

UNISONIC TECHNOLOGIES CO., LTD

UF7832 Preliminary Power MOSFET

20A, 30V N-CHANNEL POWER MOSFET

■ DESCRIPTION

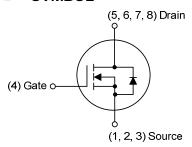
The UTC **UF7832** is an N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low Rdson characteristic by high cell density trench technology.

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

■ FEATURES

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

■ SYMBOL



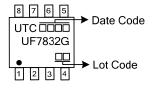
ORDERING INFORMATION

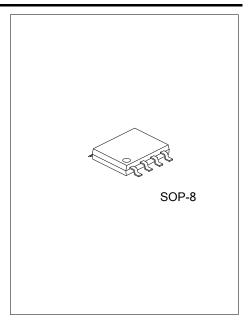
Ordering Number	Package	Pin Assignment								Dealine	
		1	2	3	4	5	6	7	8	Packing	
UF7832G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel	

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

UF7832G-S08-R
(1)Packing Type (1) R: Tape Reel
(2) S08: SOP-8
(3)Green Package (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	Α	
Pulsed Drain Current	Pulsed (Note 2)	I _{DM}	80	Α	
Avalanche Current (Note 3)		I _{AR}	16	Α	
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		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=2.0mH, I_{AS}=16A, V_{DD}=50V, R_G=25 Ω , Starting T_J = 25 $^{\circ}$ C.
- 4. $I_{SD} \le 20A$, $di/dt \le 200A/\mu s$, $V_{DD} \le V_{(BR)DSS}$, $T_J = 25$ °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

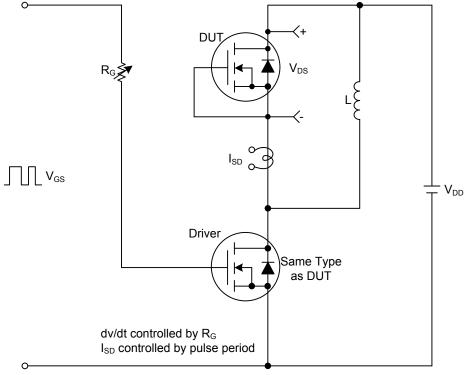
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT			
OFF CHARACTERISTICS									
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	30			V			
Drain-Source Leakage Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	μA			
Coto Source Logicore Current Forward		V _{GS} =+20V, V _{DS} =0V			100	nA			
Gate-Source Leakage Current Reverse	I _{GSS}	V _{GS} =-20V, V _{DS} =0V			-100	nA			
ON CHARACTERISTICS									
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_{D}=250\mu A$	1.0		2.5	V			
Otatia Basia Garage On Otata Basiatana		V _{GS} =10V, I _D =20A			4.0	mΩ			
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =16A			5.5	mΩ			
DYNAMIC PARAMETERS									
Input Capacitance	C _{ISS}			4150		pF			
Output Capacitance	Coss	V _{GS} =0V, V _{DS} =25V, f=1MHz		760		pF			
Reverse Transfer Capacitance	C _{RSS}			700		pF			
SWITCHING PARAMETERS									
Total Gate Charge (Note 1)	Q_{G}	V _{DS} = 50V, V _{GS} =10V,		34		nC			
Gate to Source Charge	Q_GS	I _D =1.3A, I _G =100μA		8.6		nC			
Gate to Drain Charge	Q_GD	(Note 1, 2)		12		nC			
Turn-on Delay Time (Note 1)	t _{D(ON)}			88		ns			
Rise Time	t _R	V_{DS} =30V, V_{GS} =10V, I_{D} =0.5A,		352		ns			
Turn-off Delay Time	t _{D(OFF)}	R _G =25Ω (Note 1, 2)		1620		ns			
Fall-Time	t _F			1060		ns			
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS									
Maximum Body-Diode Continuous Current	Is				20	Α			
Maximum Body-Diode Pulsed Current	I _{SM}				80	Α			
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,		500		nS			
Reverse Recovery Charge	Q _{rr}	d _I /dt=100A/µs		1.5		μC			

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

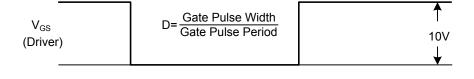
2. Essentially independent of operating temperature.

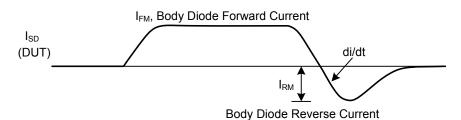


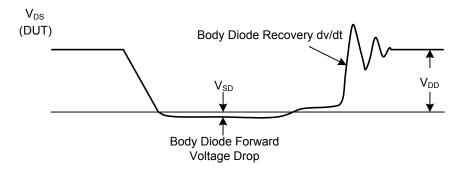
■ TEST CIRCUITS AND WAVEFORMS



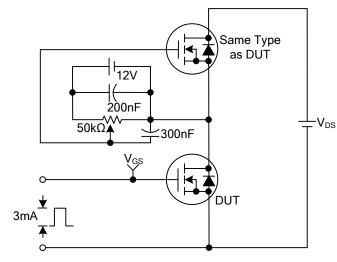
Peak Diode Recovery dv/dt Test Circuit & Waveforms



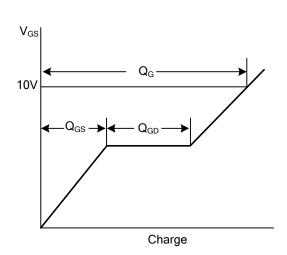




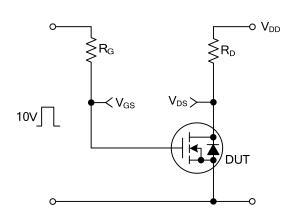
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



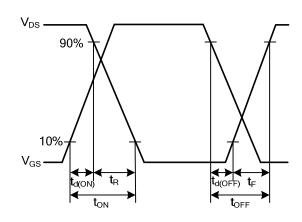
Gate Charge Test Circuit



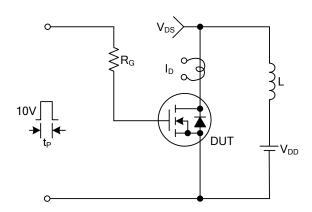
Gate Charge Waveforms



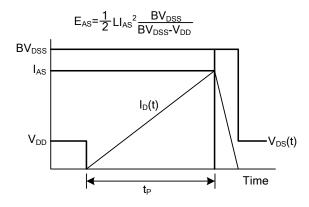
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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