

UNISONIC TECHNOLOGIES CO., LTD

URFP064 Preliminary Power MOSFET

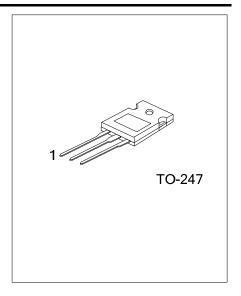
70A, 60V N-CHANNEL POWER MOSFET

■ DESCRIPTION

The UTC **URFP064** is an N-channel enhancement power MOSFET using UTC's advanced technology to provide the customers with a minimum on-state resistance and high switching speed.

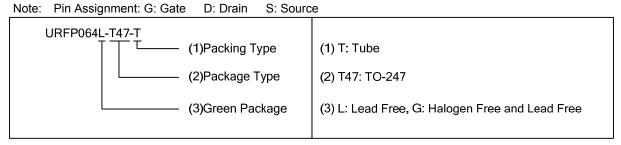
■ FEATURES

- * $R_{DS(ON)}$ <10m Ω @ V_{GS} =10V, I_D =35A
- * High Switching Speed

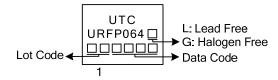


■ ORDERING INFORMATION

L	Ordering Number		Deelsess	Pin Assignment			Daakina	
Ī	Lead Free	Halogen Free	Package	1	2	3	Packing	
Ī	URFP064L-T47-T	URFP064G-T47-T	TO-247	G	D	S	Tube	



MARKING



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ABSOLUTE MAXIMUM RATINGS

PARAMETER Drain-Source Voltage Gate-Source Voltage		SYMBOL	RATINGS	UNIT	
		V_{DSS}	60	V	
		V_{GSS}	±20	V	
Drain Current	Continuous	I _D	70	Α	
	Pulsed (Note 2)	I _{DM}	280		
Single Pulsed Avalanche Energy Power Dissipation Junction Temperature Storage Temperature		E _{AS}	1500	mJ	
		P_{D}	190	W	
		T_J	-55 ~ + 150	°C	
		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} = 5.0A, V_{DD} = 25V, R_{G} = 25 $\Omega.$

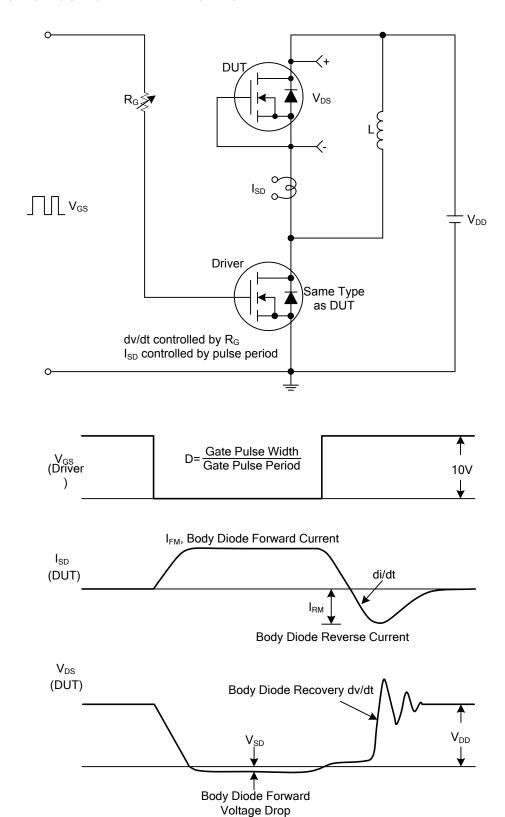
■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MINI	TVD	MAY	UNIT
	STIMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS	_	D\/	L -250A \/ -0\/	60			V
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	60			<u> </u>
Drain-Source Leakage Current		I _{DSS}	V_{DS} =60V, V_{GS} =0V			10	μΑ
Gate-Source Leakage Current	Forward	l _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
Cate Course Loundays Carront	Reverse	1000	V_{GS} =-20V, V_{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$I_D=250\mu A, V_{DS}=V_{GS}$	2.0		4.0	V
Static Drain-Source On-State Re	esistance	R _{DS(ON)}	V_{GS} =10V, I_D =35A			10	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	\/ -0\/ \/ -25\/		3800		pF
Output Capacitance		Coss	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		960		pF
Reverse Transfer Capacitance		C_{RSS}	1-1.01VII 12		75		pF
SWITCHING PARAMETERS							
Total Gate Charge Gate to Source Charge Gate to Drain Charge		Q_G	\/ -E0\/ \/ -10\/		265		nC
		Q_GS	V _{DD} =50V, V _{GS} =10V, I _D =1.3A, I _G =100µA,		30		nC
		Q_GD	ID-1.3A, IG-100μA,		60		nC
Turn-ON Delay Time		t _{D(ON)}			152		ns
Rise Time		t_R	V_{DD} =30V, I_{D} =0.5A,		304		ns
Turn-OFF Delay Time		t _{D(OFF)}	$R_G=25\Omega$, $V_{GS}=10V$		600		ns
Fall-Time		t_{F}			310		ns
SOURCE- DRAIN DIODE RATII	NGS AND CH	ARACTERIS'	TICS				
Maximum Body-Diode Continuou	us Current	Is				70	Α
Maximum Body-Diode Pulsed Current		I _{SM}				280	Α
Drain-Source Diode Forward Voltage		V_{SD}	I _S =70A, V _{GS} =0V			1.28	V
Body Diode Reverse Recovery Time (Note 1)		t _{rr}	I _S =70A, V _{GS} =0V dI _F /dt=100A/μs		74		ns
Body Diode Reverse Recovery Charge		Q_{rr}			0.2		μC

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

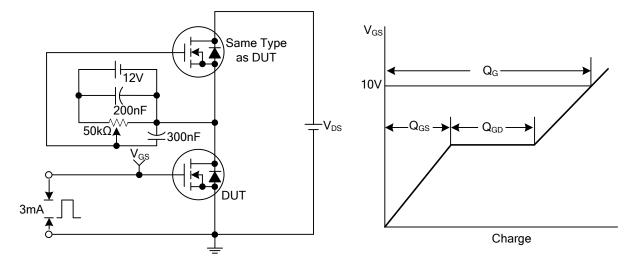
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



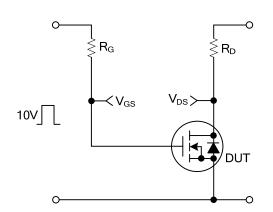
Peak Diode Recovery dv/dt Test Circuit and Waveforms

■ TEST CIRCUITS AND WAVEFORMS (Cont.)

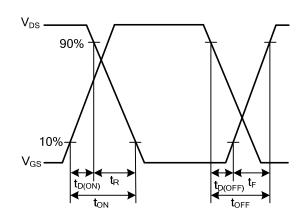


Gate Charge Test Circuit

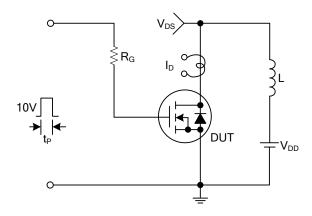
Gate Charge Waveforms



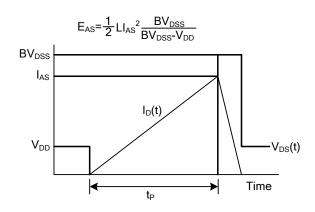
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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