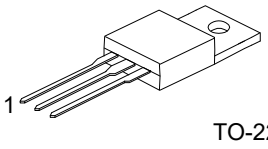
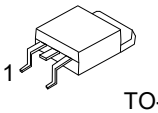
UTT130N06H **Preliminary** ***POWER MOSFET***

120A, 60V N-CHANNEL POWER MOSFET



TO-220



TO-252

■ DESCRIPTION

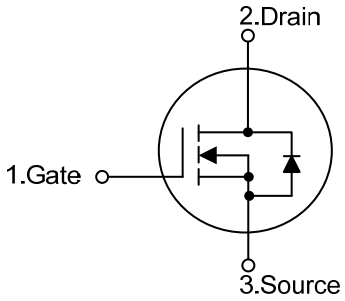
The UTC **UTT130N06H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and extremely low on-state resistance, etc.

The UTC **UTT130N06H** is suitable for secondary side synchronous rectification, DC-DC converter, motor control and load switching, etc.

■ FEATURES

* High power and current handling capability
* Low gate charge

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT130N06HL-TA3-T	UTT130N06HG-TA3-T	TO-220	G	D	S	Tube
UTT130N06HL-TN3-R	UTT130N06HG-TN3-R	TO-252	G	D	S	Tape Reel

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

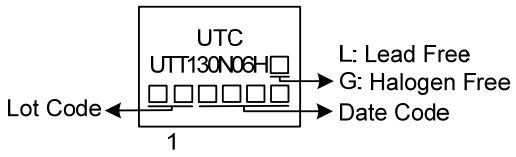
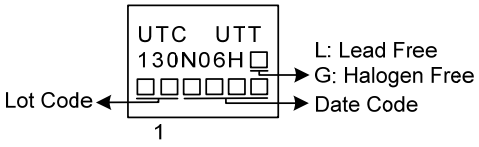
UTT130N06HG-TA3-T

(1)Packing Type — (1) T: Tube, R: Tape Reel

(2)Package Type — (2) TA3: TO-220, TN3: TO-252

(3)Green Package — (3) G: Halogen Free and Lead Free L: Lead Free

■ MARKING

TO-220	TO-252
	

■ ABSOLUTE MAXIMUM RATING (T_C =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 (Note 2)	TO-220	I_D	130	A
		TO-252		60	
	Pulsed (Note 3)	TO-220	I_{DM}	240	A
		TO-252		120	
Peak Diode Recovery dv/dt (Note 5)			dv/dt	2.8	V/ns
Avalanche Current			I_{AS}	43	A
Avalanche Energy (Note 4)			E_{AS}	92	mJ
Power Dissipation		TO-220	P_D	165	W
		TO-252		50	W
Junction Temperature			T_J	+150	°C
Storage Temperature Range			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. Current limited by bond wire.
3. Pulse width limited by max. junction temperature.
4. L = 0.1mH, I_{AS} = 43A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
5. I_{SD} ≤ 30A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting TJ = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	°C/W
	TO-252		75	°C/W
Junction to Case	TO-220	θ_{JC}	0.75	°C/W
	TO-252		2.5	°C/W

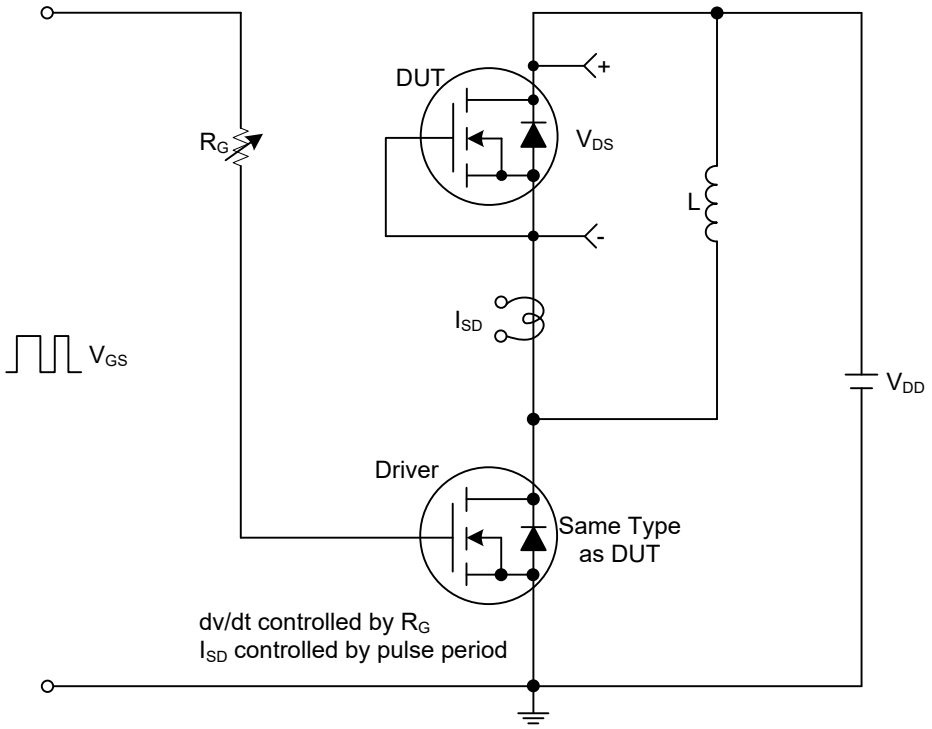
Note: The data tested by surface mounted on a 1 $inch^2$ FR-4 board with 2OZ copper.

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

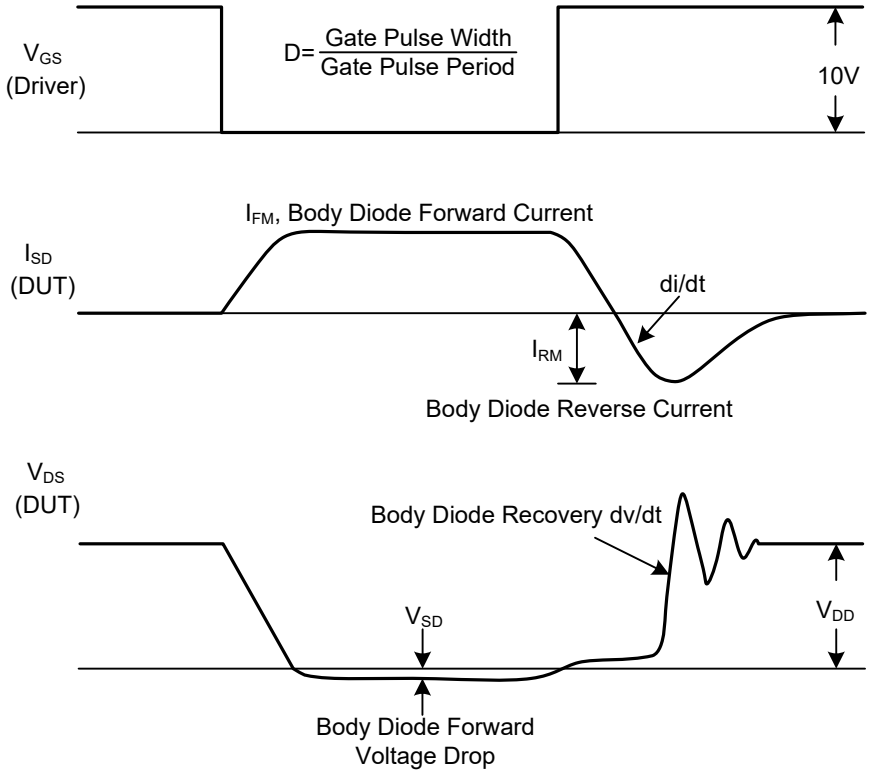
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	60			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2.0		4.0	V
Static Drain-Source On-State Resistance (Note 1)		$R_{DS(ON)}$	V_{GS}=10V, I_D=65A			6.5	mΩ
DYNAMIC PARAMETERS (Note 2)							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		5830		pF
Output Capacitance		C_{OSS}			425		pF
Reverse Transfer Capacitance		C_{RSS}			280		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q_G	V_{DS}=48V, V_{GS}=10V, I_D=130A (Note 1,2)		115		nC
Gate to Source Charge		Q_{GS}			25		nC
Gate to Drain Charge		Q_{GD}			28		nC
Turn-ON Delay Time (Note 1)		$t_{D(ON)}$	V_{DD}=30V, V_{GS}=10V, I_D=130A, R_G=3Ω (Note 1,2)		20		ns
Rise Time		t_R			19		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			56		ns
Fall-Time		t_F			46		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I_S				65	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}				130	A
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I_S=20A, V_{GS}=0V		0.8	1.3	V
Body Diode Reverse Recovery Time (Note 1)		t_{rr}	I_S=30A, dI_F/dt=100A/μs		30		ns
Body Diode Reverse Recovery Charge		Q_{rr}			28		nC

Notes: 1. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.

■ TEST CIRCUITS AND WAVEFORMS



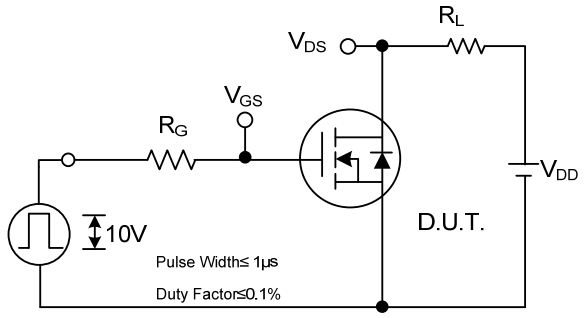
Peak Diode Recovery dv/dt Test Circuit



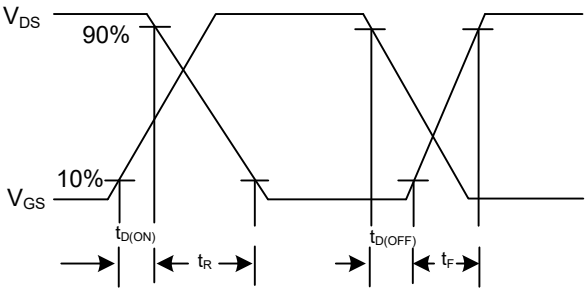
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

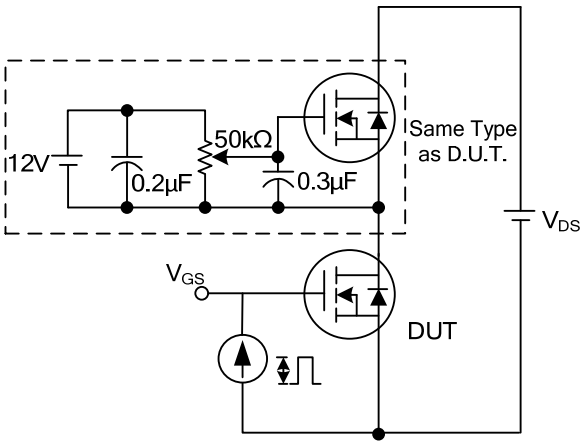
■ TEST CIRCUITS AND WAVEFORMS



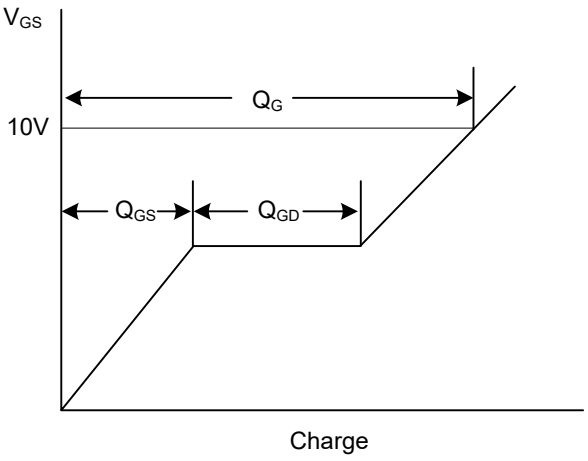
Switching Test Circuit



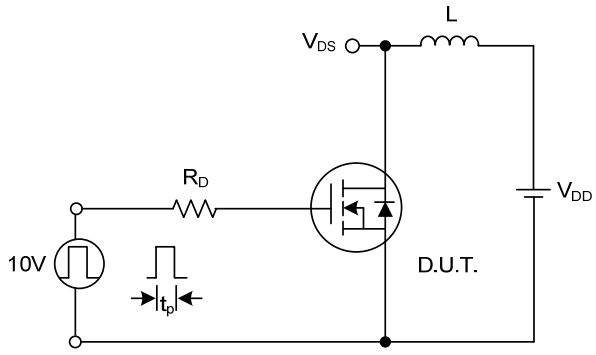
Switching Waveforms



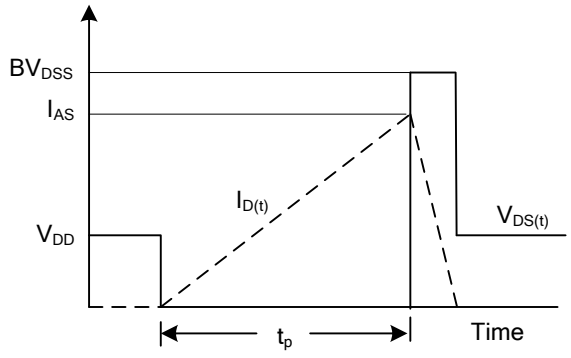
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms