



UTT200N03

Power MOSFET

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

■ DESCRIPTION

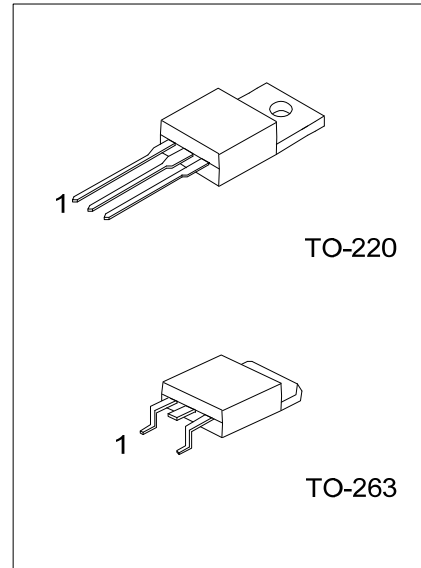
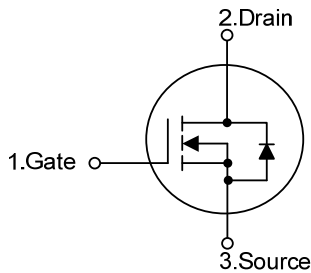
The UTC **UTT200N03** is a N-channel MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

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>UTT200N03L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TQ2: TO-263</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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■ MARKING INFORMATION

PACKAGE	MARKING
TO-220 TO-263	<p>UTC UTT200N03</p> <p>Lot Code ←</p> <p>→ L: Lead Free → G: Halogen Free → Data Code</p> <p>1</p>

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	200	A
	Pulsed (Note 1)	I_{DM}	800	A
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	864	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	178	W
Power Dissipation	Derate above 25°C		1.43	W/ $^\circ\text{C}$
Junction Temperature		T_J	-55~+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~+150	$^\circ\text{C}$

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	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	0.7	$^\circ\text{C}/\text{W}$

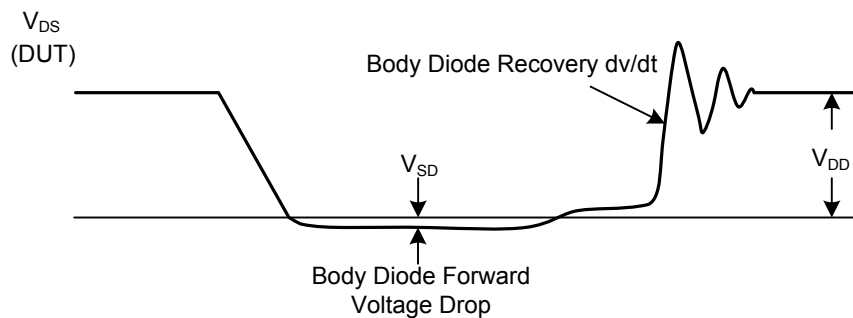
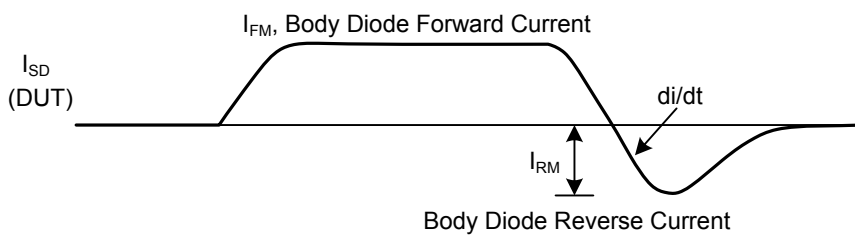
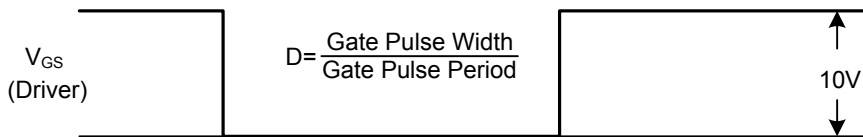
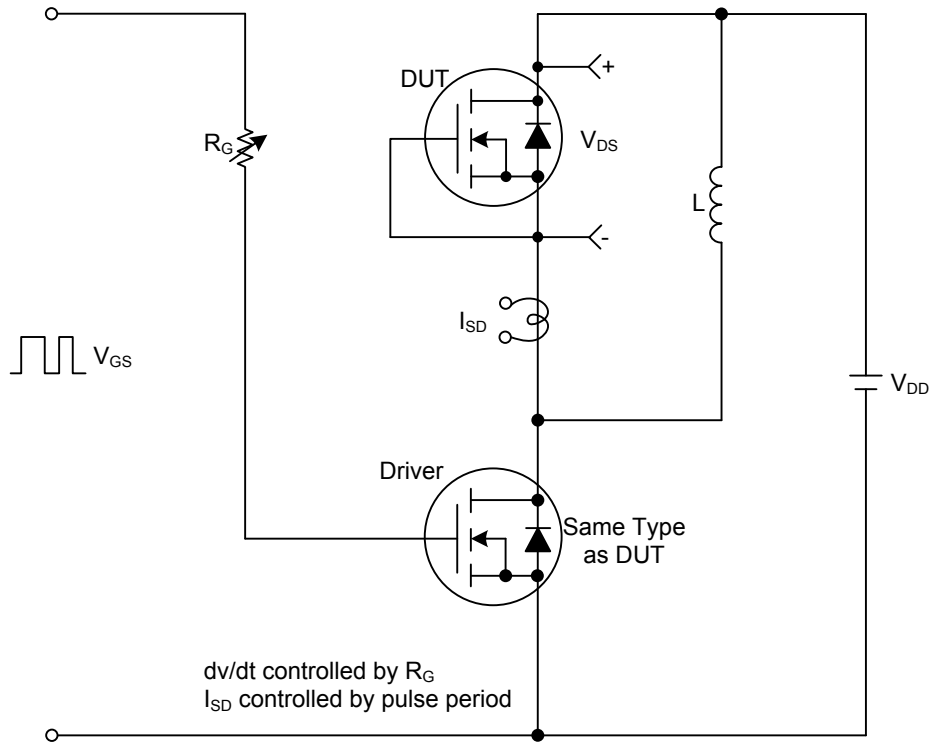
■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$, $T_C=25^\circ\text{C}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			10	μA
Gate- Source Leakage Current	Forward	I_{GSS}			+100	nA
					Reverse	-100
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		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 Ω
DYNAMIC PARAMETERS						
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
SWITCHING PARAMETERS						
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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

- Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature
 2. $L = 3\text{mH}$, $I_{AS} = 24\text{A}$, $V_{DD} = 30\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$
 3. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$
 4. Essentially independent of operating temperature

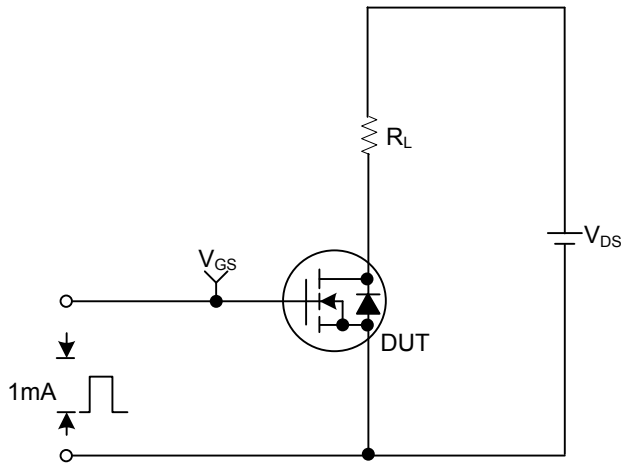
■ TEST CIRCUITS AND WAVEFORMS

Peak Diode Recovery dv/dt Test Circuit & Waveforms

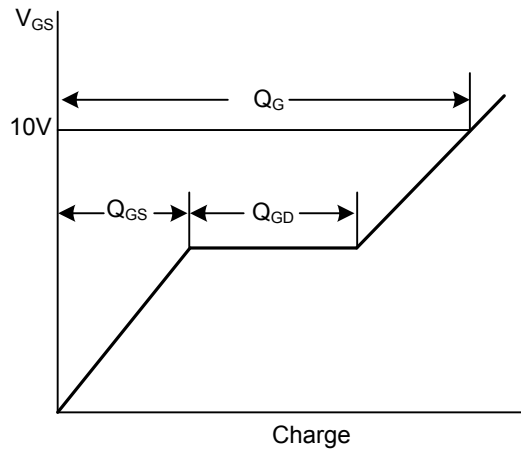


■ TEST CIRCUITS AND WAVEFORMS(Cont.)

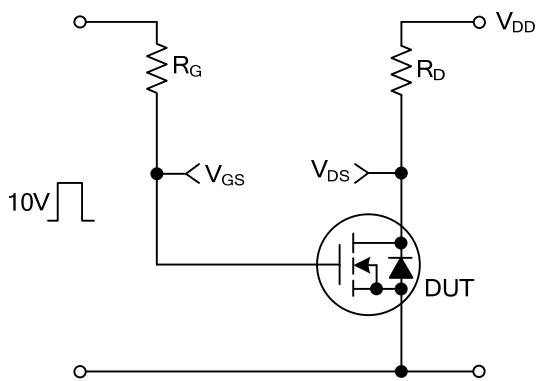
Gate Charge Test Circuit



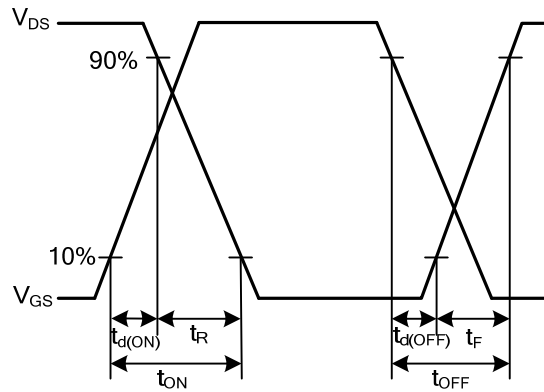
Gate Charge Waveforms



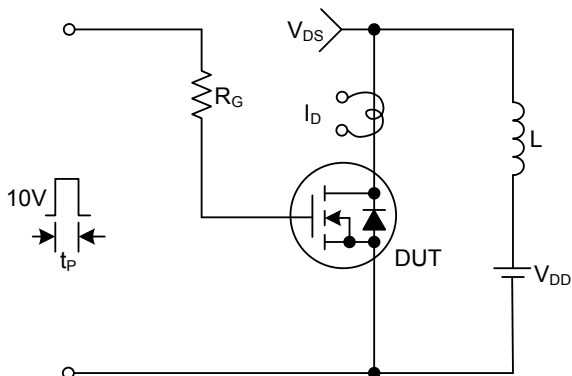
Resistive Switching Test Circuit



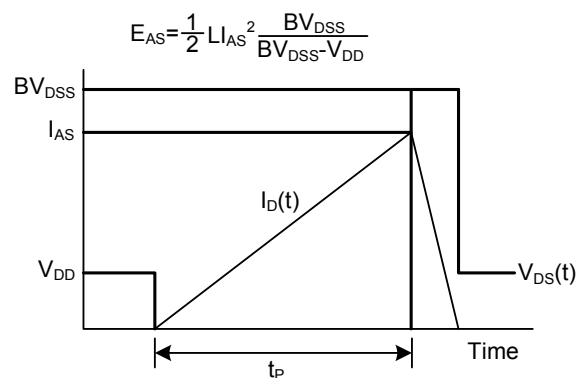
Resistive Switching Waveforms



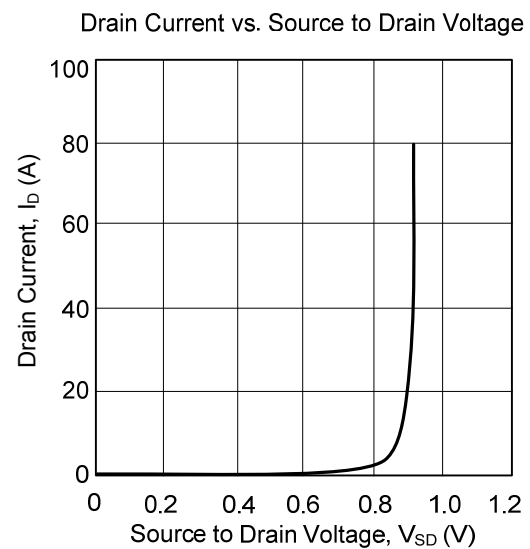
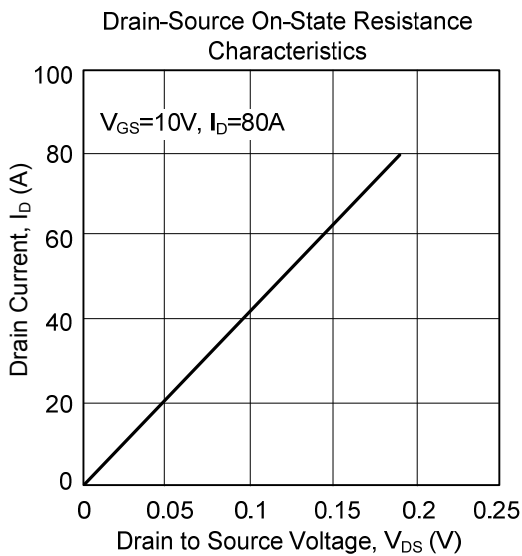
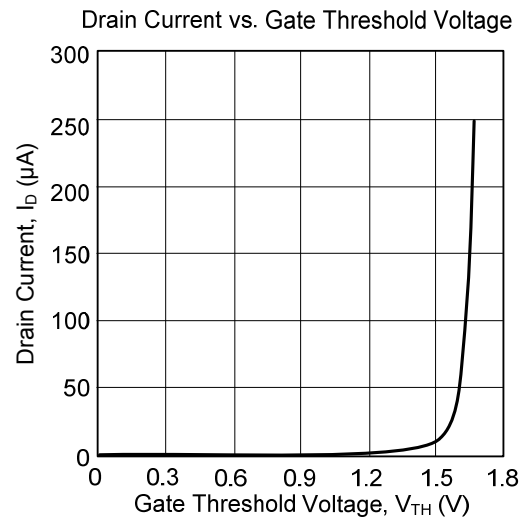
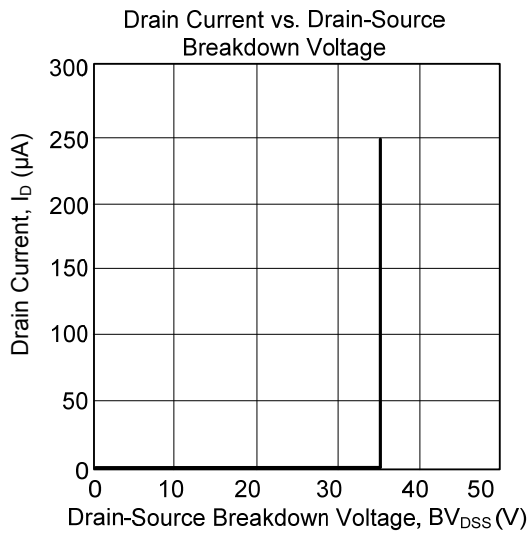
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



■ TYPICAL CHARACTERISTICS



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