



UTT8NN03

Power MOSFET

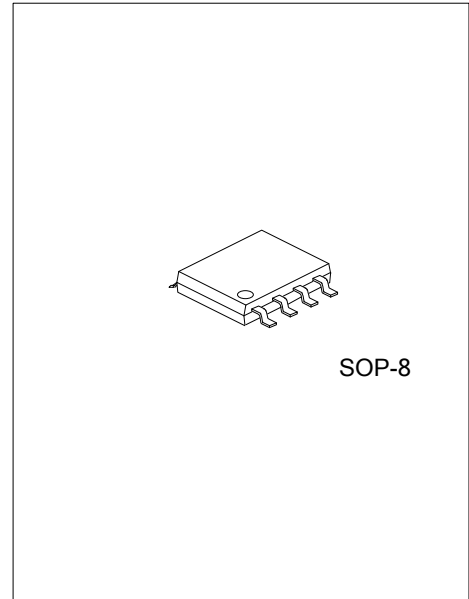
8A, 30V DUAL N-CHANNEL ENHANCEMENT MODE POWER MOSFET

■ DESCRIPTION

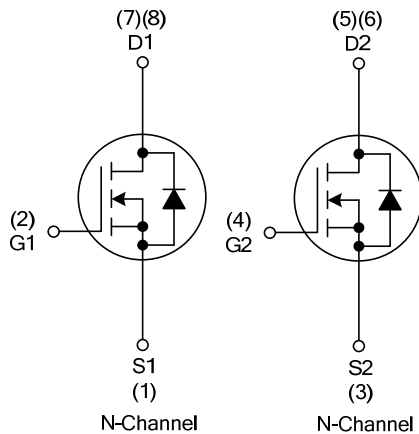
The UTC **UTT8NN03** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low $R_{DS(ON)}$ characteristic by high cell density trench technology.

■ FEATURES

- * $R_{DS(ON)} < 30\text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=6.0\text{A}$
- * $R_{DS(ON)} < 40\text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=3.0\text{A}$
- * Fast Switching Speed
- * Simple Drive Requirement



■ SYMBOL



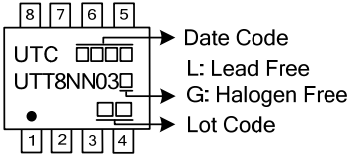
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT8NN03L-S08-R	UTT8NN03G-S08-R	SOP-8	S1	G1	S2	G2	D2	D2	D1	D1	Tape Reel

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

<p>UTT8NN03G-S08-R</p>	<p>(1)Packing Type (1) R: Tape Reel</p> <p>(2)Package Type (2) S08: SOP-8</p> <p>(3)Green Package (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	8	A
	Pulsed (Note 2)	I_{DM}	32	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	6	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	1.5	V/ns
Power Dissipation		P_D	2.1	W
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. Repetitive Rating: Pulse width limited by maximum junction temperature.
 3. $L=0.1\text{mH}$, $I_{AS}=11\text{A}$, $V_{DD}=25\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 4. $I_{SD}\leq 8.0\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq V_{(BR)DSS}$, $T_J=25^{\circ}\text{C}$.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	60	$^{\circ}\text{C}/\text{W}$

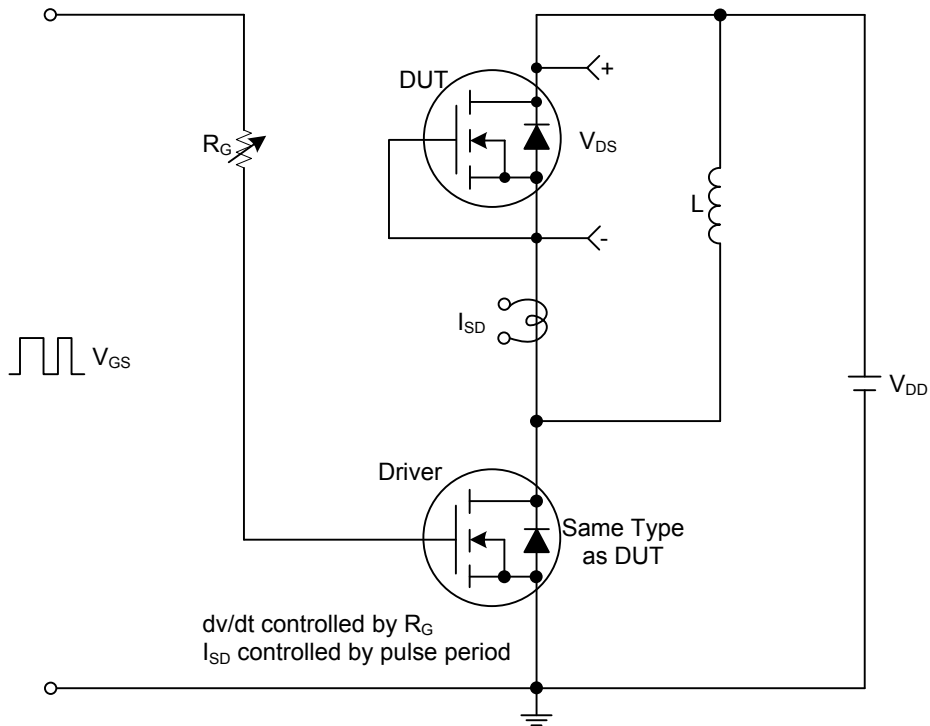
Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

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

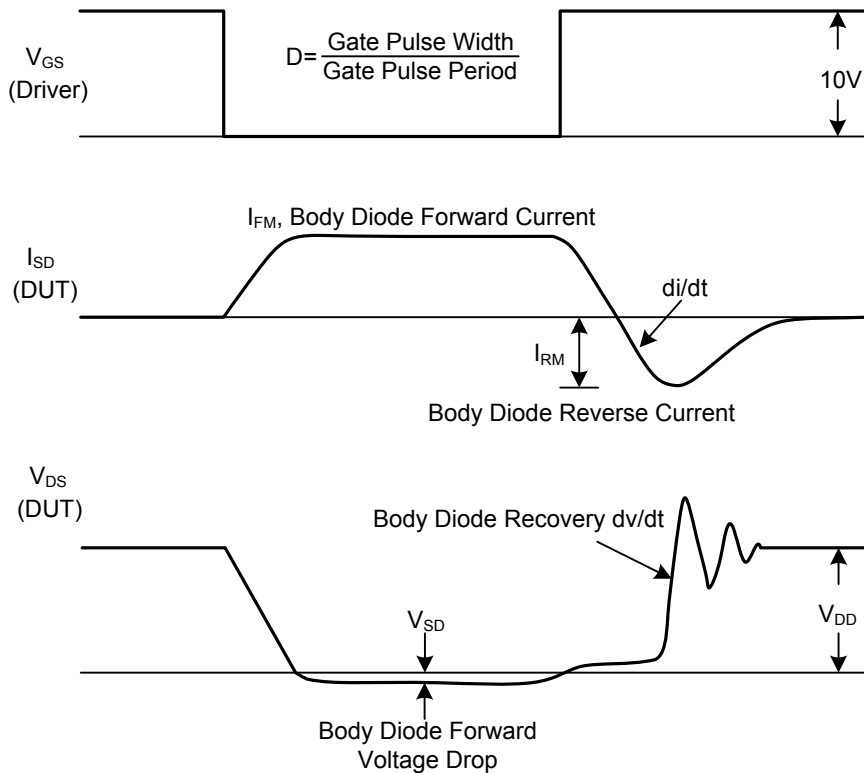
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS								
Drain-Source Breakdown Voltage		BV_{DSS}	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	30			V	
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			1	μA	
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=20\text{V}$			30	nA	
	Reverse		$V_{DS}=0\text{V}$, $V_{GS}=-20\text{V}$			-30	nA	
ON CHARACTERISTICS								
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V	
Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=6.0\text{A}$			30	m Ω	
			$V_{GS}=4.5\text{V}$, $I_D=3.0\text{A}$			40	m Ω	
DYNAMIC PARAMETERS								
Input Capacitance		C_{ISS}	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$		328		pF	
Output Capacitance		C_{OSS}				51		pF
Reverse Transfer Capacitance		C_{RSS}				35		pF
SWITCHING PARAMETERS								
Total Gate Charge (Note 1)		Q_G	$V_{DS}=24\text{V}$, $V_{GS}=10\text{V}$, $I_D=8.0\text{A}$, $I_G=1\text{mA}$ (Note 1, 2)		11.7		nC	
Gate-Source Charge		Q_{GS}				2.5		nC
Gate-Drain Charge		Q_{GD}				2.5		nC
Turn-ON Delay Time (Note 1)		$t_{D(ON)}$	$V_{DD}=15\text{V}$, $V_{GS}=10\text{V}$, $I_D=8.0\text{A}$, $R_G=25\Omega$ (Note 1, 2)		9		ns	
Turn-ON Rise Time		t_R				8		ns
Turn-OFF Delay Time		$t_{D(OFF)}$				30		ns
Turn-OFF Fall Time		t_F				19		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS								
Maximum Body-Diode Continuous Current		I_S				8	A	
Maximum Body-Diode Pulsed Current		I_{SM}				32	A	
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	$I_S=8.0\text{A}$, $V_{GS}=0\text{V}$			1.0	V	
Body Diode Reverse Recovery Time (Note 1)		t_{rr}	$I_S=8.0\text{A}$, $V_{GS}=0\text{V}$,			140	ns	
Body Diode Reverse Recovery Charge		Q_{rr}	$di_F/dt=100\text{A}/\mu\text{s}$			110	nC	

- Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
 2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



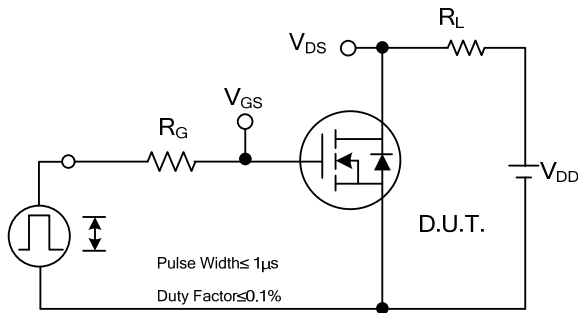
Peak Diode Recovery dv/dt Test Circuit



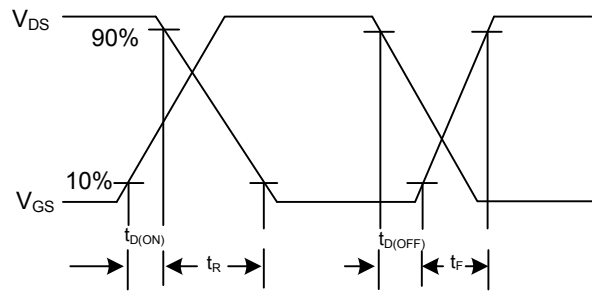
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

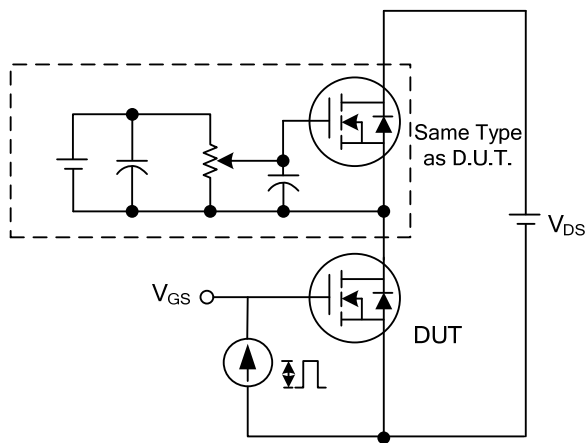
TEST CIRCUITS AND WAVEFORMS (Cont.)



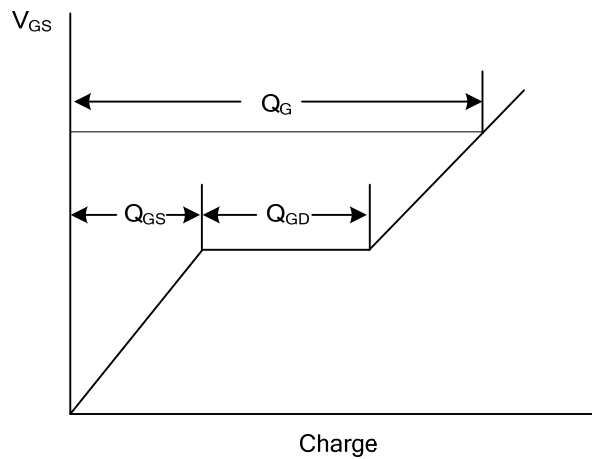
Switching Test Circuit



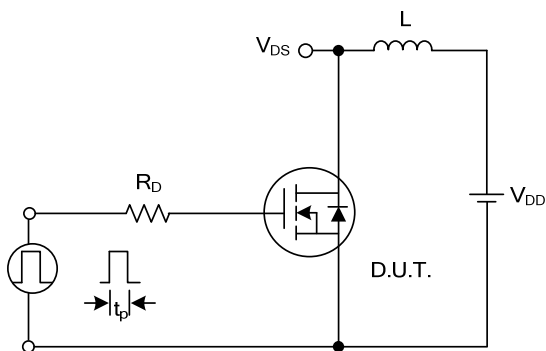
Switching Waveforms



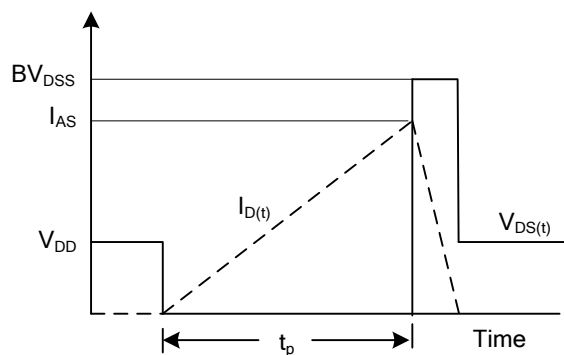
Gate Charge Test Circuit



Gate Charge Waveform

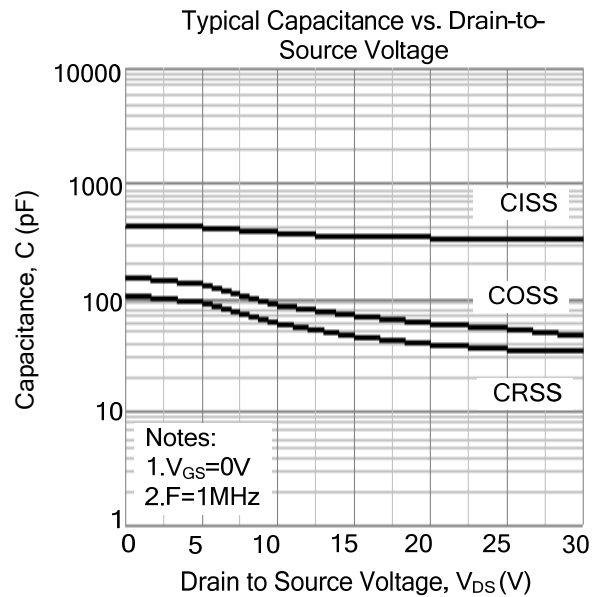
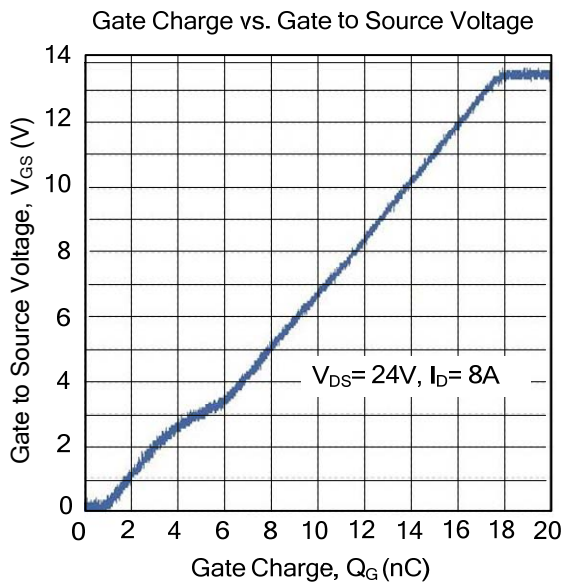


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



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