



URFP064

Preliminary

Power MOSFET

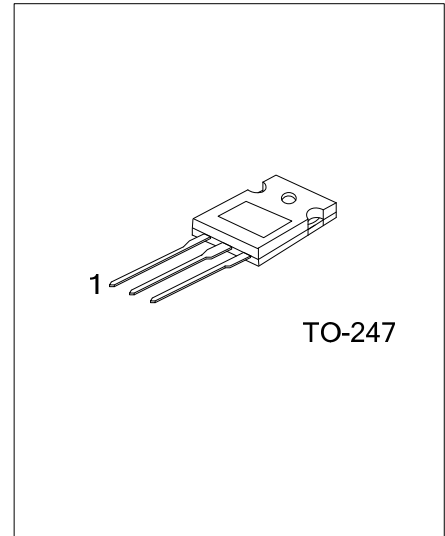
70A, 60V N-CHANNEL POWER MOSFET

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

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



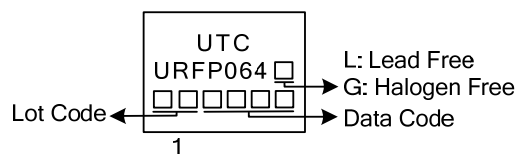
ORDERING INFORMATION

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

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

URFP064L-T47-T	(1)Packing Type	(1) T: Tube
	(2)Package Type	(2) T47: TO-247
	(3)Green Package	(3) L: Lead Free, G: Halogen Free and Lead Free

MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	Continuous	I_D	70
	Pulsed (Note 2)	I_{DM}	280
Single Pulsed Avalanche Energy	E_{AS}	1500	mJ
Power Dissipation	P_D	190	W
Junction Temperature	T_J	-55 ~ +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. $L = 120\text{mH}$, $I_{AS} = 5.0\text{A}$, $V_{DD} = 25\text{V}$, $R_G = 25\ \Omega$.

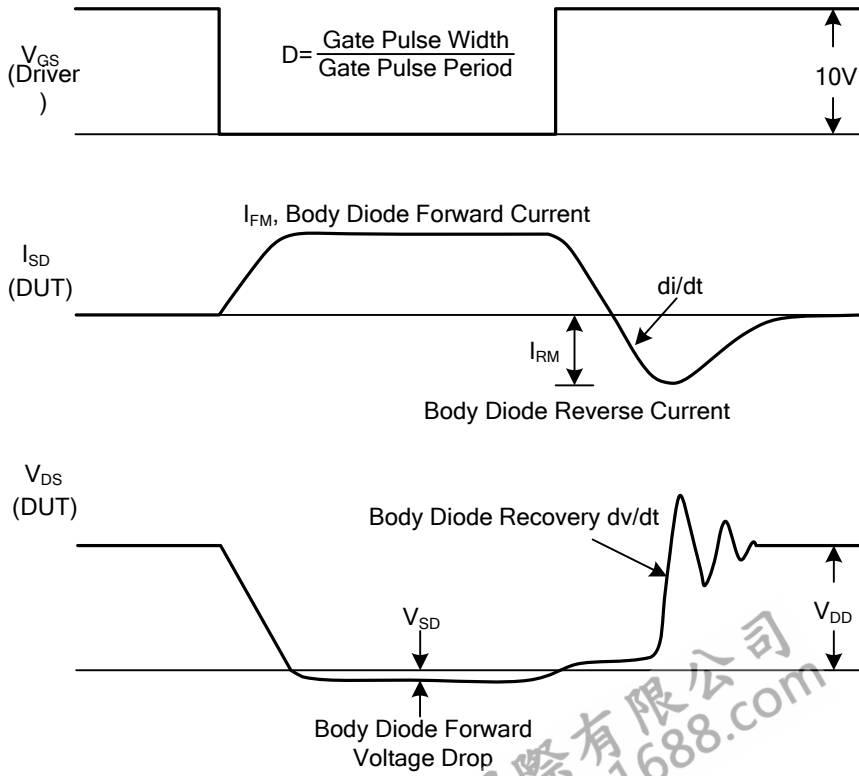
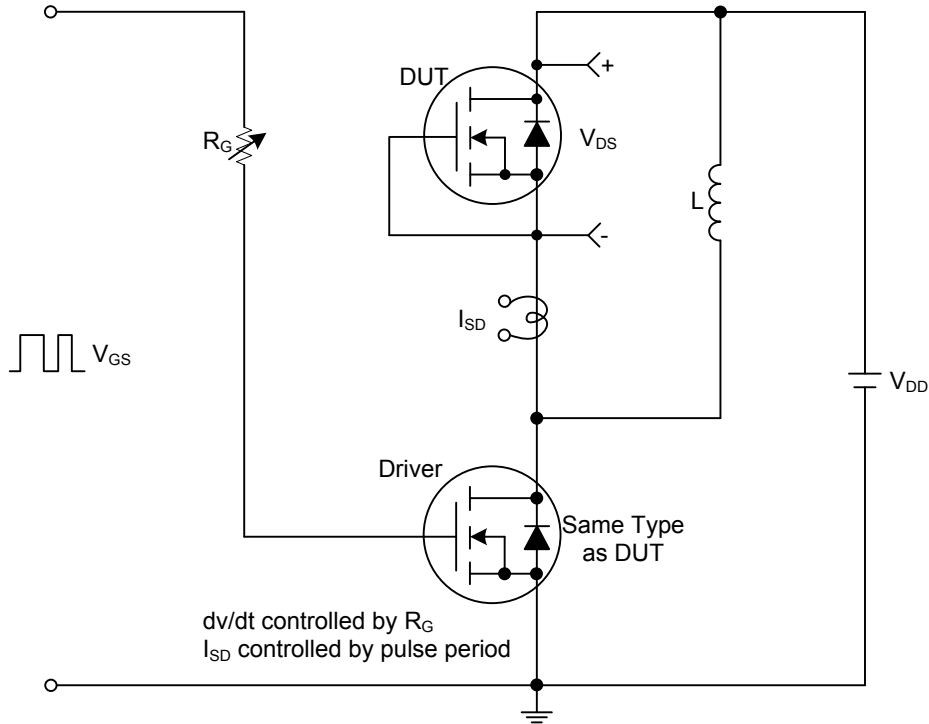
■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			10	μA
Gate-Source Leakage Current		I_{GSS}				
Reverse		$V_{GS}=-20\text{V}$, $V_{DS}=0\text{V}$			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$I_D=250\mu\text{A}$, $V_{DS}=V_{GS}$	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=35\text{A}$			10	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		3800		pF
Output Capacitance	C_{OSS}			960		pF
Reverse Transfer Capacitance	C_{RSS}			75		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $I_D=1.3\text{A}$, $I_G=100\mu\text{A}$,		265		nC
Gate to Source Charge	Q_{GS}			30		nC
Gate to Drain Charge	Q_{GD}			60		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$, $I_D=0.5\text{A}$, $R_G=25\Omega$, $V_{GS}=10\text{V}$		152		ns
Rise Time	t_R			304		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			600		ns
Fall-Time	t_F			310		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				70	A
Maximum Body-Diode Pulsed Current	I_{SM}				280	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=70\text{A}$, $V_{GS}=0\text{V}$			1.28	V
Body Diode Reverse Recovery Time (Note 1)	t_{rr}	$I_S=70\text{A}$, $V_{GS}=0\text{V}$ $di_F/dt=100\text{A}/\mu\text{s}$		74		ns
Body Diode Reverse Recovery Charge	Q_{rr}			0.2		μC

Notes: 1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

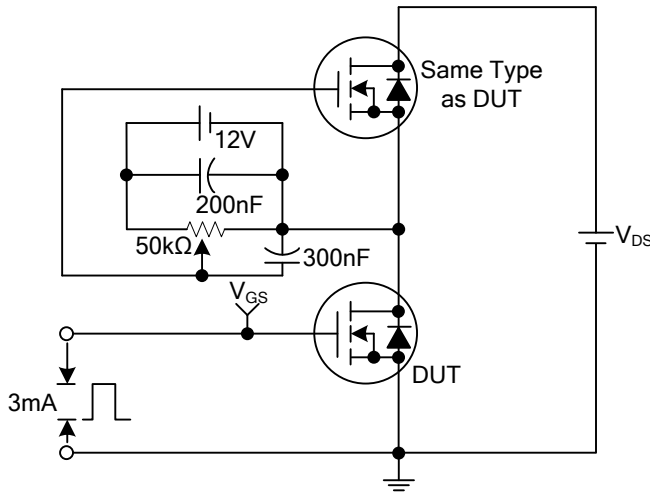
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

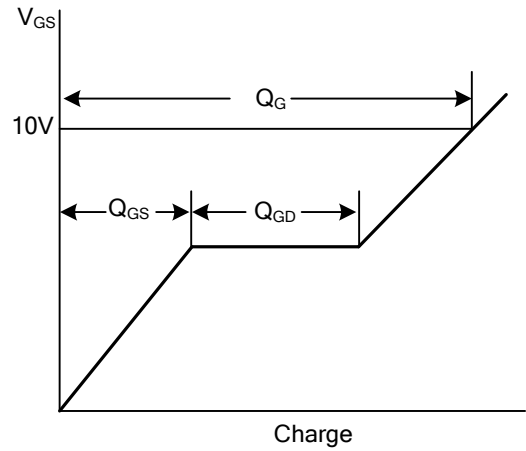


Peak Diode Recovery dv/dt Test Circuit and Waveforms

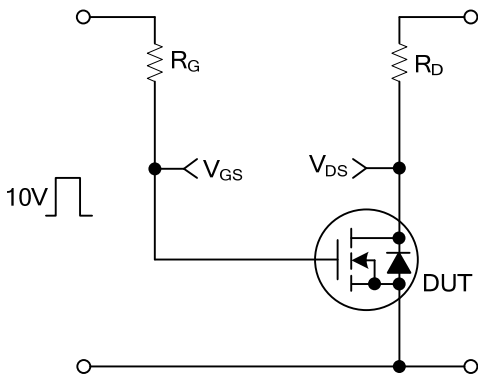
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



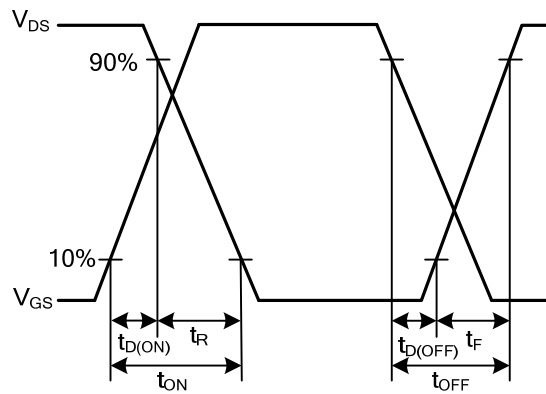
Gate Charge Test Circuit



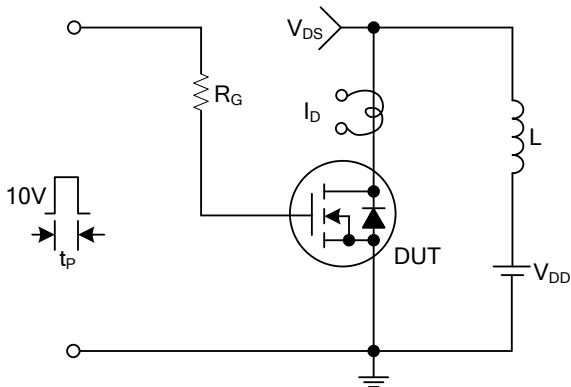
Gate Charge Waveforms



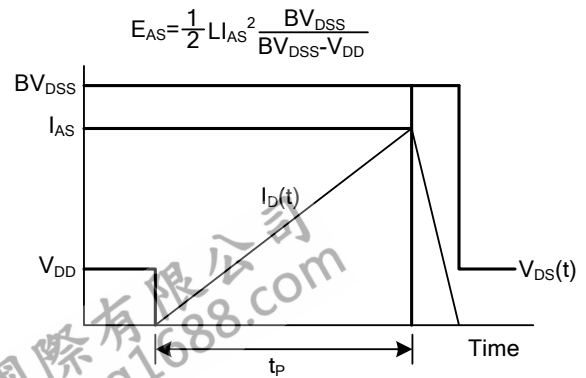
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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