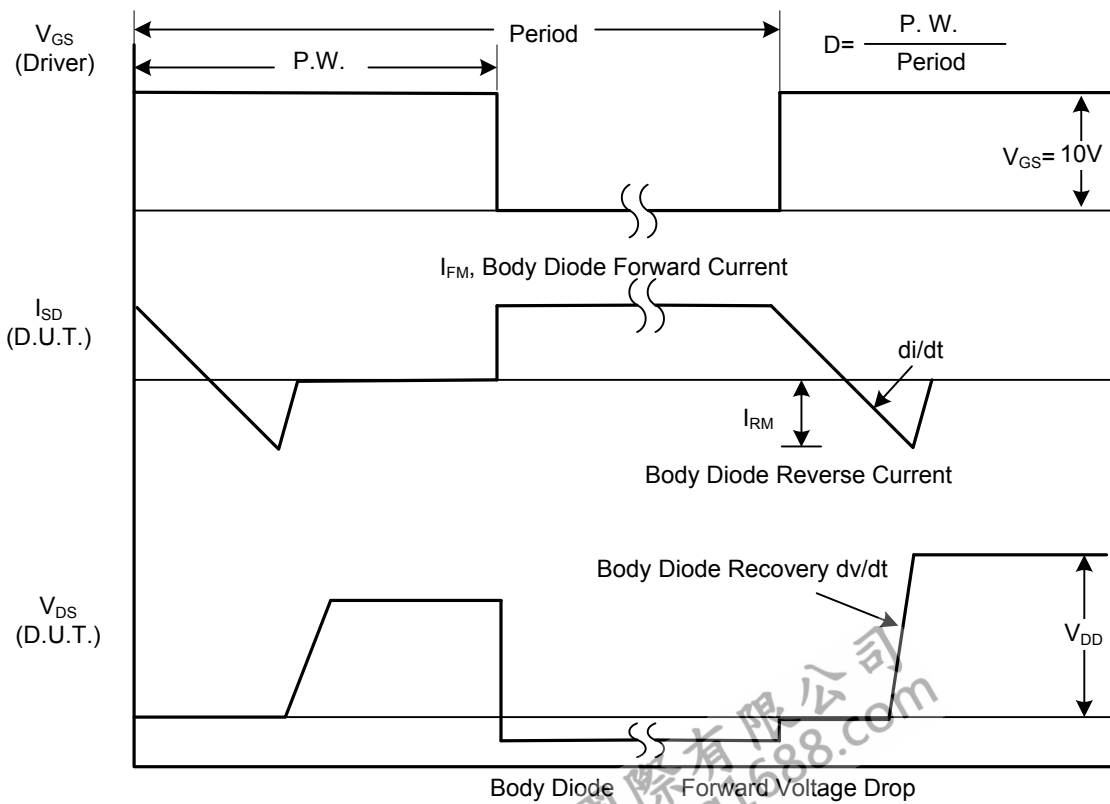
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

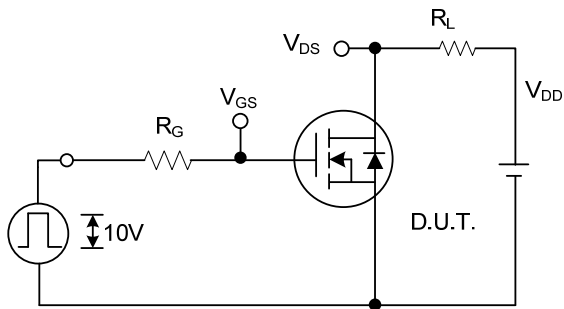


Peak Diode Recovery dv/dt Test Circuit

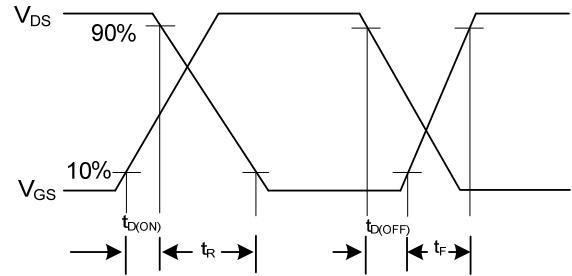


Peak Diode Recovery dv/dt Waveforms

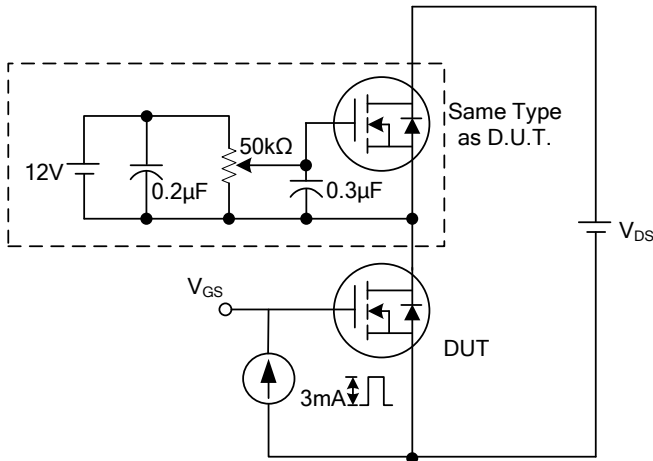
TEST CIRCUITS AND WAVEFORMS (Cont.)



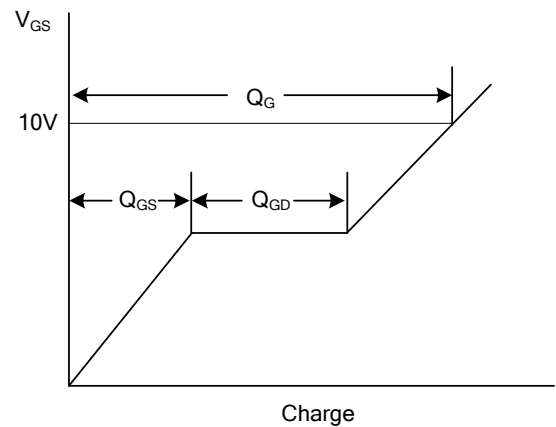
Switching Test Circuit



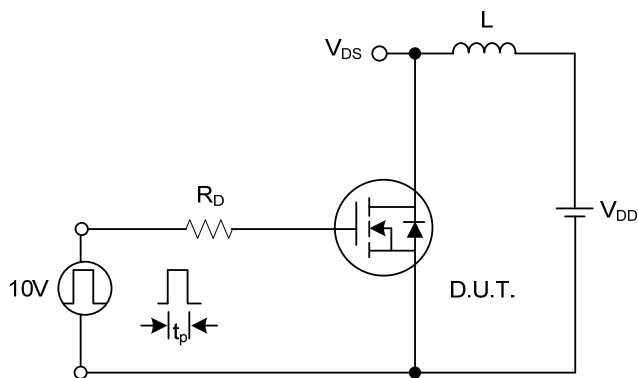
Switching Waveforms



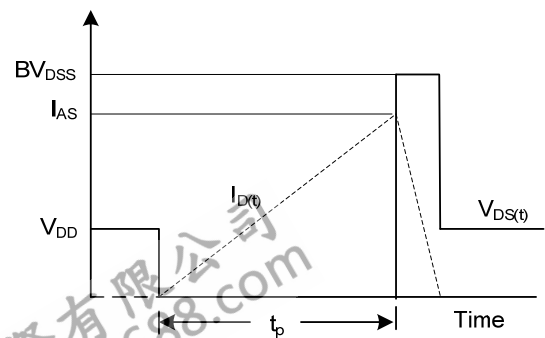
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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