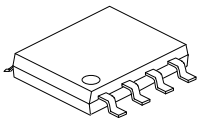
N-CHANNEL POWER MOSFET



SOP-8

■ DESCRIPTION

The UTC **UF7476** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and minimum on-state resistance.

The UTC **UF7476** is suitable for various applications such as power management for Netcom, computing and portable applications, etc.

■ FEATURES

* $R_{DS(ON)}$ < 8.0 mΩ @ V_{GS}=4.5V, I_D=15A
  $R_{DS(ON)}$ < 30 mΩ @ V_{GS}=2.8V, I_D=12A
* Ultra-low gate impedance
* High switching speed

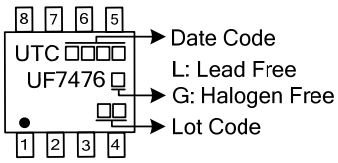
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UF7476L-S08-R	UF7476G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

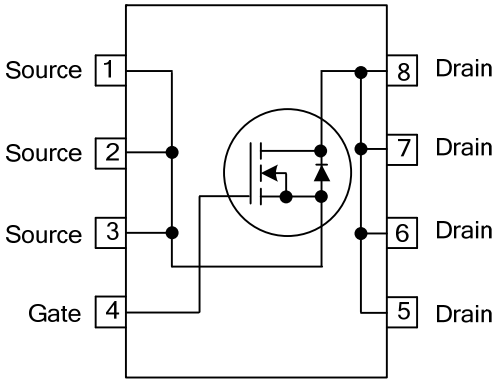
Note: Pin Assignment: G: Gate D: Drain S: Source

UF7476G-S08-R (1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) S08: SOP-8
(3)Green Package	(3) G: Halogen Free and Lead Free

■ MARKING



■ PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATING

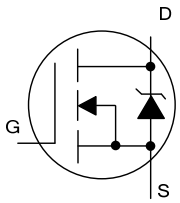
PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	12	V
Gate-Source Voltage			V_{GSS}	±12	V
Drain Current	Continuous	T_A=25°C	I_D	15	A
		T_A=70°C		12	A
	Pulsed (Note 1)		I_{DM}	120	A
Avalanche Current (Note 1)			I_{AR}	12	A
Avalanche Energy (Note 3)			E_{AS}	14.4	mJ
Power Dissipation (Note 4)		T_A=25°C	P_D	2.5	W
Linear Derating Factor				0.02	W/°C
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. Starting T_J = 25°C, L=0.8mH, I_{AS}=6.0A, R_G = 25Ω
4. When mounted on 1 inch square copper board.

■ THERMAL RESISTANCE

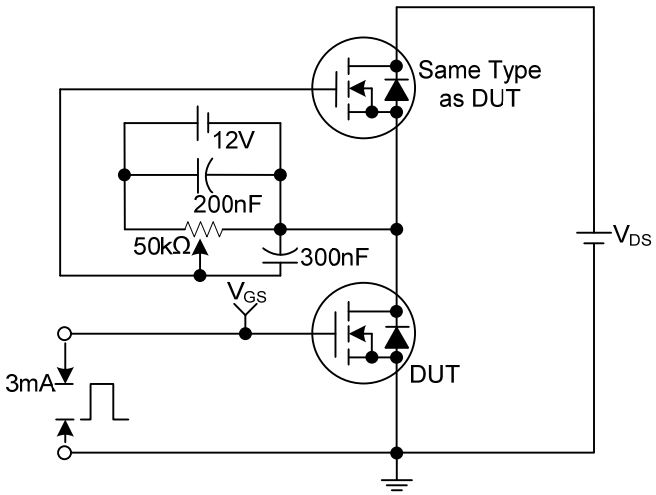
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 4)	θ_{JA}	75	°C/W

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

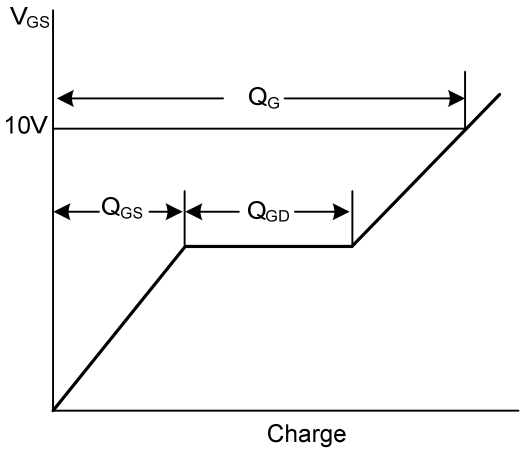
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	12			V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=1mA		0.014		V/°C
Drain-Source Leakage Current		I_{DSS}	V_{DS}=9.6V, V_{GS}=0V			100	μA
			V_{DS}=9.6V, V_{GS}=0V, T_J=125°C			250	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=12V, V_{DS}=0V			200	nA
	Reverse		V_{GS}=-12V, V_{DS}=0V			-200	nA
ON CHARACTERISTICS							
Static Drain-Source On-State Resistance (Note)		$R_{DS(ON)}$	V_{GS}=4.5V, I_D=15A		6.0	8.0	mΩ
			V_{GS}=2.8V, I_D=12A		12	30	mΩ
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	0.6		1.9	V
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=6.0V, f=1.0MHz		2550		pF
Output Capacitance		C_{OSS}			2190		pF
Reverse Transfer Capacitance		C_{RSS}			450		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	I_D=12A, V_{DS}=10V, V_{GS}=4.5V		26	40	nC
Gate to Source Charge		Q_{GS}			4.6		nC
Gate to Drain ("Miller") Charge		Q_{GD}			11		nC
Output Gate Charge		Q_{OSS}	V_{DS}=5.0V, V_{GS}=0V		17		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=6.0V, I_D=12A, R_G=1.8Ω V_{GS}=4.5V (Note)		11		ns
Rise Time		t_R			29		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			19		ns
Fall Time		t_F			8.3		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body Diode Continuous Source Current		I_S	MOSFET symbol showing the integral reverse p-n junction diode.			2.5	A
Maximum Body Diode Pulsed Current (Note 1)		I_{SM}				120	A
Drain-Source Diode Forward Voltage (Note)		V_{SD}	T_J=25°C, I_S=12A, V_{GS}=0V		0.87	1.2	V
			T_J=125°C, I_S=12A, V_{GS}=0V		0.73		V
Body Diode Reverse Recovery Time		t_{rr}	T_J=25°C, I_F=12A, V_R=12V, di/dt=100A/μs (Note)		55	82	ns
Body Diode Reverse Recovery Charge		Q_{rr}			59	89	nC
Body Diode Reverse Recovery Time		t_{rr}	T_J=125°C, I_F=12A, V_R=12V, di/dt=100A/μs (Note)		54	81	ns
Body Diode Reverse Recovery Charge		Q_{rr}			60	90	nC

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

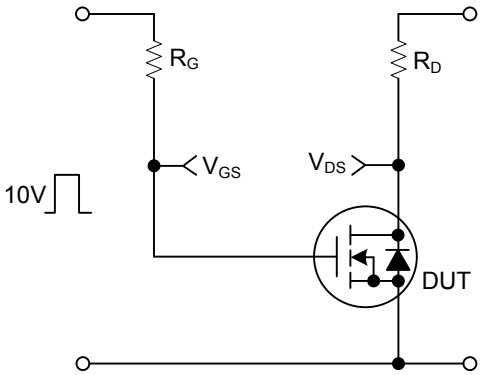
■ TEST CIRCUITS AND WAVEFORMS



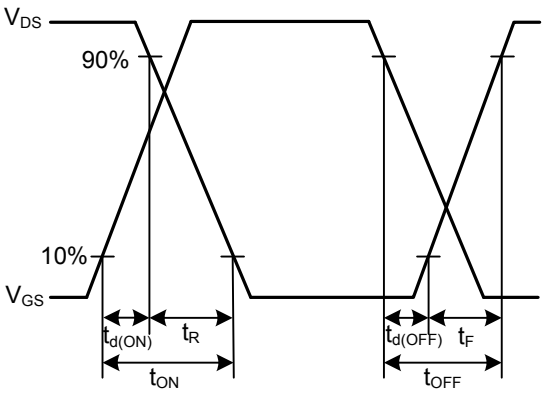
Gate Charge Test Circuit



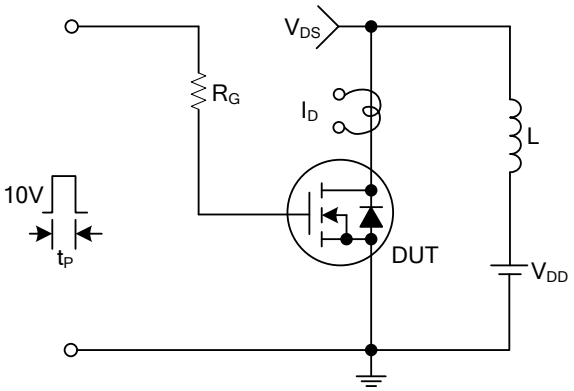
Gate Charge Waveforms



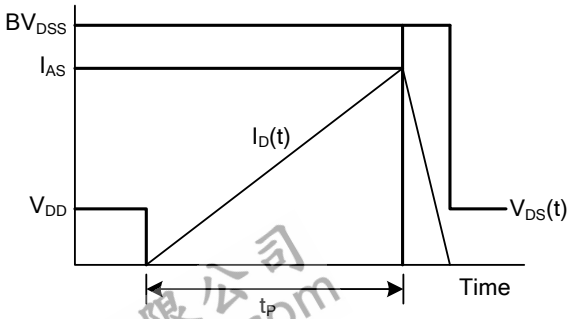
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms