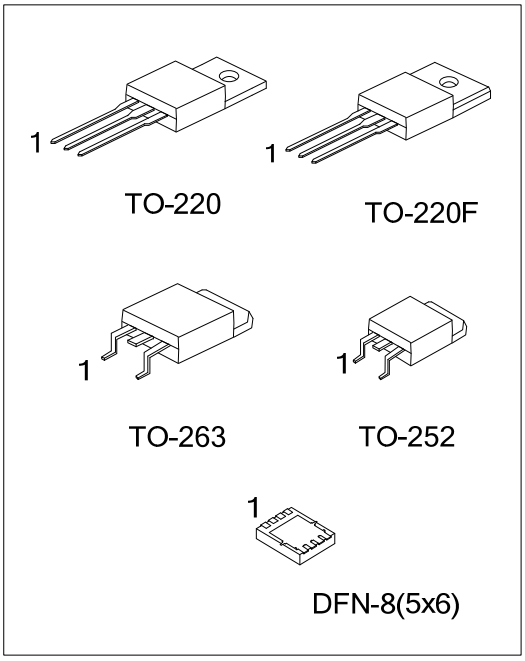
UTT30N10

Power MOSFET

30A, 100V N-CHANNEL POWER MOSFET



■ DESCRIPTION

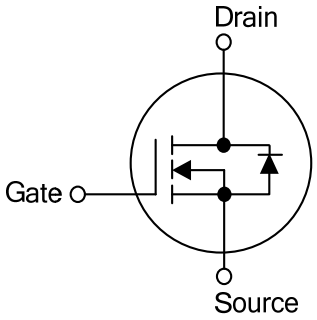
The UTC **UTT30N10** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

The UTC **UTT30N10** is suitable for high voltage synchronous rectifier and DC/DC converters, etc.

■ FEATURES

* $R_{DS(ON)}$ < 52mΩ @ V_{GS}=10V, I_D=30A
* High Switching Speed

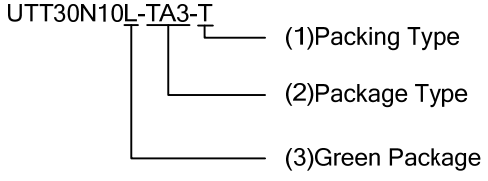
■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT30N10L-TA3-T	UTT30N10G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT30N10L-TF3-T	UTT30N10G-TF3-T	TO-220F	G	D	S	-	-	-	-	-	Tube
UTT30N10L-TN3-R	UTT30N10G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT30N10L-TQ2-T	UTT30N10G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT30N10L-TQ2-R	UTT30N10G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
-	UTT30N10G-K08-5060-R	DFN-8(5×6)	S	S	S	G	D	D	D	D	Tape Reel

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

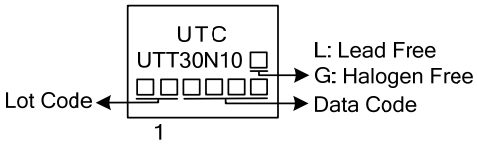
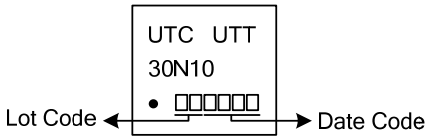


(1) T: Tube, R: Tape Reel

(2) TA3: TO-220, TF3: TO-220F, TN3: TO-252
TQ2: TO-263, K08-5060: DFN-8(5×6)

(3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

TO-252	DFN-8(5×6)
	

■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous (V_{GS}=10V) T_C=25°C	I_D	30	A
	Pulsed	I_{DM}	120	A
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	55	mJ
Power Dissipation	TO-220/TO-263	P_D	79	W
	TO-220F		47	W
	TO-252		44	W
	DFN-8(5×6)		13.6	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. Starting T_J = 25°C, L = 0.27mH, I_{AS} = 30A.
3. Pulse Width = 100s

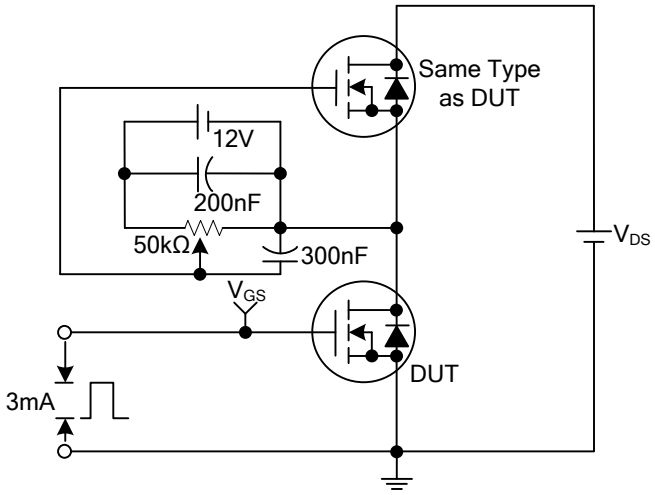
■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F TO-263	θ_{JA}	62	°C/W
	TO-252		110	°C/W
	DFN-8(5×6)		65	°C/W
Junction to Case	TO-220/TO-263	θ_{JC}	1.58	°C/W
	TO-220F		2.64	°C/W
	TO-252		2.85	°C/W
	DFN-8(5×6)		9.1	°C/W

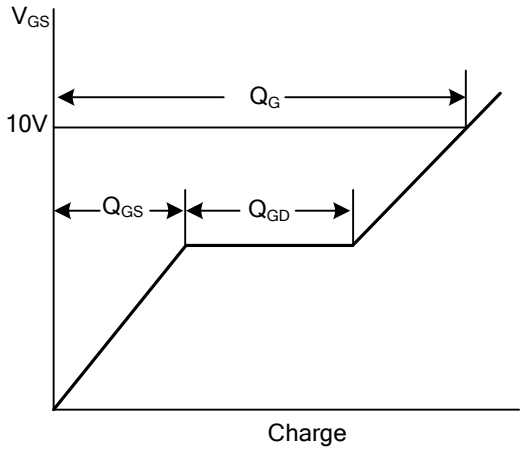
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=100V, 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	1		3	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=30A		39.5	52	mΩ
			V_{GS}=6V, I_D=15A		39.2	72	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		2590		pF
Output Capacitance		C_{OSS}			144		pF
Reverse Transfer Capacitance		C_{RSS}			105		pF
SWITCHING PARAMETERS							
Total Gate Charge at 10V		Q_G	V_{DS}=25V, V_{GS}=10V, I_D=1.3A, I_G=100μA		75		nC
Gate to Source Charge		Q_{GS}			9		nC
Gate to Drain Charge		Q_{GD}			16		nC
Turn-ON Time		t_{ON}	V_{DD}=30V, , V_{GS}=10V I_D=0.5A, R_{GS}=25Ω		48		ns
Turn-ON Delay Time		$t_{D(ON)}$			68		ns
Rise Time		t_R			780		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			126		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				30	A
Maximum Body-Diode Pulsed Current		I_{SM}				120	A
Drain-Source Diode Forward Voltage		V_{SD}	I_{SD}=30A			1.25	V
			I_{SD}=15A			1.0	V

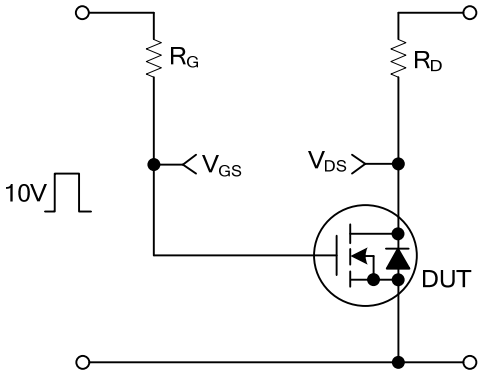
■ TEST CIRCUITS AND WAVEFORMS



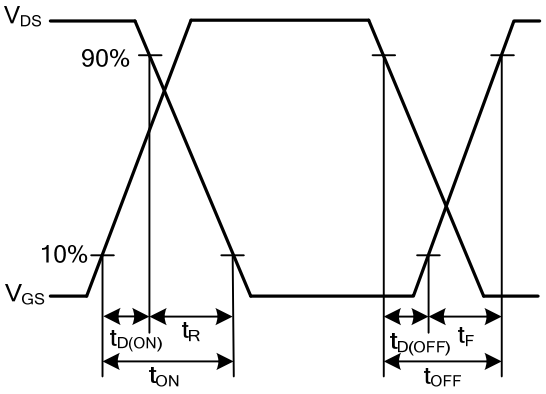
Gate Charge Test Circuit



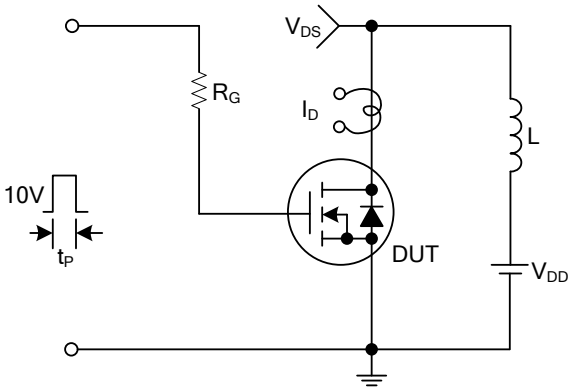
Gate Charge Waveforms



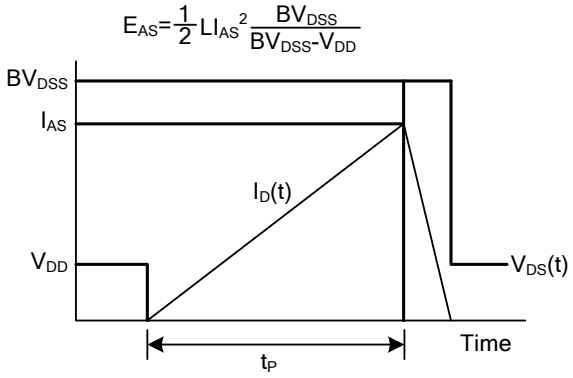
Resistive Switching Test Circuit



Resistive Switching Waveforms

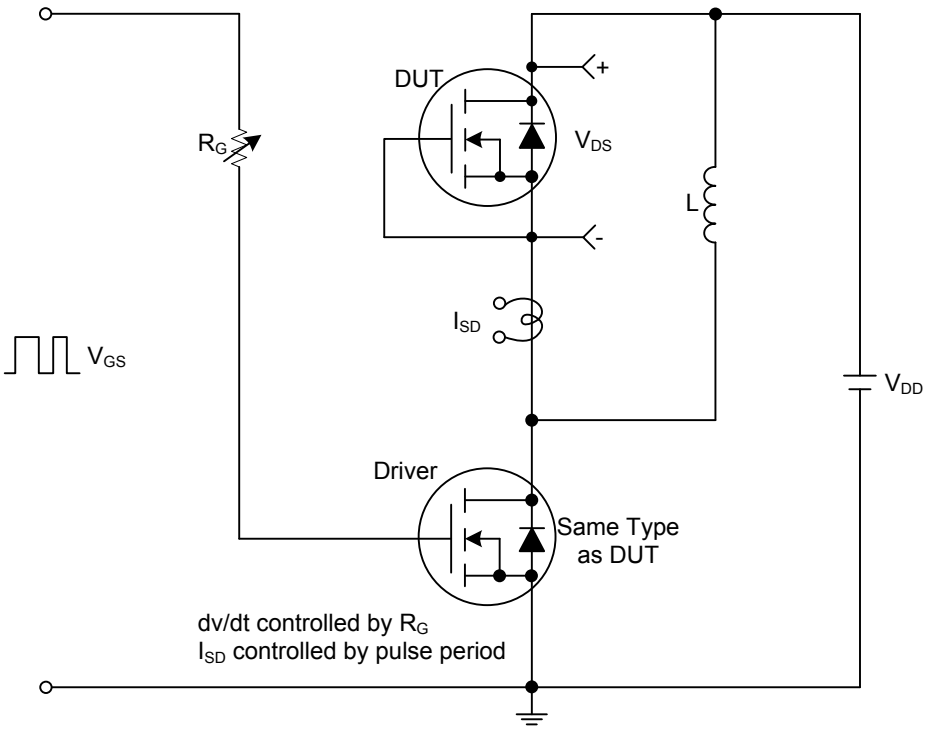


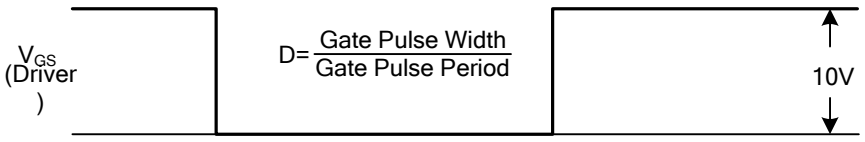
Unclamped Inductive Switching Test Circuit

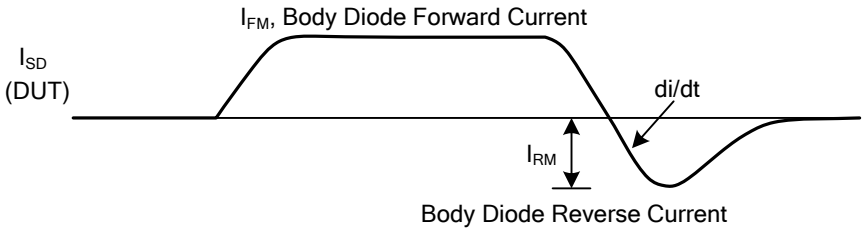


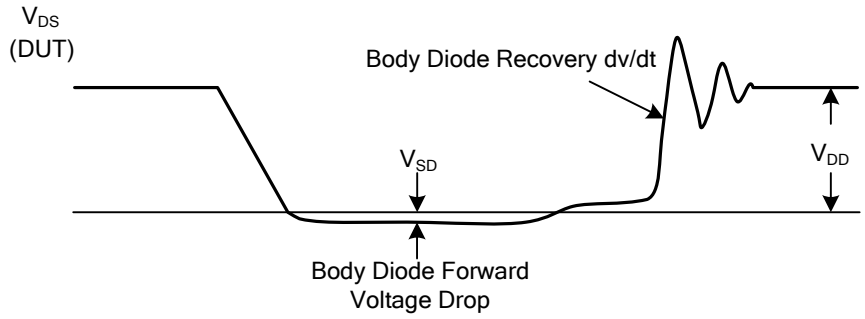
Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)





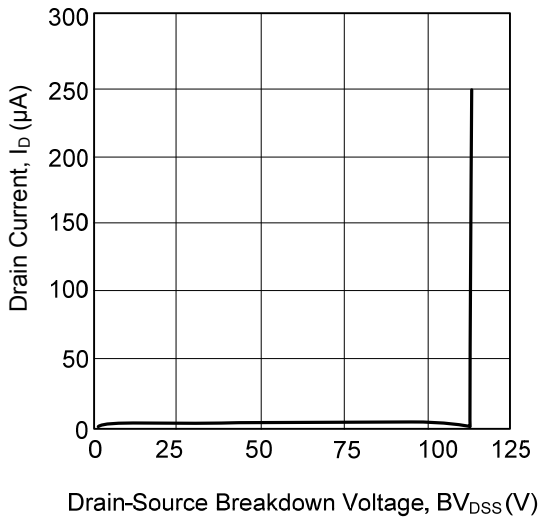




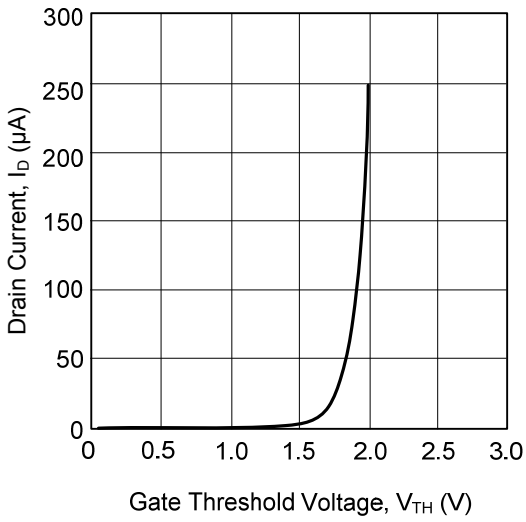
Peak Diode Recovery dv/dt Test Circuit and Waveforms

■ TYPICAL CHARACTERISTICS

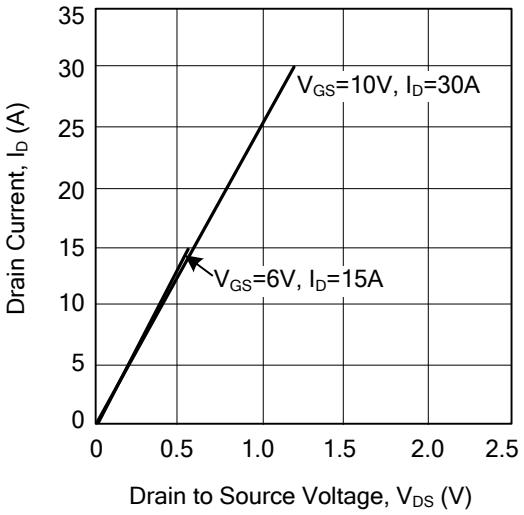
Drain Current vs. Drain-Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



Drain-Source On-State Resistance Characteristics



Body-Diode Continuous Current vs. Source to Drain Voltage