

UNISONIC TECHNOLOGIES CO., LTD

UTT75N07

Preliminary

75A, 70V N-CHANNEL ENHANCEMENT MODE TRENCH POWER MOSFET

DESCRIPTION

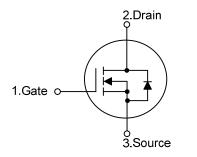
The UTC **UTT75N07** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low $R_{DS(ON)}$ and high switching speed characteristic by high cell density trench and low gate charge technology.

The UTC **UTT75N07** is suitable for high efficiency synchronous rectification in SMPS, UPS, hard switched and high frequency circuits.

FEATURES

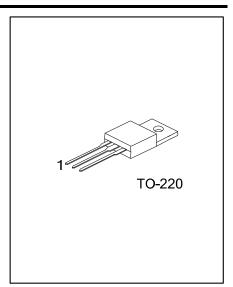
- * $R_{DS(ON)} \le 10 \text{ m}\Omega$ @ V_{GS} =10V, I_D =37.5A
- * High Cell Density Trench Technology
- * High Power and Current Handling Capability

SYMBOL



ORDERING INFORMATION

Ordering Number		Daakaga	Pin Assignment			Deaking	
Lead Free Halogen Free		Package	1	2	3	Packing	
UTT75N07L-TA3-T	UTT75N07L-TA3-T UTT75N07G-TA3-T		G	D	S	Tube	
Note: Pin Assignment: G: 0	Gate D: Drain S: Source						
	(1) T: Tube (2) TA3: TO-22((3) L: Lead Free		ogen Fre	e and Le	ead Free		
■ MARKING UTC UTT 75N07 L: Lead Free G: Halogen Free Data Code 1							
www.unisonic.com.tw						1 of 5	
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■ **ABSOLUTE MAXIMUM RATING** (T_c=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT	
				UNIT	
Drain-Source Voltage		V _{DSS}	70	V	
Gate-Source Voltage		V _{GSS}	±20	V	
Drain Current	Continuous	Ι _D	75	А	
	Pulsed (Note 2)	I _{DM}	300	А	
Avalanche Energy	Single Pulsed (Note 3)	E _{AS}	1382	mJ	
Peak Diode Recovery dv/dt (Note 4)		dv/dt	13	V/ns	
Power Dissipation		PD	110	W	
Junction Temperature		TJ	+150	°C	
Storage Temperature Range		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. L = 120mH, I_{AS} = 4.8A, V_{DD} = 48V, R_G = 25 Ω , Starting T_J = 25°C.
- 4. $I_{SD} \leq 30A$, di/dt $\leq 200A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J = 25^{\circ}C$.

THERMAL RESISTANCES CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient	θ _{JA}	62	°C/W	
Junction to Case	θ _{JC}	1.13	°C/W	

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

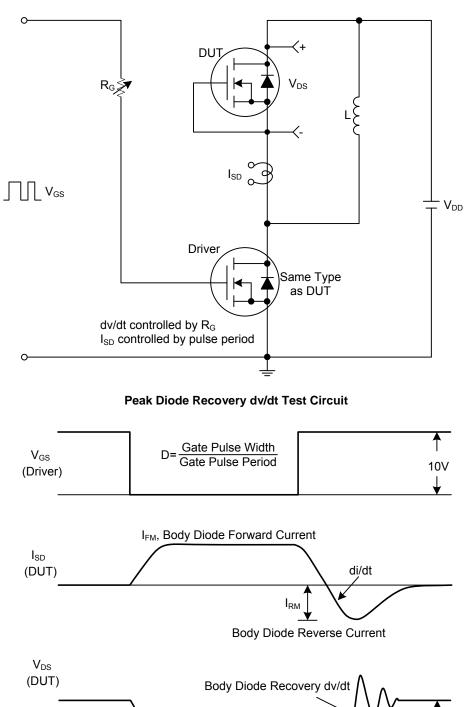
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	70			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =70V, V _{GS} =0V			1.0	μA
Gate-Source Leakage Current	Forward	1	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse	I _{GSS}	V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250µA			3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =37.5A			10	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		CISS			3700		pF
Output Capacitance		Coss	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		290		pF
Reverse Transfer Capacitance		C _{RSS}			245		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q_{G}			430		nC
Gate to Source Charge		Q_{GS}	V _{DS} =50V, V _{GS} =10V, I _D =1.3A, I _G =100µA (Note 1, 2)		20		nC
Gate to Drain Charge		Q_{GD}			34		nC
Turn-on Delay Time (Note 1)		t _{D(ON)}			64		ns
Rise Time		t _R	V _{DD} =30V, V _{GS} =10V, I _D =0.5A,		120		ns
Turn-off Delay Time		t _{D(OFF)}	R _G =25Ω (Note 1, 2)		1700		ns
Fall-Time		t _F			420		ns
SOURCE- DRAIN DIODE RATIN	GS AND CH	ARACTERIS	TICS				
Maximum Body-Diode Continuous Current		Is	~~~~~			75	Α
Maximum Body-Diode Pulsed Current		I _{SM}	TRE CON			300	Α
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I _S =75A, V _{GS} =0V			1.2	V
Reverse Recovery Time (Note 1)		t _{rr}	I _S =30A, V _{GS} =0V,		66		nS
Reverse Recovery Charge		Qrr	dl _F /dt =100A/µs		0.1		μC
Notes: 1. Pulse Test : Pulse width	n < 300us Du	ty cycle $\leq 2\%$					

Notes: 1. Pulse Test : Pulse width \leq 300µs, Duty cycle \leq 2%.

2. Essentially independent of operating ambient temperature.



■ TEST CIRCUITS AND WAVEFORMS



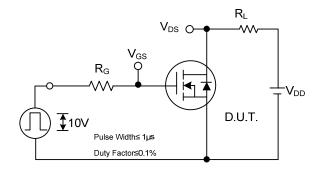
SD

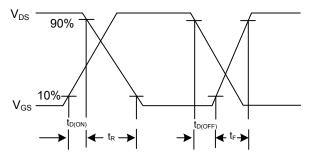
Body Diode Forward Voltage Drop Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

 V_{DD}

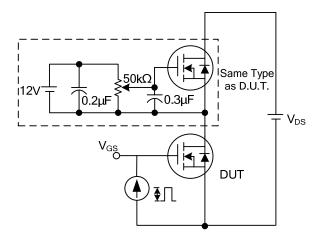
TEST CIRCUITS AND WAVEFORMS



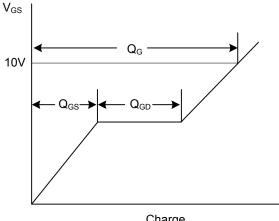


Switching Test Circuit



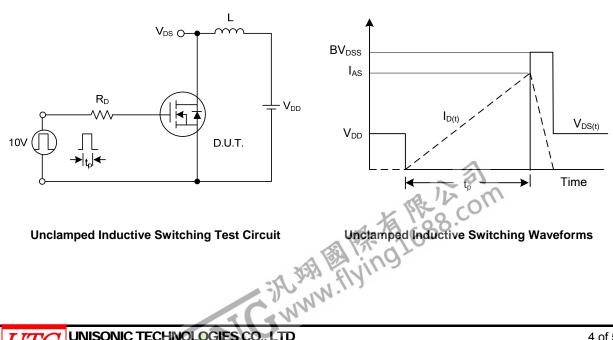


Gate Charge Test Circuit



Charge





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