



UTT36N10

Power MOSFET

36A, 100V N-CHANNEL POWER MOSFET

■ DESCRIPTION

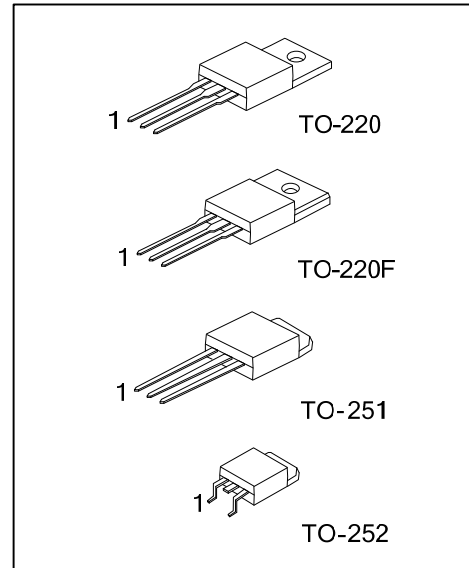
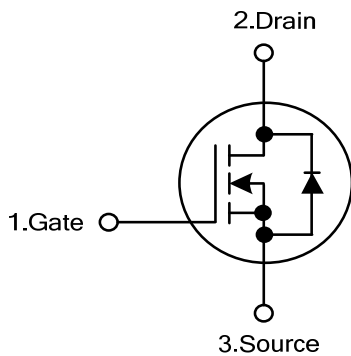
The UTC **UTT36N10** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

The UTC **UTT36N10** is suitable for high voltage synchronous rectifier and DC/DC converters, etc.

■ FEATURES

* High Switching Speed

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT36N10L-TA3-T	UTT36N10G-TA3-T	TO-220	G	D	S	Tube
UTT36N10L-TF3-T	UTT36N10G-TF3-T	TO-220F	G	D	S	Tube
UTT36N10L-TM3-R	UTT36N10G-TM3-R	TO-251	G	D	S	Tape Reel
UTT36N10L-TN3-R	UTT36N10G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UTT36N10L-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TF3: TO-220F, TM3: TO-251</p> <p>TN3: TO-252</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous ($V_{GS}=10\text{V}$) $T_c=25^\circ\text{C}$	I_D	36	A
	Pulsed	I_{DM}	144	A
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	55	mJ
Power Dissipation	TO-220	P_D	125	W
	TO-220F		79	
	TO-251/TO-252		44	
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. Starting $T_J = 25^\circ\text{C}$, $L = 0.27\text{mH}$, $I_{AS} = 30\text{A}$.

3. $L=9.25\text{mH}$, $I_{AS}=9\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

4. Pulse Width = 100s.

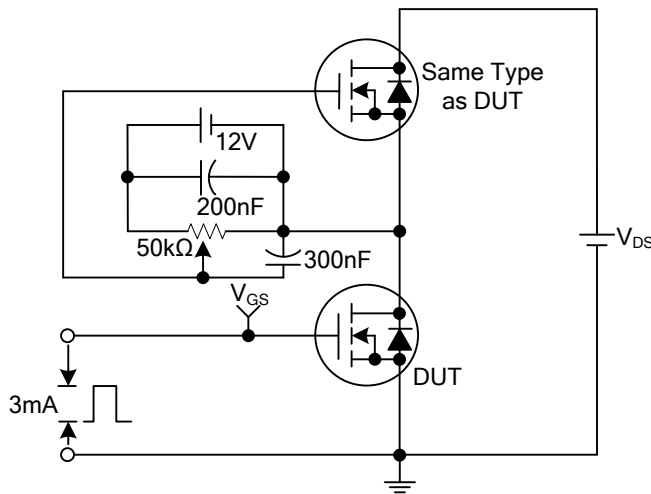
■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	$^\circ\text{C/W}$
	TO-220F		62	
	TO-251/TO-252		110	
Junction to Case	TO-220	θ_{JC}	1	$^\circ\text{C/W}$
	TO-220F		1.58	
	TO-251/TO-252		2.85	

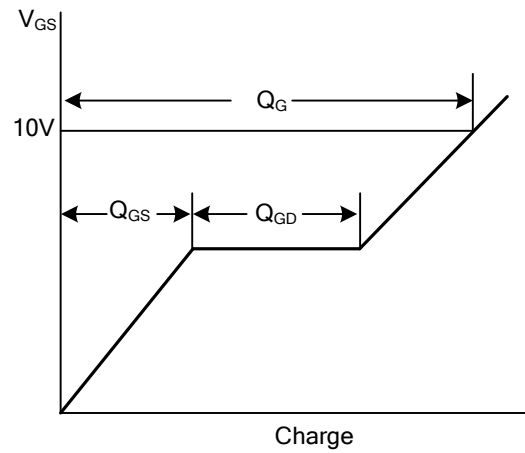
■ ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}			+100	nA
	Reverse				-100	
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1		3	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=30\text{A}$		32	52	m Ω
		$V_{GS}=6\text{V}$, $I_D=15\text{A}$		40	72	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		2233		pF
Output Capacitance	C_{OSS}			171		pF
Reverse Transfer Capacitance	C_{RSS}			119		pF
SWITCHING PARAMETERS						
Turn-ON Time	t_{ON}	$V_{DD}=30\text{V}$, $I_D=1\text{A}$, $V_{GS}=10\text{V}$, $R_{GS}=50\Omega$		72	83	ns
Turn-ON Delay Time	$t_{D(ON)}$			93	112	ns
Rise Time	t_R			868	890	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			168	180	ns
Total Gate Charge at 10V	Q_G	$V_{DD}=40\text{V}$, $I_D=36\text{A}$, $V_{GS}=10\text{V}$		180	200	nC
Gate to Source Charge	Q_{GS}			21		nC
Gate to Drain Charge	Q_{GD}			20		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_{SD}=15\text{A}$			1.0	V

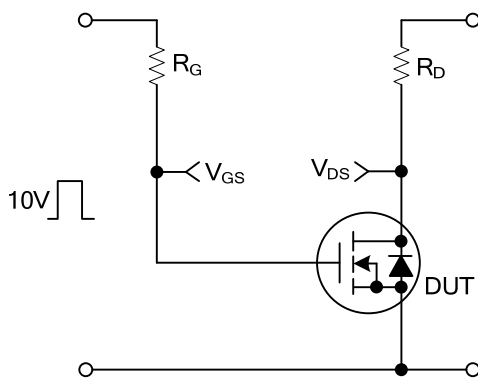
TEST CIRCUITS AND WAVEFORMS



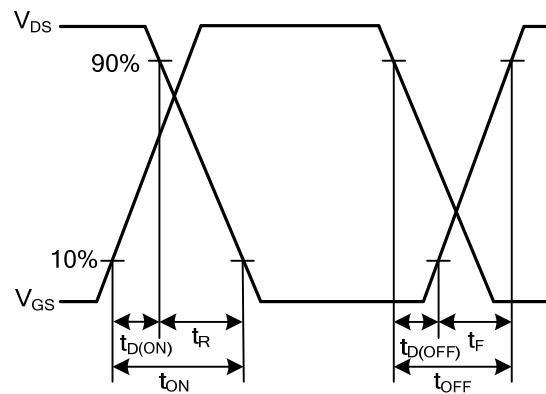
Gate Charge Test Circuit



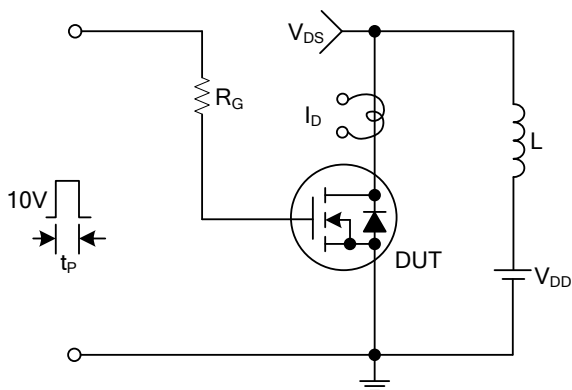
Gate Charge Waveforms



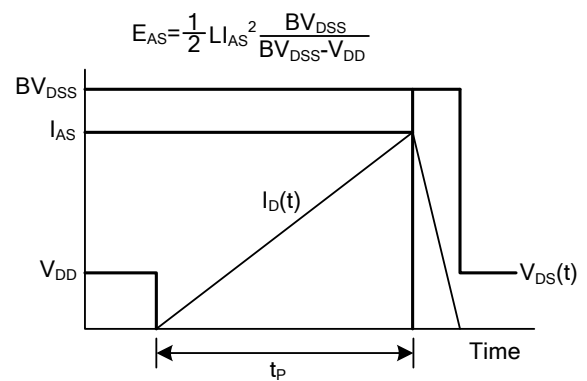
Resistive Switching Test Circuit



Resistive Switching Waveforms

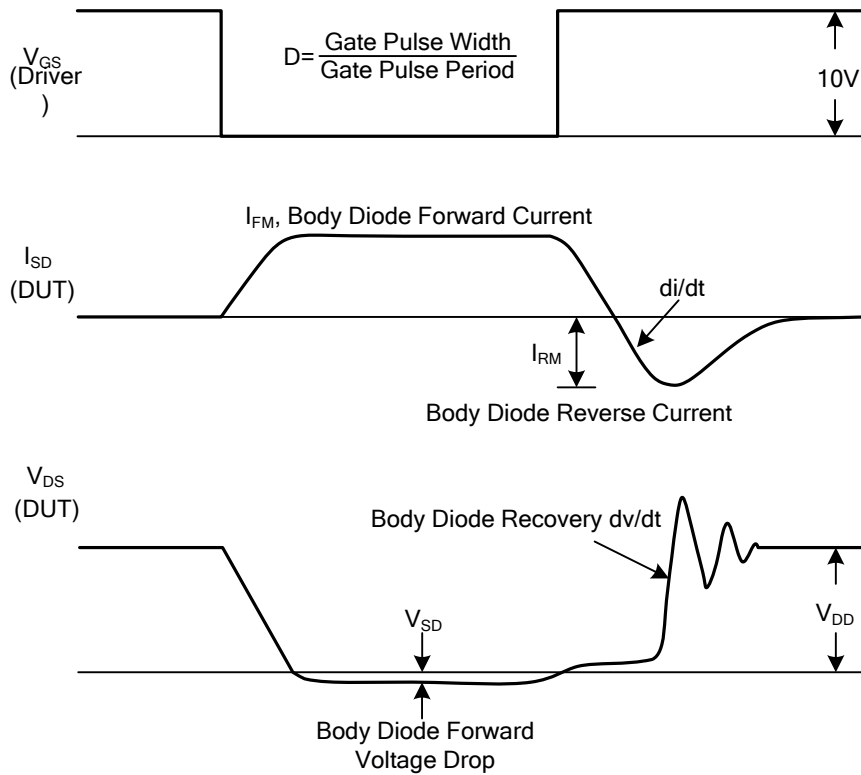
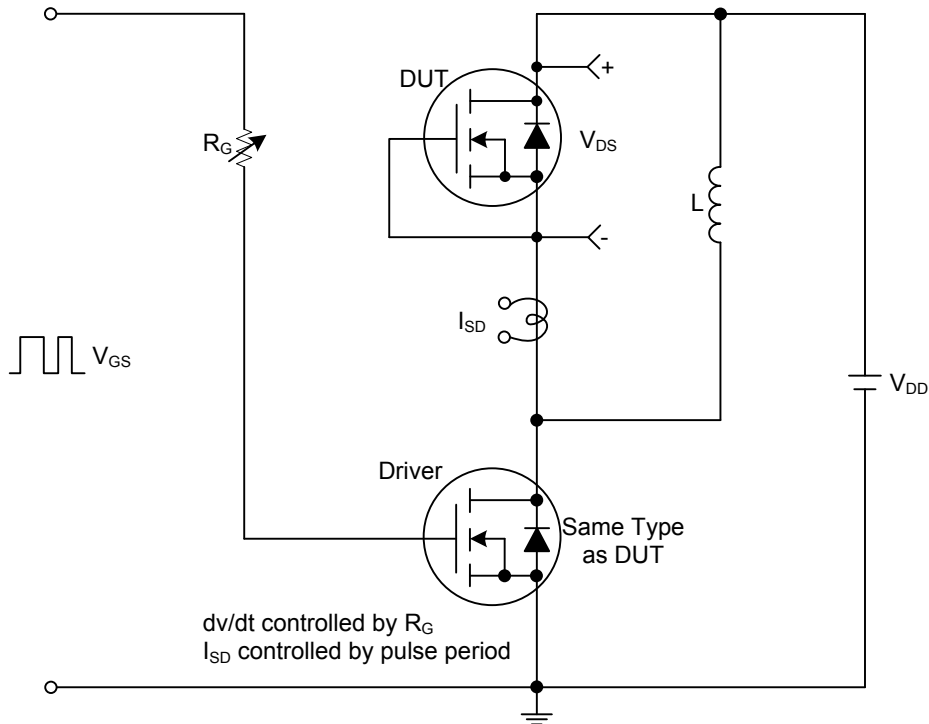


Unclamped Inductive Switching Test Circuit



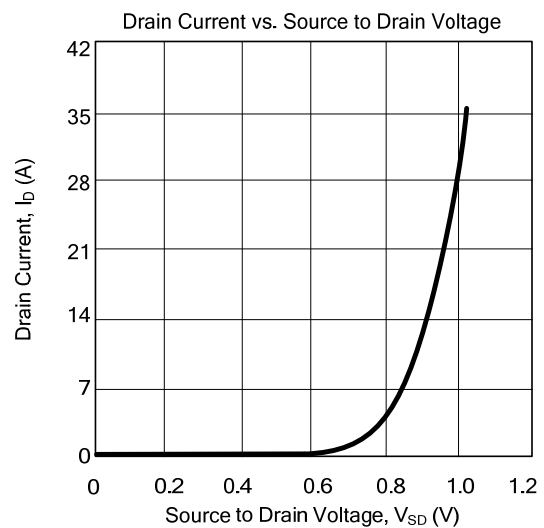
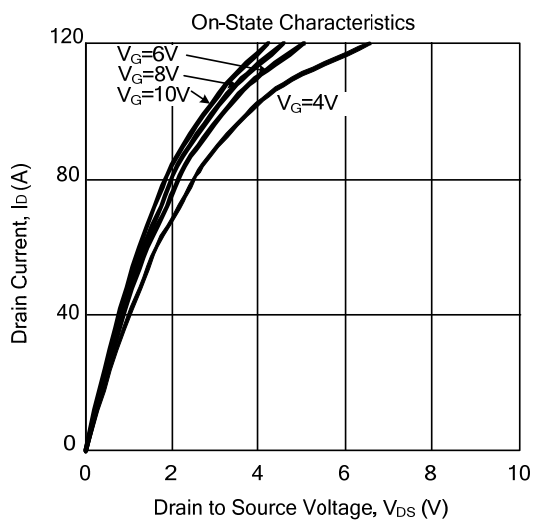
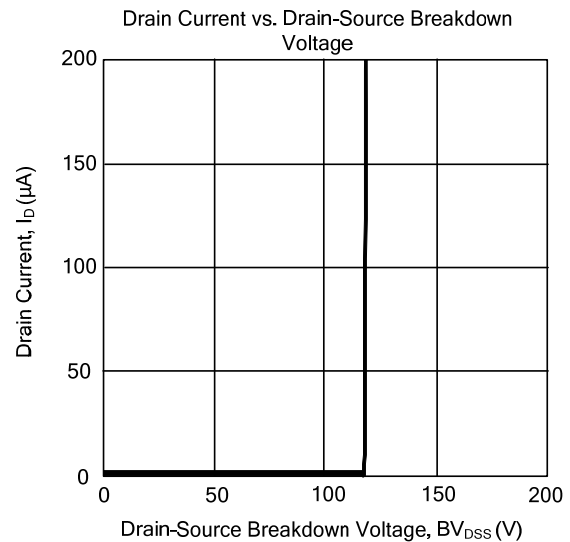
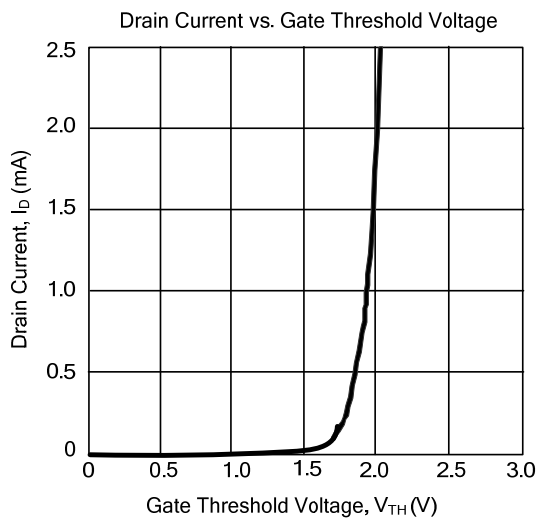
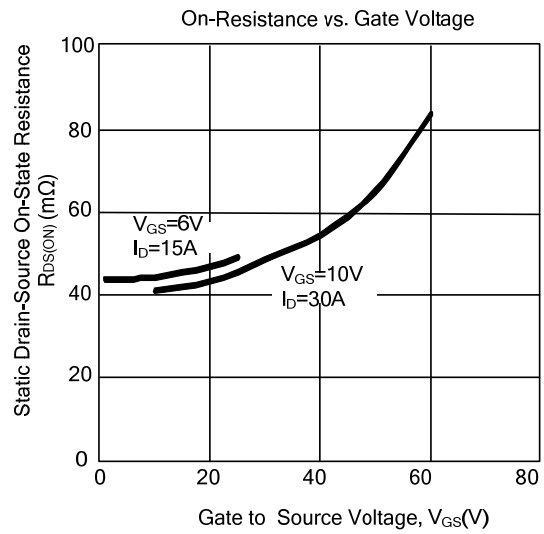
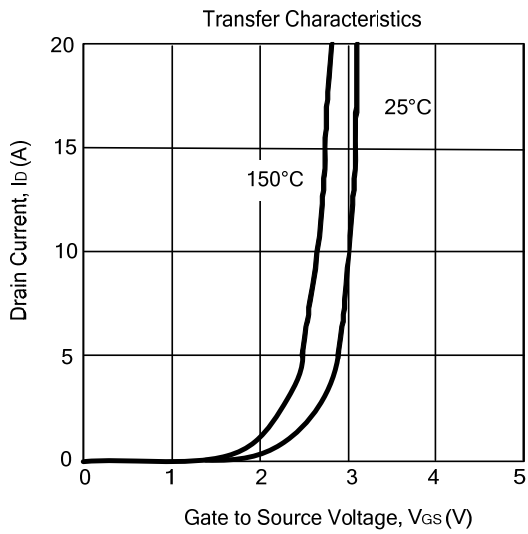
Unclamped Inductive Switching Waveforms

TEST CIRCUITS AND WAVEFORMS(Cont.)

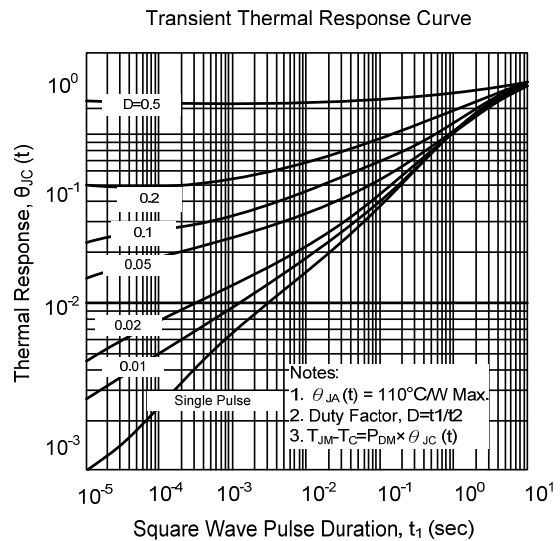
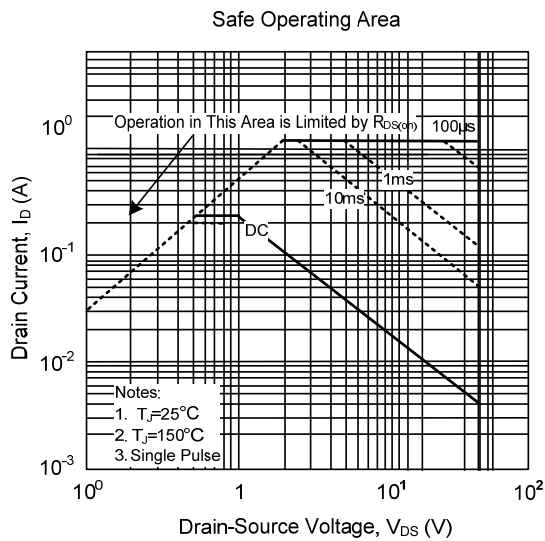


Peak Diode Recovery dv/dt Test Circuit and Waveforms

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



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