



UTT100N06

Power MOSFET

**100A, 60V N-CHANNEL
ENHANCEMENT MODE POWER
MOSFET**

■ DESCRIPTION

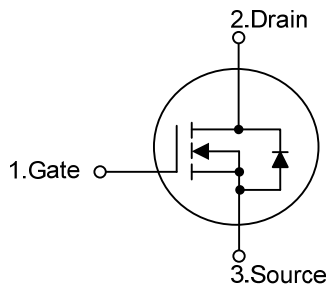
The UTC **UTT100N06** is an N-channel enhancement mode Power FET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

It also can withstand high energy pulse in the avalanche and commutation mode.

■ FEATURES

- * Fast switching speed
- * $R_{DS(ON)} < 7.0m\Omega @ V_{GS}=10V, I_D=50A$
- * 100% avalanche tested
- * Improved dv/dt capability

■ SYMBOL

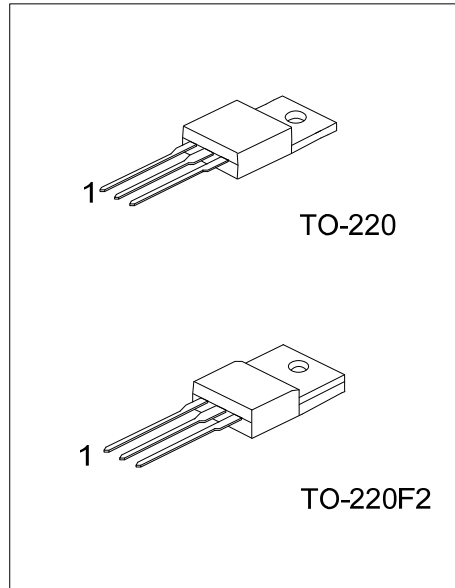


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT100N06L-TA3-T	UTT100N06G-TA3-T	TO-220	G	D	S	Tube
UTT100N06L-TF2-T	UTT100N06G-TF2-T	TO-220F2	G	D	S	Tube

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

<p>UTT100N06G-TA3-T</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220, TF2: TO-220F2</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ 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	100	A
	Pulsed	I _{DM}	400	A
Avalanche Energy		E _{AS}	450	mJ
Peak Diode Recovery dv/dt		dv/dt	6	V/ns
Power Dissipation	TO-220	P _D	100	W
	TO-220F2		63	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°C

Note: 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.

■ THERMAL CHARACTERISTICS

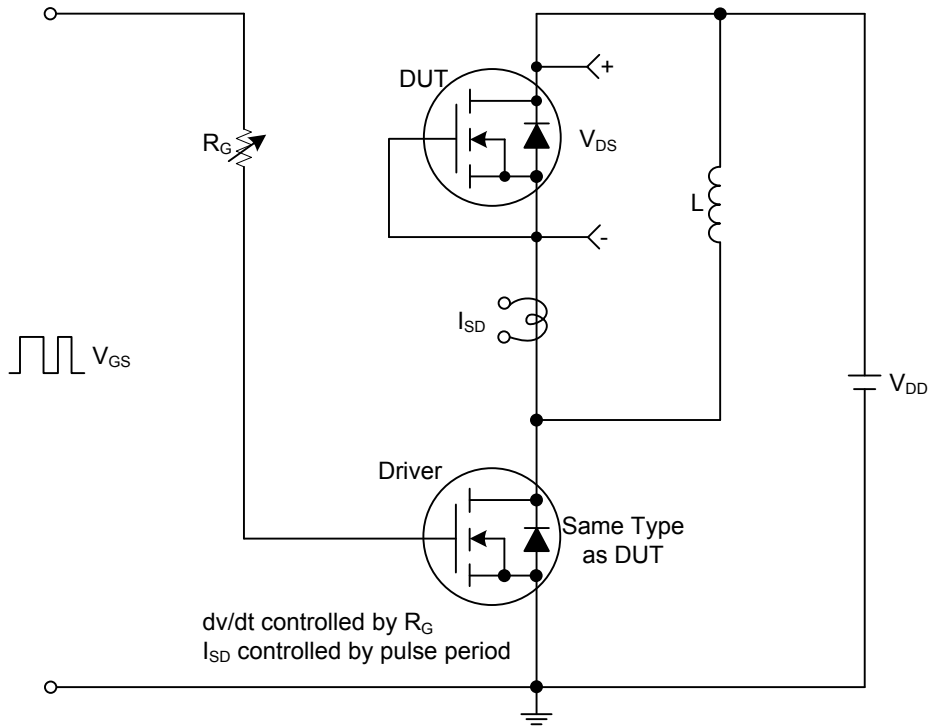
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ _{JA}	62.5	°C/W
Junction to Case	TO-220	θ _{JC}	1.5	°C/W
	TO-220F2		1.98	°C/W

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

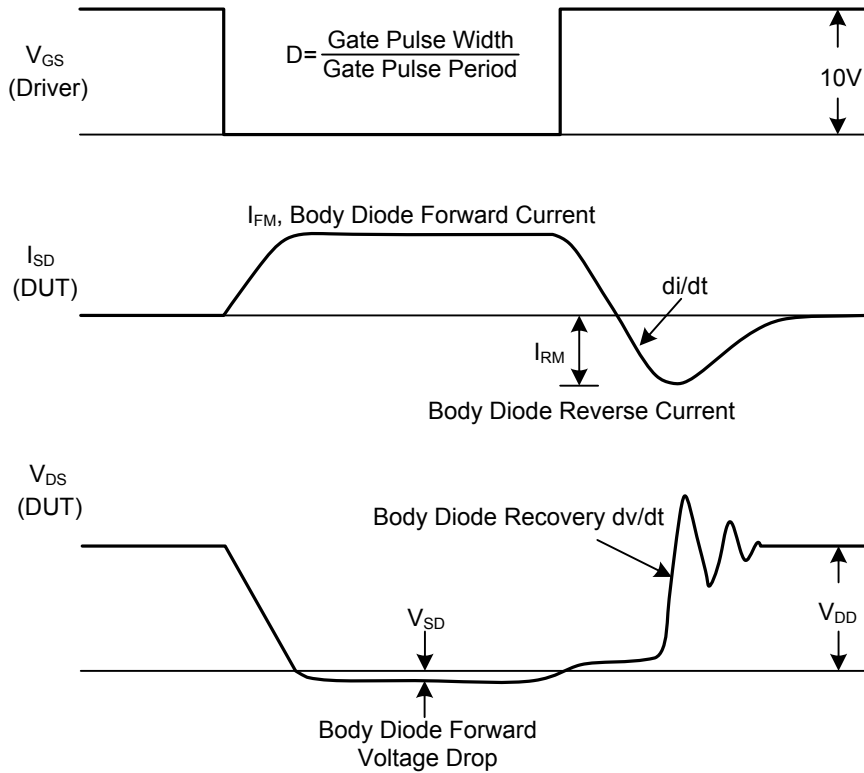
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS								
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	60			V	
Drain-Source Leakage Current		I _{DSS}	V _{DS} =60V, V _{GS} =0V			10	μA	
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA	
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA	
ON CHARACTERISTICS								
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V	
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =50A			7.0	mΩ	
DYNAMIC PARAMETERS								
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		12900		pF	
Output Capacitance		C _{OSS}				1060		pF
Reverse Transfer Capacitance		C _{RSS}				700		pF
SWITCHING PARAMETERS								
Total Gate Charge		Q _G	V _{GS} =10V, V _{DS} =30V, I _D =100A		500		nC	
Gate to Source Charge		Q _{GS}				50		nC
Gate to Drain Charge		Q _{GD}				33		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =100A, R _G =0.4Ω		90		ns	
Rise Time		t _R			130	200		ns
Turn-OFF Delay Time		t _{D(OFF)}			768			ns
Fall-Time		t _F			280	420		ns
Transconductance		g _{FS}		V _{DS} =15V, I _D =30A	30			S
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS								
Maximum Body-Diode Continuous Current		I _S		100			A	
Maximum Body-Diode Pulsed Current		I _{SM}		400			A	
Drain-Source Diode Forward Voltage		V _{SD}	I _S =100A, V _{GS} =0V		1.0	1.5	V	
Resistance of Gate		R _G		0.65	1.3	2	Ω	

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

■ TEST CIRCUITS AND WAVEFORMS



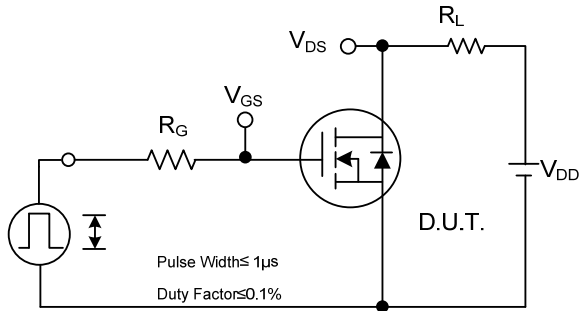
Peak Diode Recovery dv/dt Test Circuit



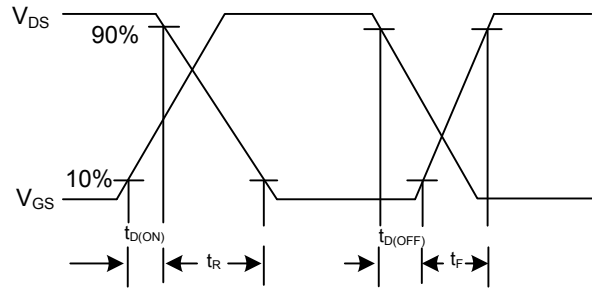
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

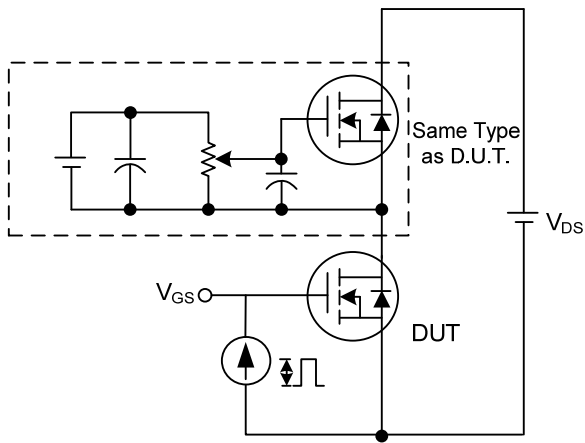
TEST CIRCUITS AND WAVEFORMS



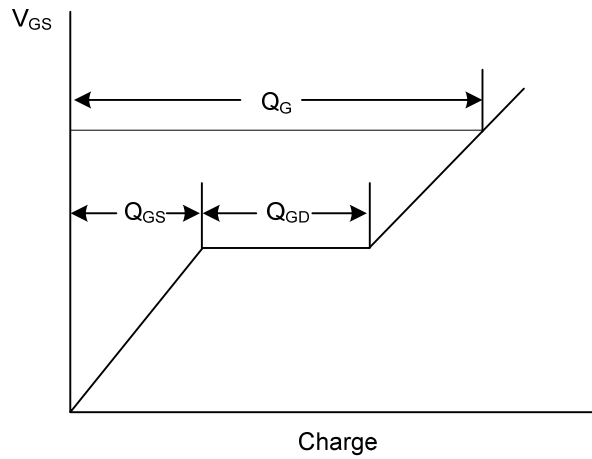
Switching Test Circuit



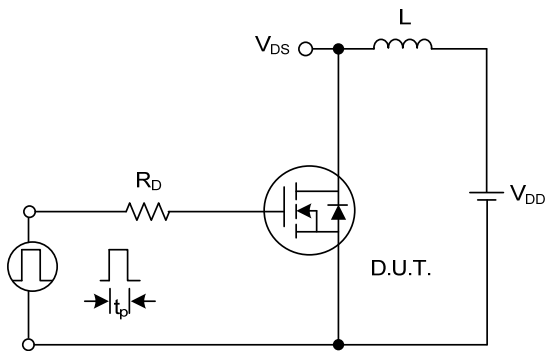
Switching Waveforms



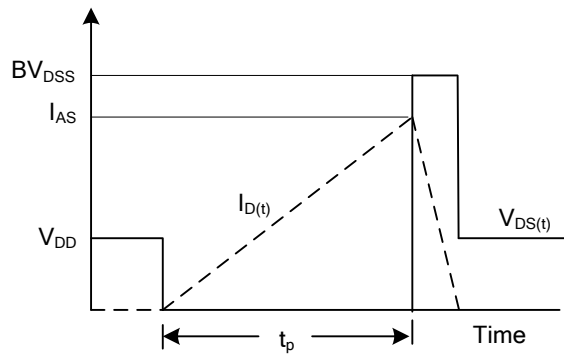
Gate Charge Test Circuit



Gate Charge Waveform

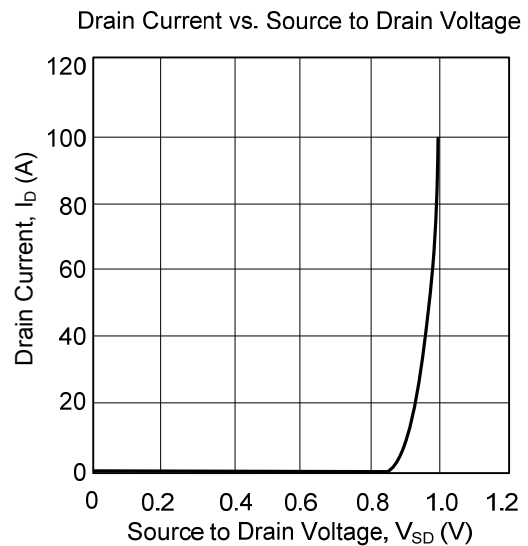
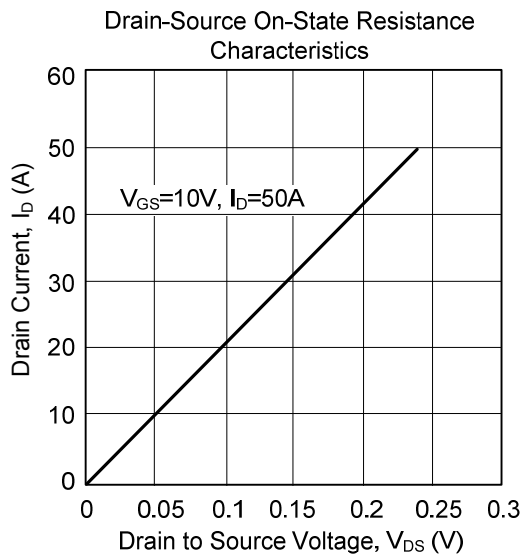
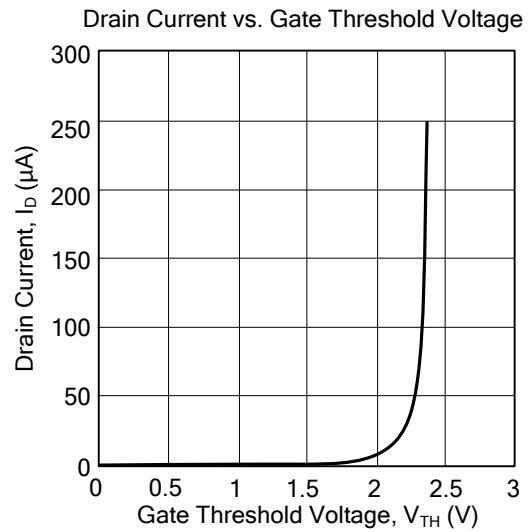
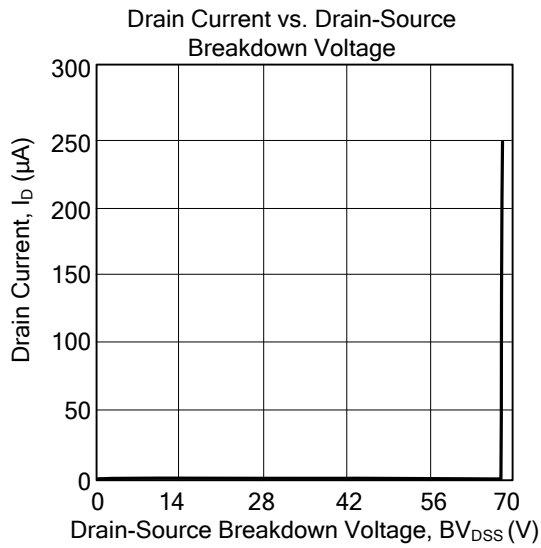


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



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