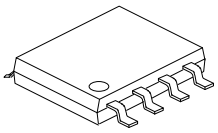
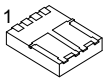
UTT12NN10

Power MOSFET

2.5A, 100V DUAL N-CHANNEL ENHANCEMENT MODE POWER MOSFET



SOP-8



DFN3030-8

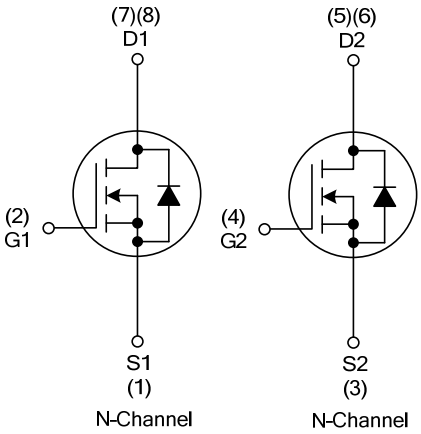
■ DESCRIPTION

The UTC **UTT12NN10** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low Rdson characteristic by high cell density trench technology.

■ FEATURES

* $R_{DS(ON)}$ < 0.28Ω @ V_{GS}=10V, I_D=2.0A
* Fast Switching Speed
* Simple Drive Requirement

■ SYMBOL



■ ORDERING INFORMATION

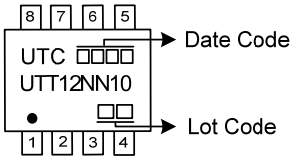
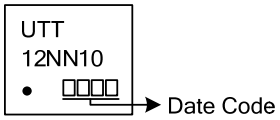
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT12NN10L-S08-R	UTT12NN10G-S08-R	SOP-8	S1	G1	S2	G2	D2	D2	D1	D1	Tape Reel
UTT12NN10L-K08-3030-R	UTT12NN10G-K08-3030-R	DFN3030-8	S1	G1	S2	G2	D2	D2	D1	D1	Tape Reel

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

UTT12NN10G-S08-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) S08: SOP-8, K08-3030: DFN3030-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOP-8	DFN3030-8
	

■ ABSOLUTE MAXIMUM RATINGS (T_A=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	I_D	2.5	A
	Pulsed (Note 2)	I_{DM}	10	A
Peak Diode Recovery dv/dt (Note 3)		dv/dt	2.3	V/nS
Power Dissipation	SOP-8	P_D	1.6	W
	DFN3030-8		2.0	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. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. I_{SD} ≤ 2.0A, di/dt ≤200A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J = 25°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ_{JA}	78	°C/W
	DFN3030-8		62.5	°C/W

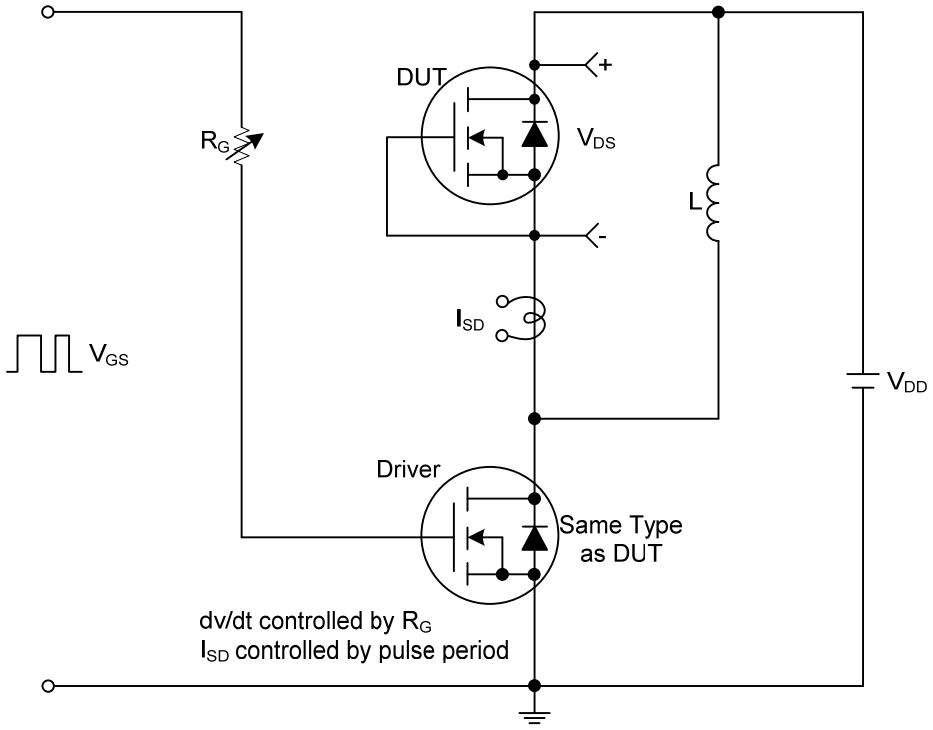
Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

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

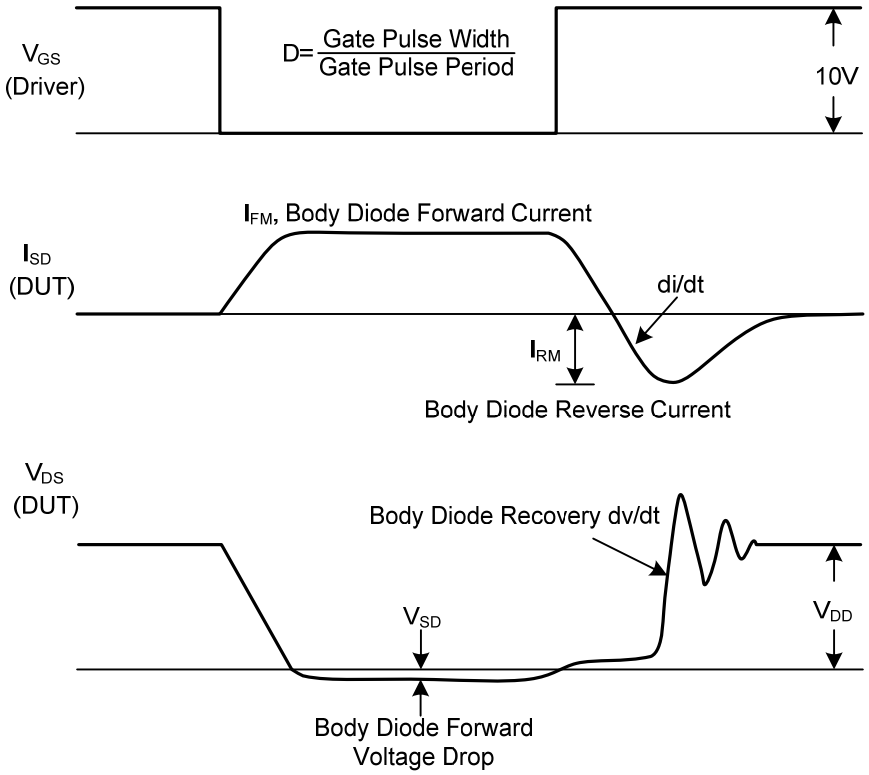
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	100			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=100V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{DS}=0V ,V_{GS}=20V			100	nA
	Reverse		V_{DS}=0V ,V_{GS}=-20V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		3.0	V
Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=2A			0.28	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V,V_{DS}=25V, f=1.0MHz		400		pF
Output Capacitance		C_{OSS}			33		pF
Reverse Transfer Capacitance		C_{RSS}			26		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q_G	V_{DS}=50V, V_{GS}=10V, I_D=1.3A, I_D=100μA (Note 1, 2)		40		nC
Gate-Source Charge		Q_{GS}			2.0		nC
Gate-Drain Charge		Q_{GD}			3.0		nC
Turn-ON Delay Time (Note 1)		$t_{D(ON)}$	V_{DS}=30V, V_{GS}=10V, I_D=0.5A, R_G=25Ω (Note 1, 2)		29		ns
Turn-ON Rise Time		t_R			26		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			165		ns
Turn-OFF Fall Time		t_F			37		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				2.5	A
Maximum Body-Diode Pulsed Current		I_{SM}				10	A
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I_S =1.5A, V_{GS}=0V			1.3	V
Body Diode Reverse Recovery Time (Note 1)		t_{rr}	I_S =2.0A, V_{GS}=0V, dI_F/dt=50A/μs		210		ns
Body Diode Reverse Recovery Charge		Q_{rr}			170		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle≤2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



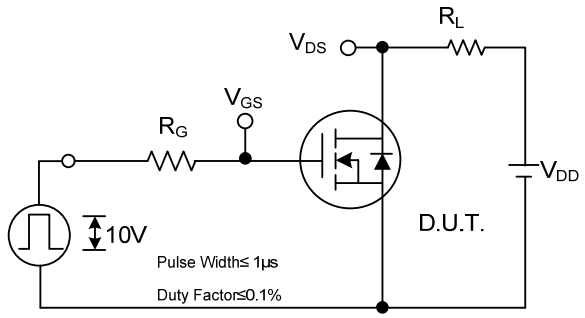
Peak Diode Recovery dv/dt Test Circuit



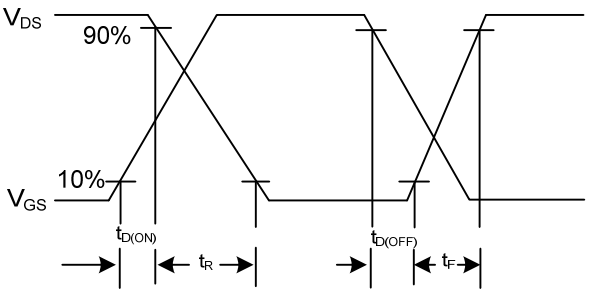
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

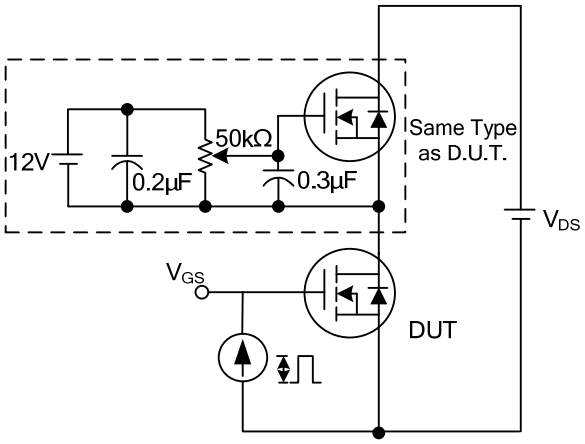
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



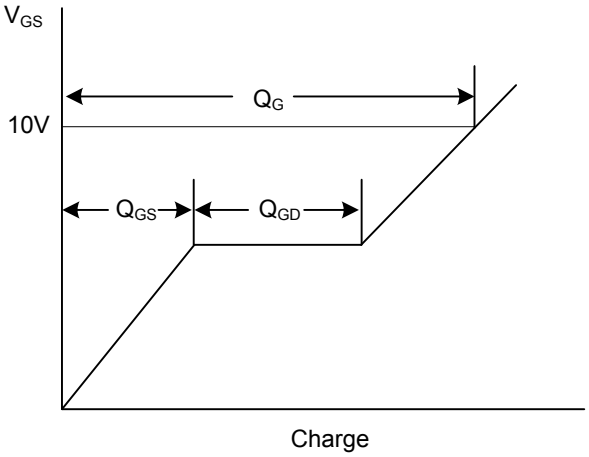
Switching Test Circuit



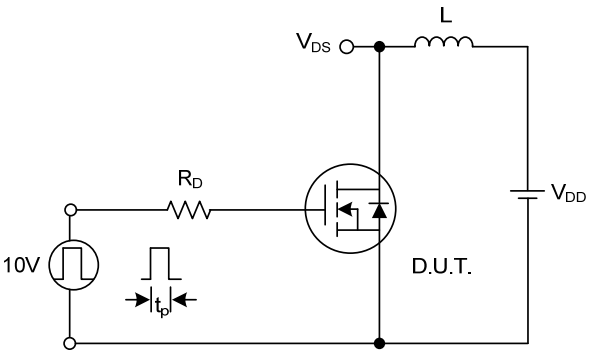
Switching Waveforms



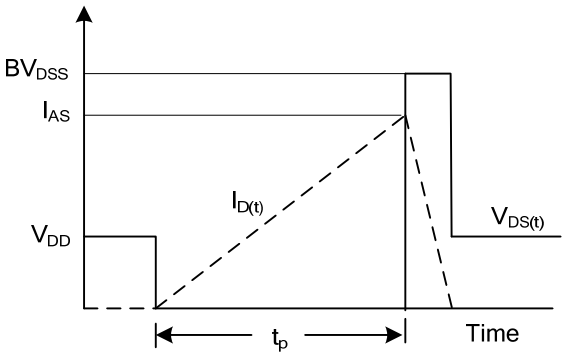
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms