



UF40N07

Preliminary

Power MOSFET

40A, 70V N-CHANNEL POWER MOSFET

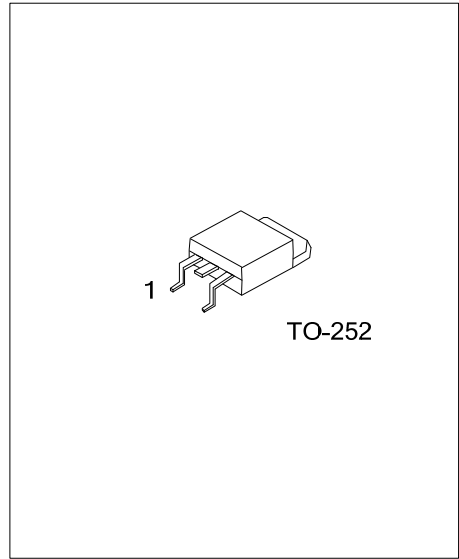
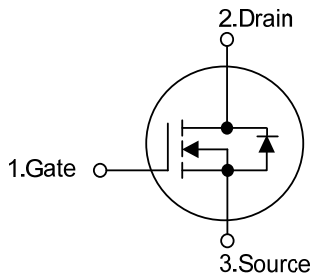
DESCRIPTION

The UTC **UF40N07** is a high voltage power MOSFET and is designed to have better characteristics, such as fast switching time, low gate charge, low on-state resistance and have a high rugged avalanche characteristics. This power MOSFET is usually used at high speed switching applications in power supplies, PWM motor controls, high efficient DC to DC converters and bridge circuits.

FEATURES

- * $R_{DS(ON)} < 25\text{ m}\Omega @ V_{GS}=10\text{V}, I_D=20\text{A}$
- * High switching speed
- * 100% avalanche tested

SYMBOL



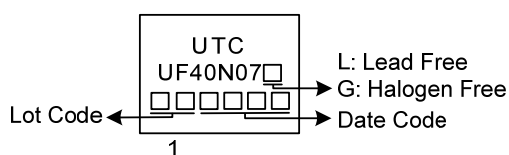
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF40N07L-TN3-R	UF40N07G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UF40N07G-TN3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free and Lead Free L: Lead Free</p>
--	--

MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A =25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	70	V
Gate-Source Voltage		V _{GSS}	±25	V
Continuous Drain Current	Continuous	I _D	40	A
	Pulsed	I _{DM}	160	A
Avalanche Energy		E _{AS}	200	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	18	V/ns
Power Dissipation		P _D	1	mW
Junction Temperature		T _J	+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=0.8mH, I_{AS}=22.3A, V_{DD}=50V, R_G=25 Ω, Starting T_J = 25°C

4. I_{SD} ≤30A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	110	°C/W
Junction to Case	θ _{JC}	1.95	°C/W

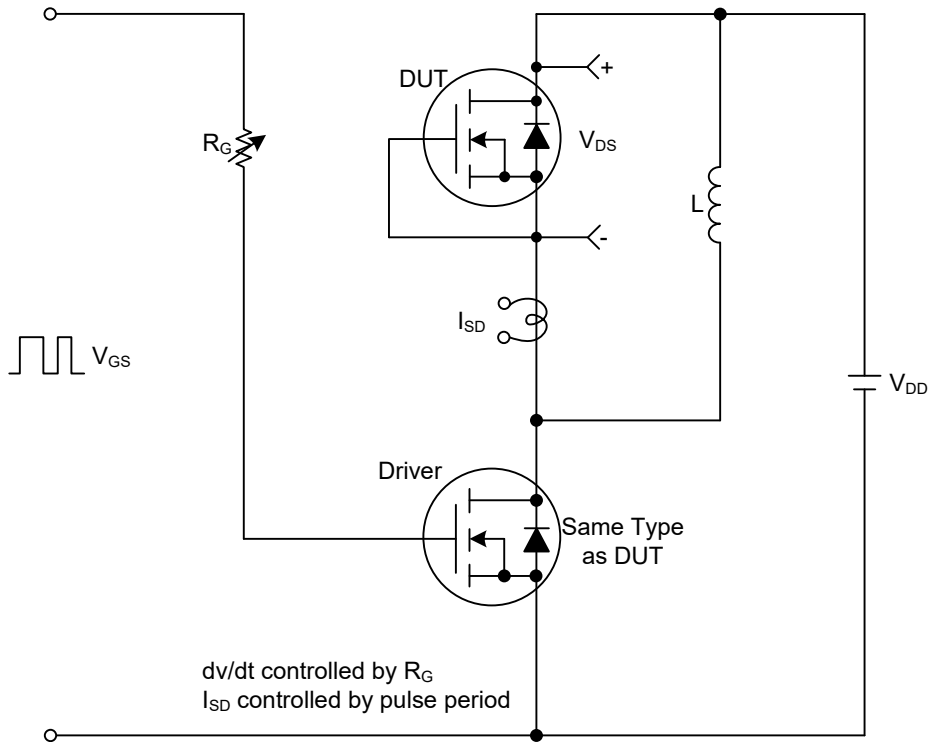
■ ELECTRICAL CHARACTERISTICS (T_A =25°C, unless otherwise specified)

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	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			10	μA
		V _{GS} =-20V, V _{DS} =0V			-10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	I _D =250μA, V _{DS} =V _{GS}	2.0		4.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A			25	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		1613		pF
Output Capacitance	C _{OSS}			306		pF
Reverse Transfer Capacitance	C _{RSS}			36		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q _G	V _{GS} =50V, V _{DS} =50V, I _D =1.3A I _G =100μA (Note 1, 2)		116		nC
Gate to Source Charge	Q _{GS}			9		nC
Gate to Drain Charge	Q _{GD}			14		nC
Turn-ON Delay Time (Note 1)	t _{D(ON)}	V _{GS} =30V, V _{DD} =30V, R _G =25Ω, I _D =0.5A (Note 1, 2)		70		ns
Rise Time	t _R			72		ns
Turn-OFF Delay Time	t _{D(OFF)}			360		ns
Fall-Time	t _F			100		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				40	A
Maximum Body-Diode Pulsed Current	I _{SM}				160	A
Drain-Source Diode Forward Voltage (Note 1)	V _{SD}	I _S =40A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time (Note 1)	t _{rr}	I _S =40A, V _{GS} =0V dI _F /dt = 100A/μs		66		ns
Body Diode Reverse Recovery Charge	Q _{rr}				0.16	

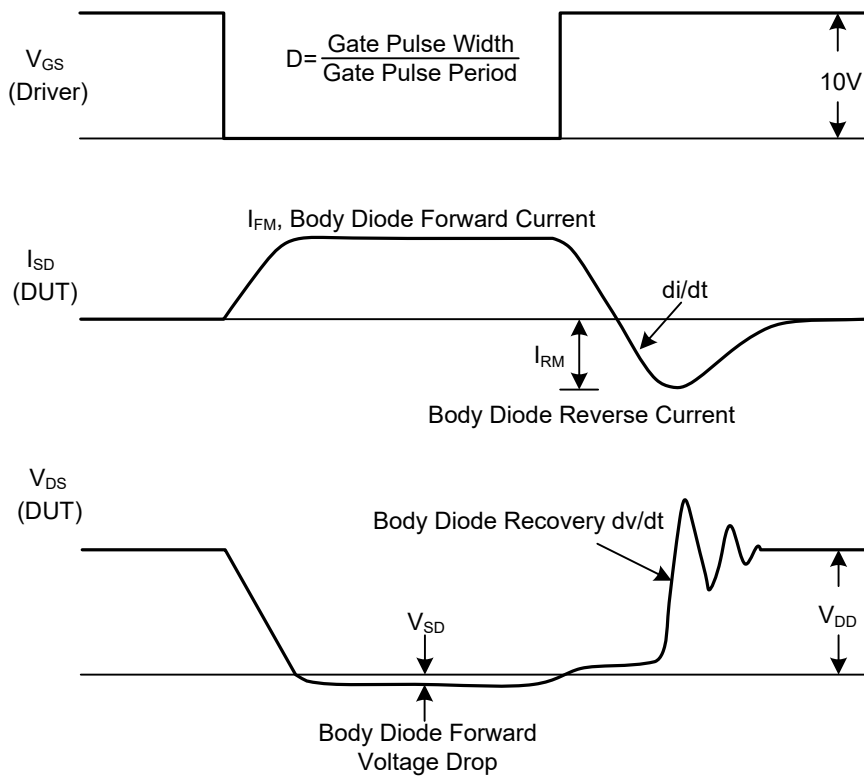
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

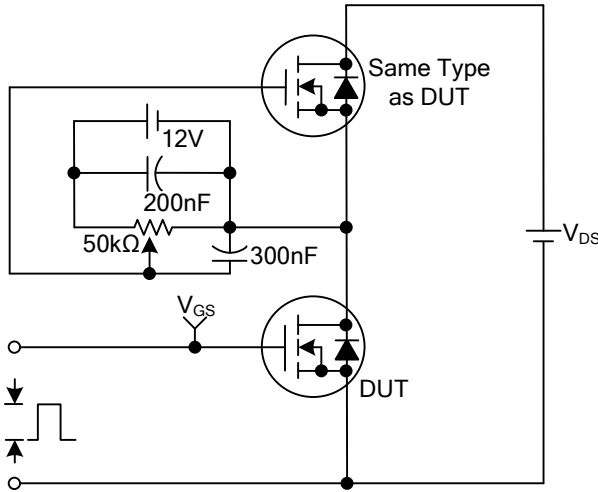


Peak Diode Recovery dv/dt Test Circuit

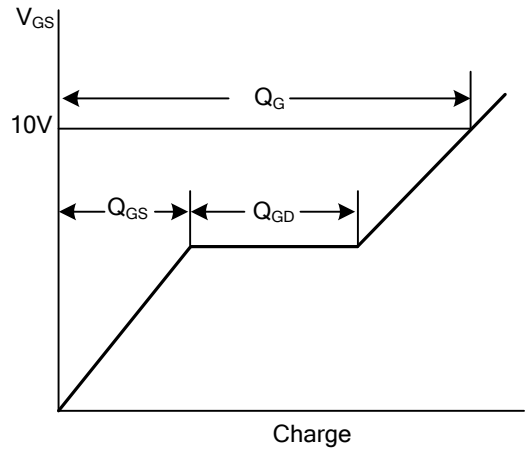


Peak Diode Recovery dv/dt Waveforms

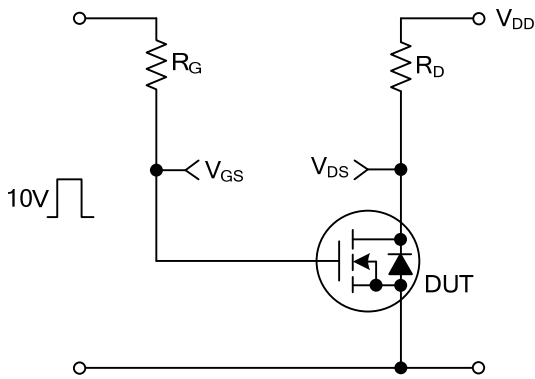
■ TEST CIRCUITS AND WAVEFORMS



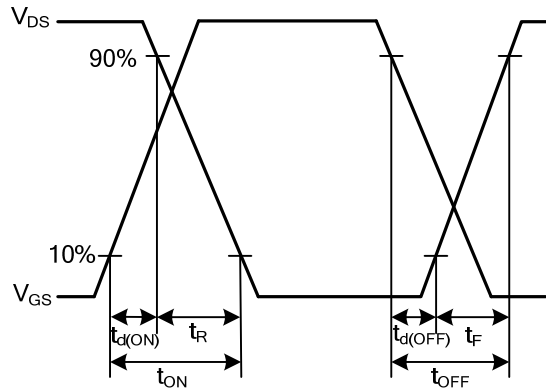
Gate Charge Test Circuit



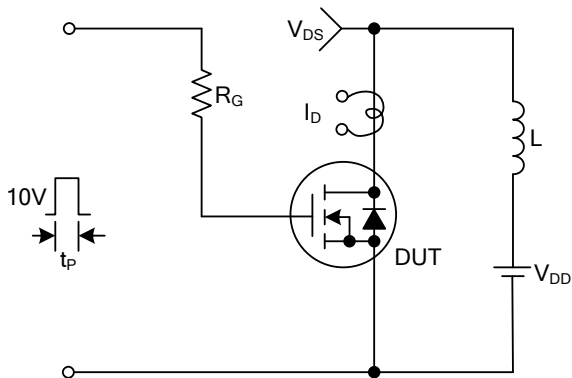
Gate Charge Waveforms



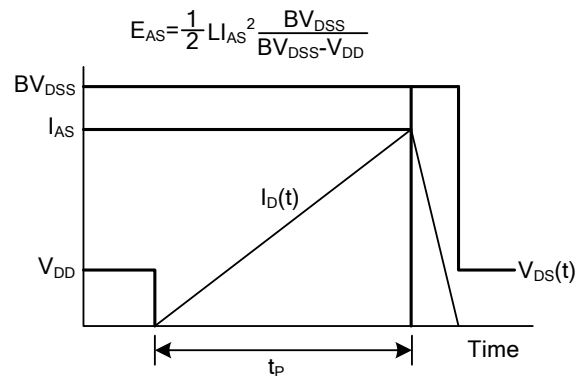
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.