



## UTT200N03

Power MOSFET

### 200A, 30V N-CHANNEL POWER MOSFET

#### DESCRIPTION

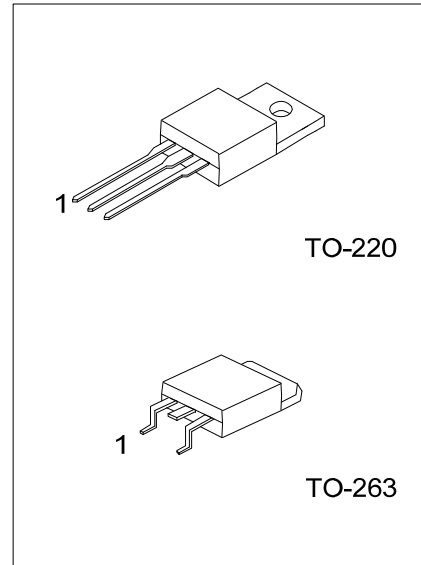
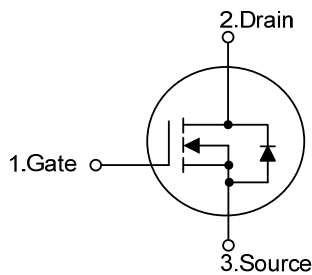
The UTC **UTT200N03** is a N-channel MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

The UTC **UTT200N03** is generally applied in DC to DC convertor or synchronous rectification

#### FEATURES

- \* Fast Switching
- \* 100% Avalanche Tested
- \* High Power and Current Handling Capability
- \* RoHS Compliant

#### SYMBOL



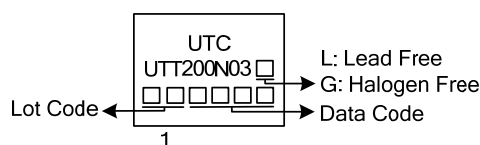
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT200N03L-TA3-T	UTT200N03G-TA3-T	TO-220	G	D	S	Tube
UTT200N03L-TQ2-T	UTT200N03G-TQ2-T	TO-263	G	D	S	Tube
UTT200N03L-TQ2-R	UTT200N03G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>UTT200N03G-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, TQ2: TO-263</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS [ $T_C=25^{\circ}\text{C}$ , unless otherwise specified (Note 6)]

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	200	A
	Pulsed (Note 2)	$I_{DM}$	800	A
Single Pulsed Avalanche Energy (Note 3)		$E_{AS}$	864	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	1.4	V/ns
Power Dissipation	$T_C=25^{\circ}\text{C}$	$P_D$	178	W
Power Dissipation	Derate above $25^{\circ}\text{C}$		1.43	W/ $^{\circ}\text{C}$
Junction Temperature		$T_J$	-55 ~ +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.  $L=3.0\text{mH}$ ,  $I_{AS}=24\text{A}$ ,  $V_{DD}=30\text{V}$ ,  $R_G=25\ \Omega$ , 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 CHARACTERISTICS

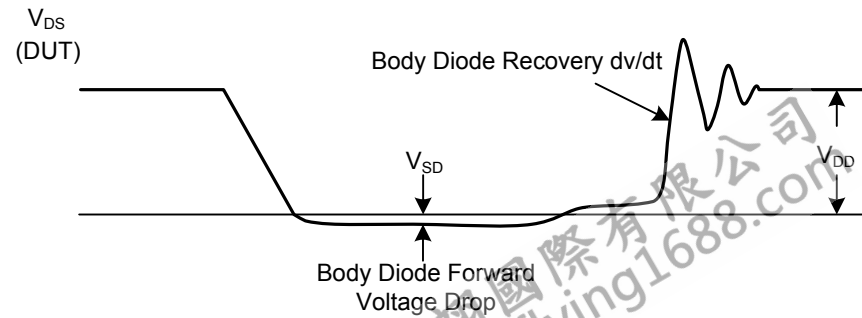
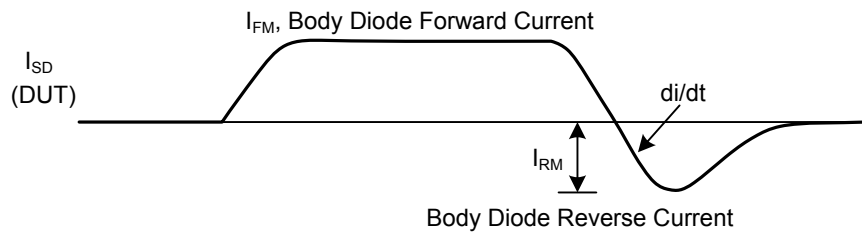
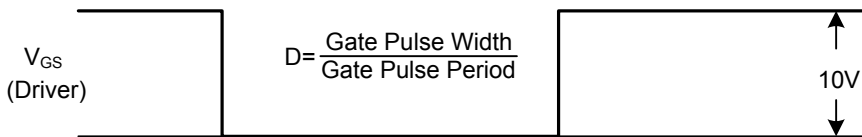
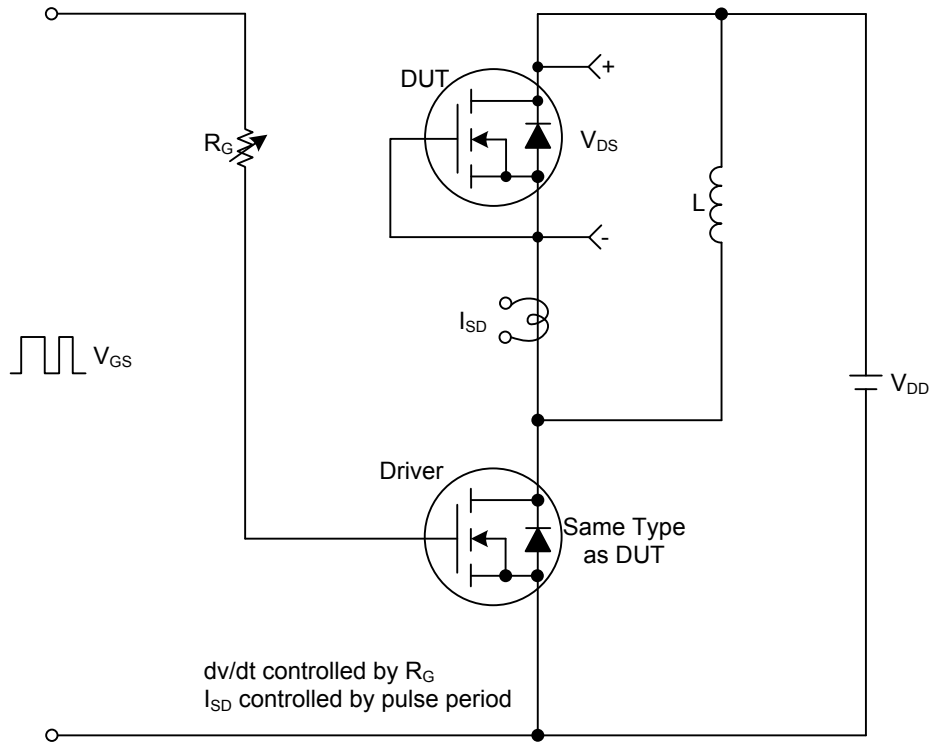
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	62.5	$^{\circ}\text{C}/\text{W}$
Junction to Case	$\theta_{JC}$	0.7	$^{\circ}\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=30\text{V}$ , $V_{GS}=0\text{V}$			10	$\mu\text{A}$
Gate- Source Leakage Current	$I_{GSS}$	Forward			+100	nA
		Reverse			-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=80\text{A}$			2.6	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		5490	7300	pF
Output Capacitance	$C_{OSS}$			1220	1620	pF
Reverse Transfer Capacitance	$C_{RSS}$			155	233	pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}$ , $V_{DS}=25\text{V}$ , $I_D=100\text{A}$		200	350	nC
Gate to Source Charge	$Q_{GS}$			11		nC
Gate to Drain Charge	$Q_{GD}$			40		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$ , $I_D=0.5\text{A}$ , $R_{GEN}=4.7\ \Omega$ , $V_{GS}=10\text{V}$		70	110	ns
Rise Time	$t_R$			200	300	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			1600	2000	ns
Fall-Time	$t_F$			700	1200	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				200	A
Maximum Body-Diode Pulsed Current	$I_{SM}$				800	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=100\text{A}$ , $V_{GS}=0\text{V}$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=30\text{A}$ , $V_{GS}=0\text{V}$ , $di/dt=100\text{A}/\mu\text{s}$		185		ns
Reverse Recovery Charge	$Q_{rr}$			500		nC

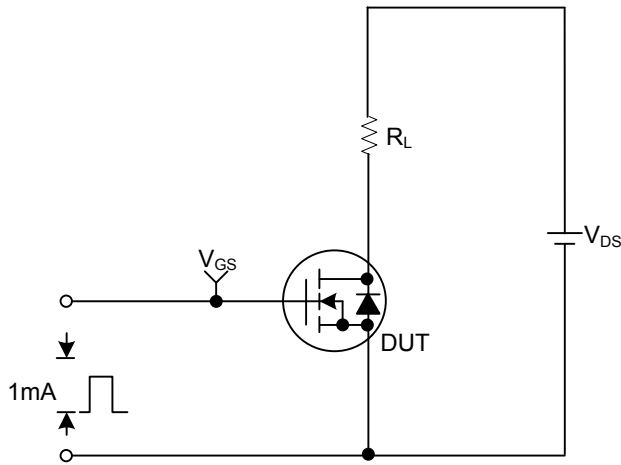
■ TEST CIRCUITS AND WAVEFORMS

Peak Diode Recovery dv/dt Test Circuit & Waveforms

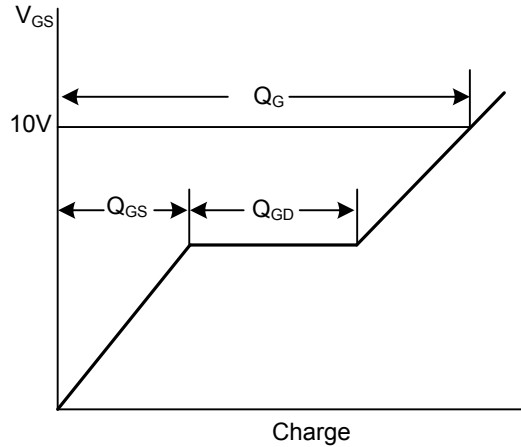


## TEST CIRCUITS AND WAVEFORMS

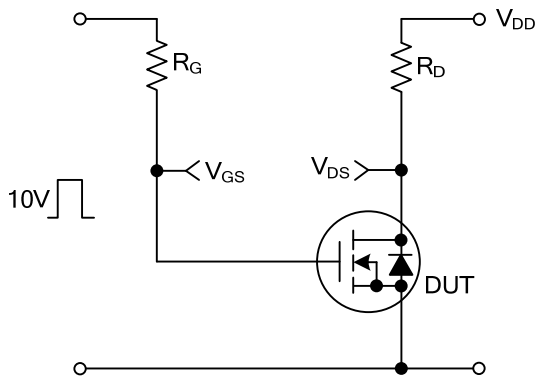
Gate Charge Test Circuit



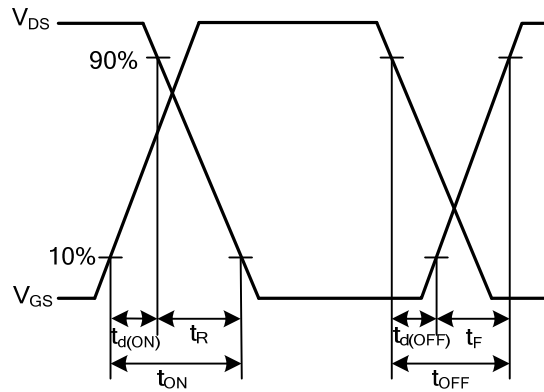
Gate Charge Waveforms



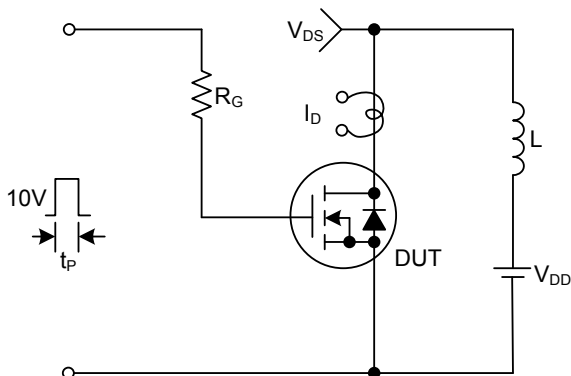
Resistive Switching Test Circuit



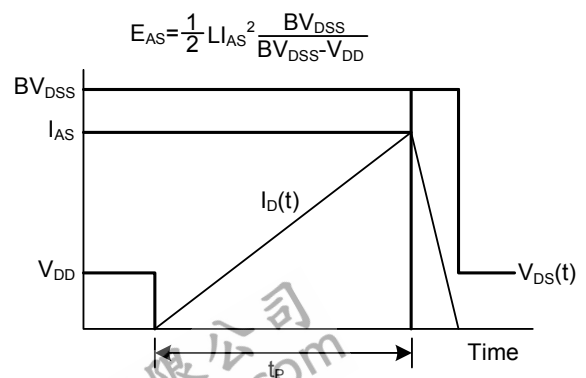
Resistive Switching Waveforms



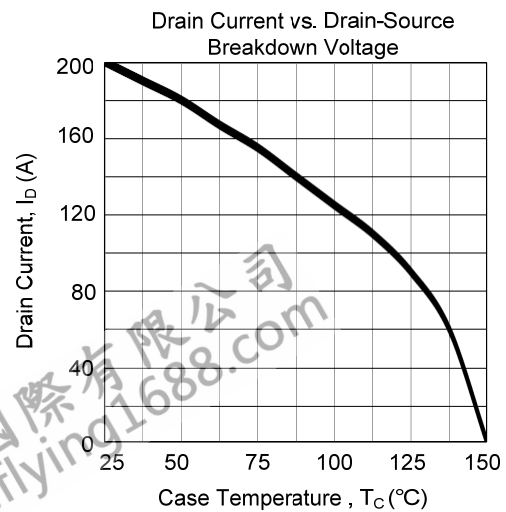
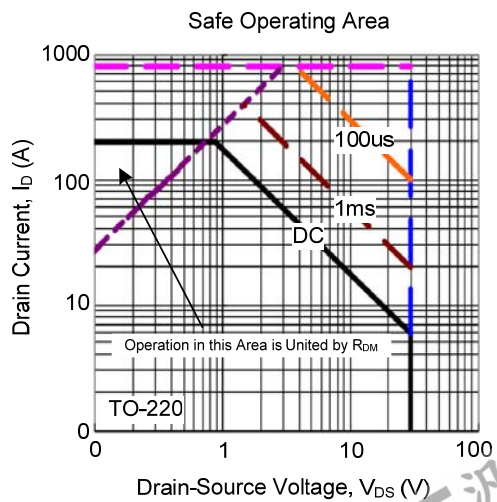
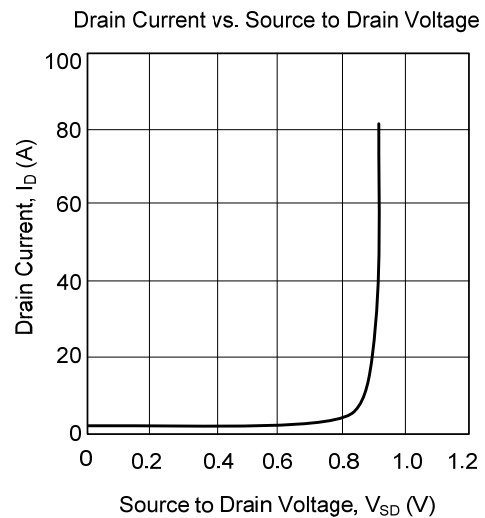
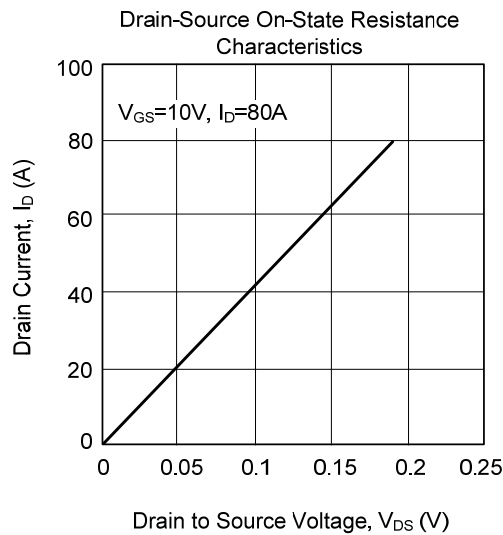
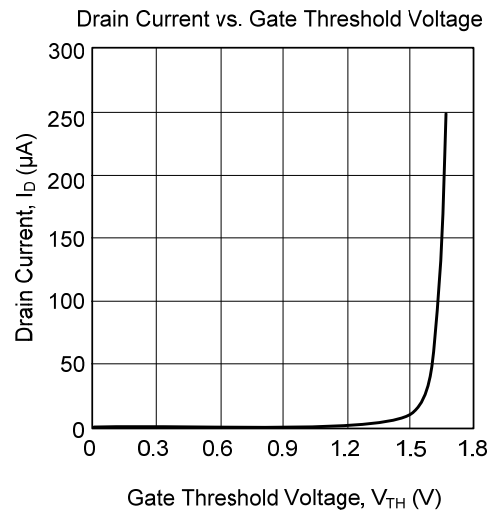
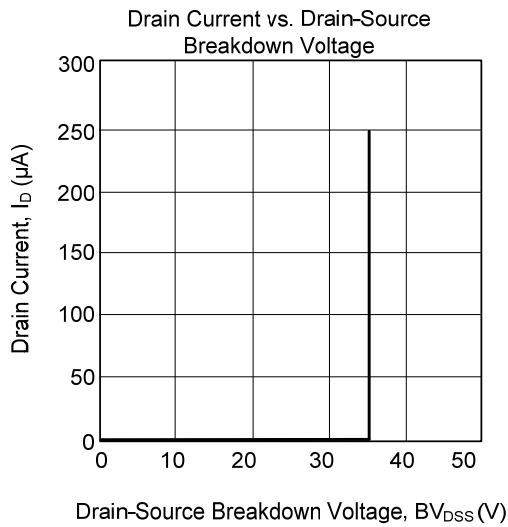
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



## TYPICAL CHARACTERISTICS



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