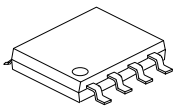
20A, 30V N-CHANNEL POWER MOSFET



SOP-8

■ DESCRIPTION

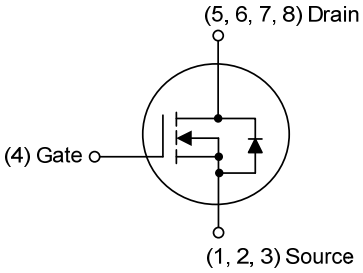
The UTC **UF7832** is an N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low Rdson characteristic by high cell density trench technology.

The UTC **UF7832** is suitable for high frequency DC-DC converters with synchronous rectification applications.

■ FEATURES

* $R_{DS(ON)}$ < 4.0mΩ @ V_{GS}=10V, I_D=10A
  $R_{DS(ON)}$ < 5.5mΩ @ V_{GS}=4.5V, I_D=16A
* High Power and Current Handling Capability
* High Cell Density Trench Technology

■ SYMBOL



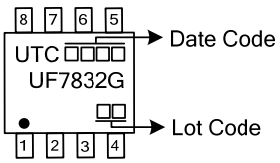
■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
UF7832G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

UF7832G-S08-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current	Continuous	I_D	20	A
Pulsed Drain Current	Pulsed (Note 2)	I_{DM}	80	A
Avalanche Current (Note 3)		I_{AR}	16	A
Avalanche energy	Single Pulsed (Note 3)	E_{AS}	256	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.0	V/ns
Power Dissipation		P_D	3.5	W
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=2.0mH, I_{AS}=16A, V_{DD}=50V, R_G=25Ω, Starting T_J = 25°C.
4. I_{SD} ≤ 20A, di/dt ≤ 200A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J = 25°C.

■ THERMAL DATA

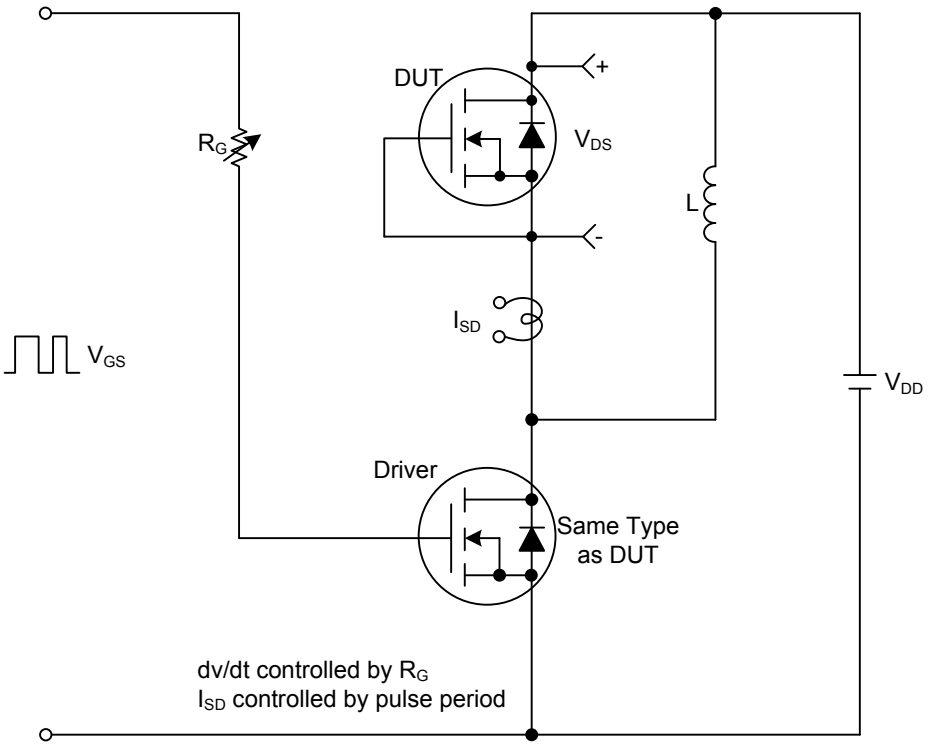
PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	50	°C/W
Junction to Case	θ_{JC}	35.7	°C/W

■ ELECTRICAL CHARACTERISTICS

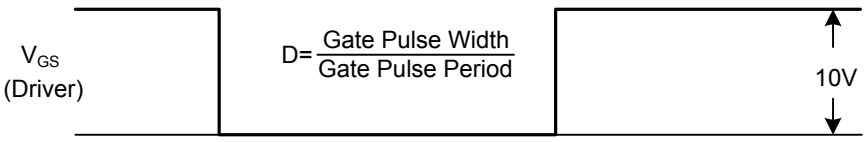
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	30			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		2.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=20A			4.0	mΩ
			V_{GS}=4.5V, I_D=16A			5.5	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1MHz		4150		pF
Output Capacitance		C_{OSS}			760		pF
Reverse Transfer Capacitance		C_{RSS}			700		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q_G	V_{DS}= 50V, V_{GS}=10V, I_D=1.3A, I_G=100μA (Note 1, 2)		34		nC
Gate to Source Charge		Q_{GS}			8.6		nC
Gate to Drain Charge		Q_{GD}			12		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)		88		ns
Rise Time		t_R			352		ns
Turn-off Delay Time		$t_{D(OFF)}$			1620		ns
Fall-Time		t_F			1060		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				20	A
Maximum Body-Diode Pulsed Current		I_{SM}				80	A
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I_S=16A, V_{GS}=0V			1.0	V
Reverse Recovery Time (Note 1)		t_{rr}	I_F=20A, V_{GS}=0V, d_I/dt=100A/μs		500		nS
Reverse Recovery Charge		Q_{rr}			1.5		μC

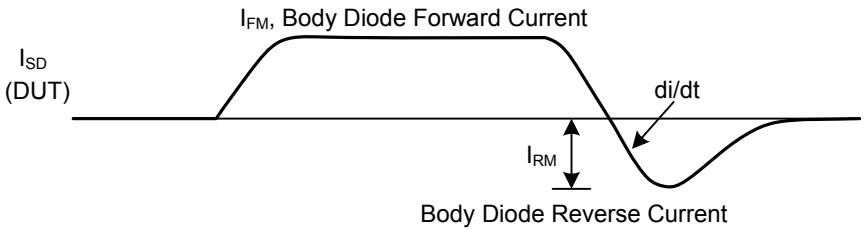
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

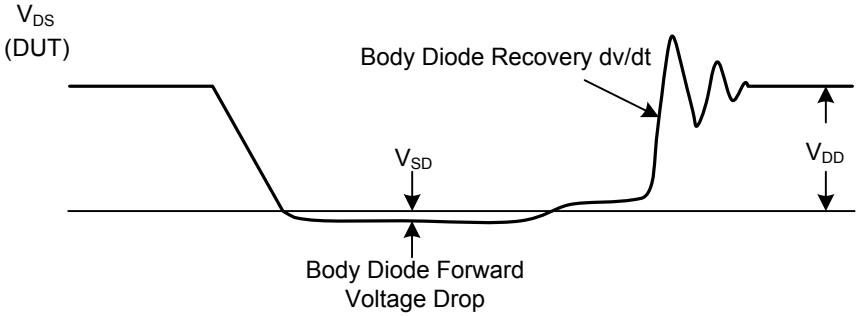
■ TEST CIRCUITS AND WAVEFORMS



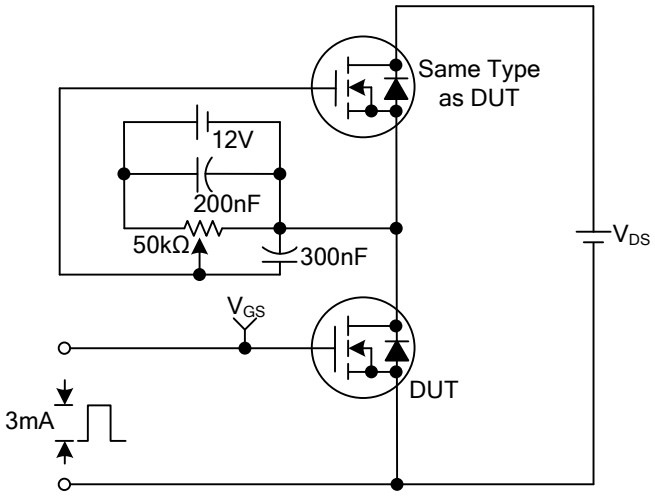
Peak Diode Recovery dv/dt Test Circuit & Waveforms



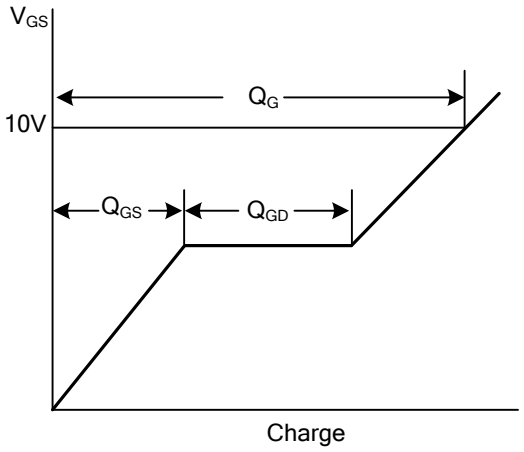




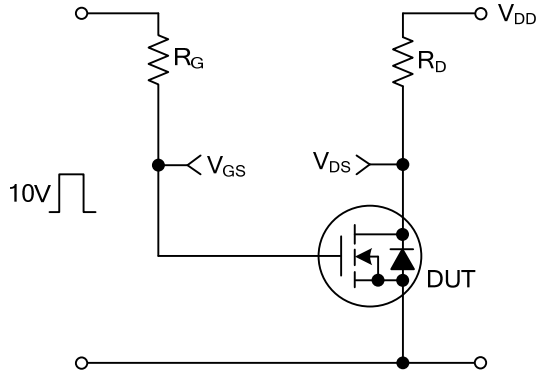
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



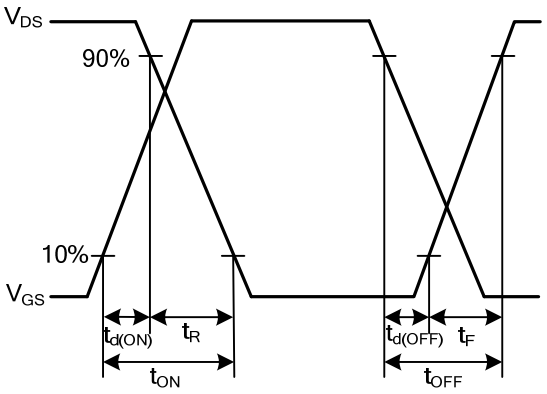
Gate Charge Test Circuit



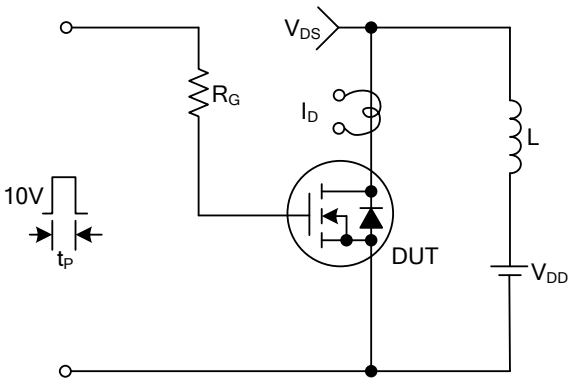
Gate Charge Waveforms



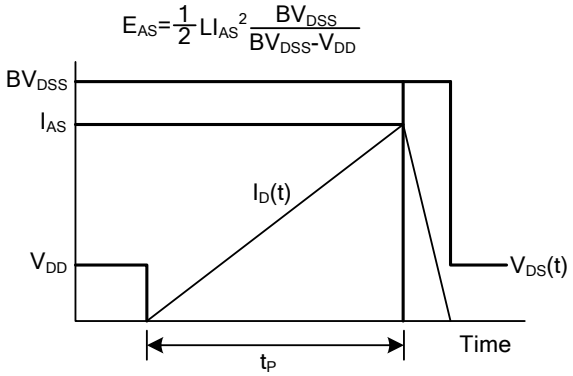
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms