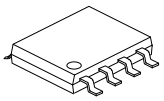
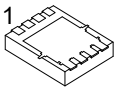
N-CHANNEL POWER MOSFET



SOP-8



PDFN5×6

■ DESCRIPTION

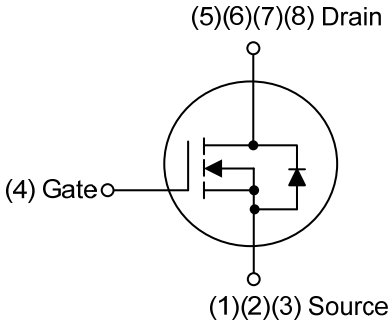
The UTC **UF7476** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and minimum on-state resistance.

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

■ FEATURES

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

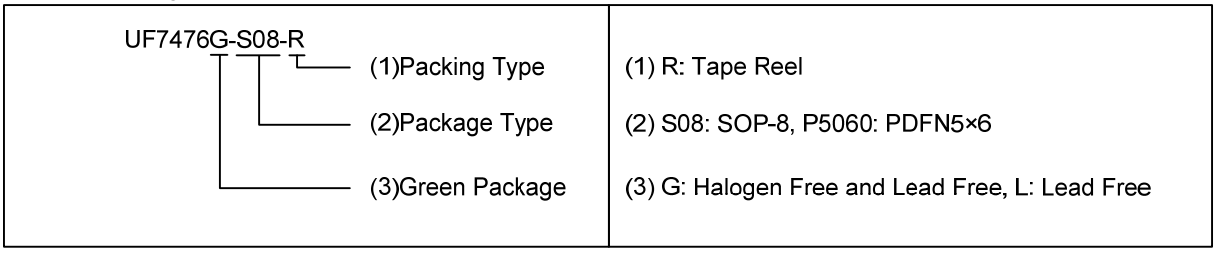
■ SYMBOL



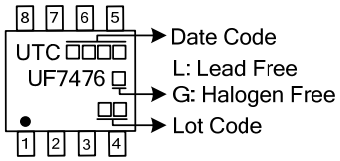
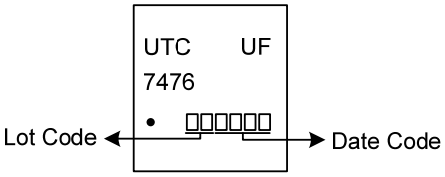
■ ORDERING INFORMATION

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
UF7476L-P5060-R	UF7476G-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

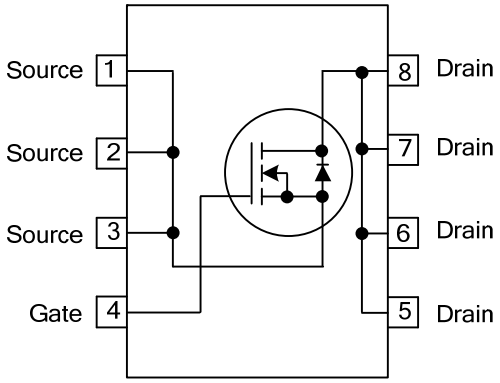
Note: Pin Assignment: G: Gate D: Drain S: Source



■ MARKING

SOP-8	PDFN5×6
	

■ 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 Energy (Note 3)			E_{AS}	71	mJ
Power Dissipation (Note 4)	SOP-8	T_A=25°C	P_D	2.5	W
	PDFN5×6			20	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 = 0.8mH, I_{AS} = 13.3A, R_G = 25Ω, Starting T_J = 25°C
4. When mounted on 1 inch square copper board.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 4)	SOP-8	θ_{JA}	75	°C/W
	PDFN5×6		65	°C/W

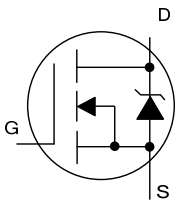
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ 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
Drain-Source Leakage Current		I_{DSS}	V_{DS}=9.6V, V_{GS}=0V			100	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							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	0.6		1.9	V
Static Drain-Source On-State Resistance (Note)		$R_{DS(ON)}$	V_{GS}=4.5V, I_D=15A			8.0	mΩ
			V_{GS}=2.8V, I_D=12A			30	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=6.0V, f=1.0MHz		1750		pF
Output Capacitance		C_{OSS}			770		pF
Reverse Transfer Capacitance		C_{RSS}			730		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	I_D=12A, V_{DS}=10V, V_{GS}=4.5V		29		nC
Gate to Source Charge		Q_{GS}			3		nC
Gate to Drain ("Miller") Charge		Q_{GD}			13		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=6.0V, V_{GS}=4.5V, I_D=12A, R_G=3Ω		12		ns
Rise Time		t_R			19		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			40		ns
Fall Time		t_F			36		ns

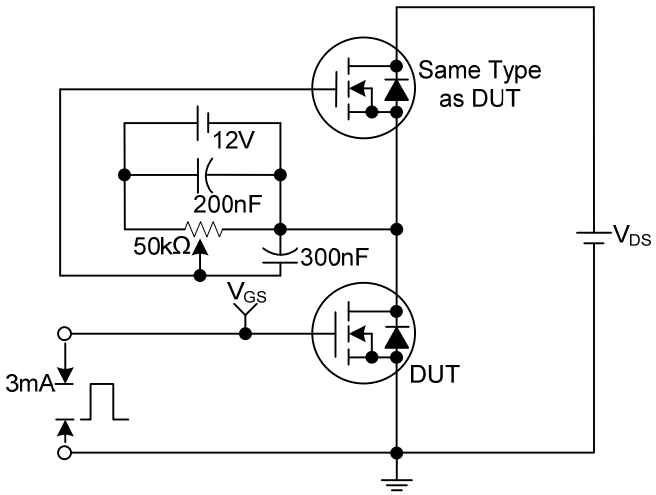
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ ELECTRICAL CHARACTERISTICS (Cont.)

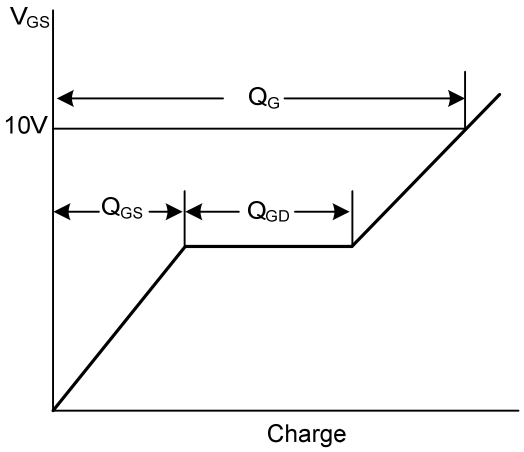
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body Diode Continuous Source Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode. 			2.5	A
Maximum Body Diode Pulsed Current (Note 1)	I_{SM}				120	A
Drain-Source Diode Forward Voltage (Note)	V_{SD}	I_S=12A, V_{GS}=0V, T_J=25°C		0.87	1.2	V

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

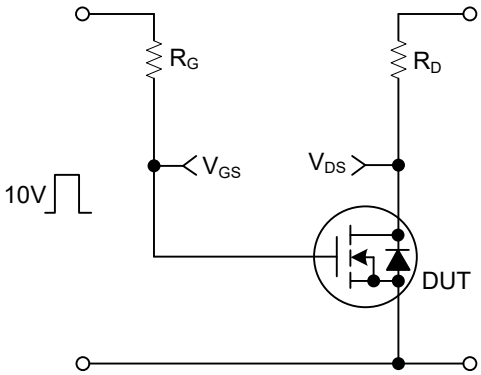
■ TEST CIRCUITS AND WAVEFORMS



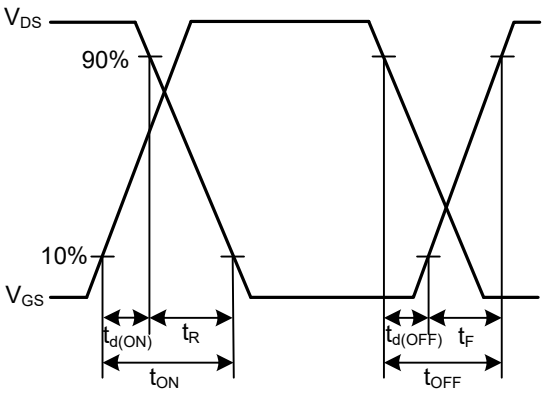
Gate Charge Test Circuit



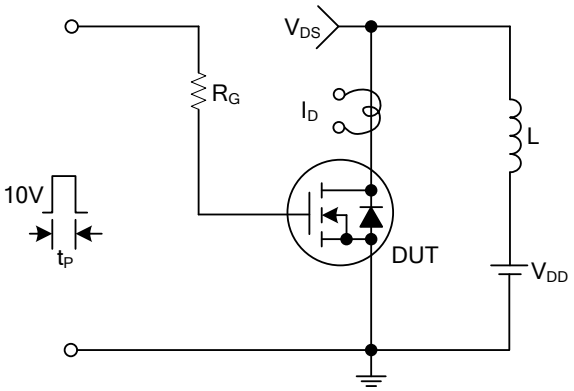
Gate Charge Waveforms



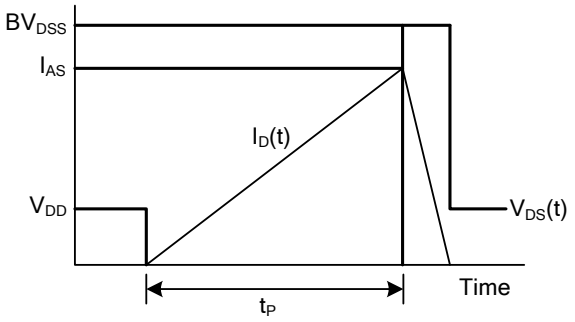
Resistive Switching Test Circuit



Resistive Switching Waveforms



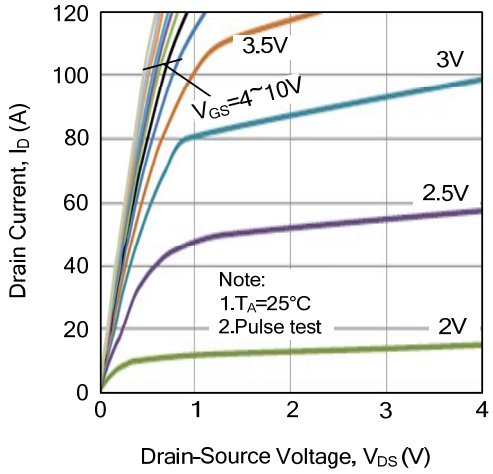
Unclamped Inductive Switching Test Circuit



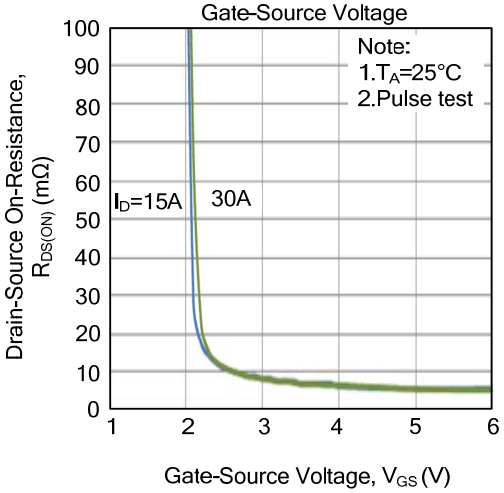
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

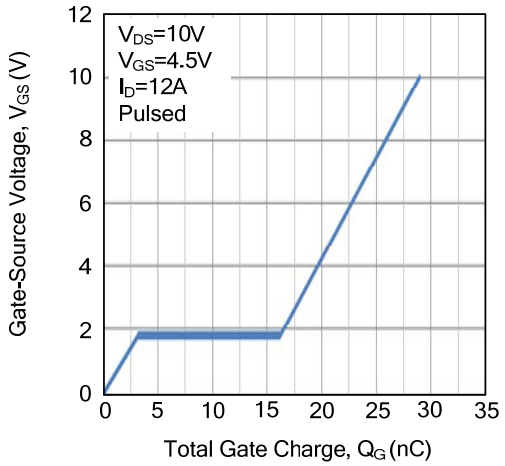
Drain Current vs. Drain-Source Voltage



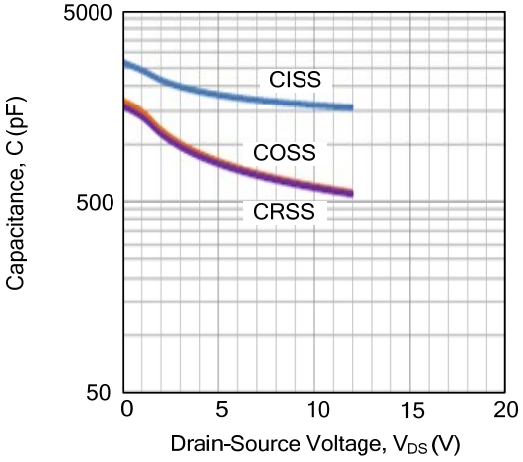
Drain-Source On-Resistance vs. Gate-Source Voltage



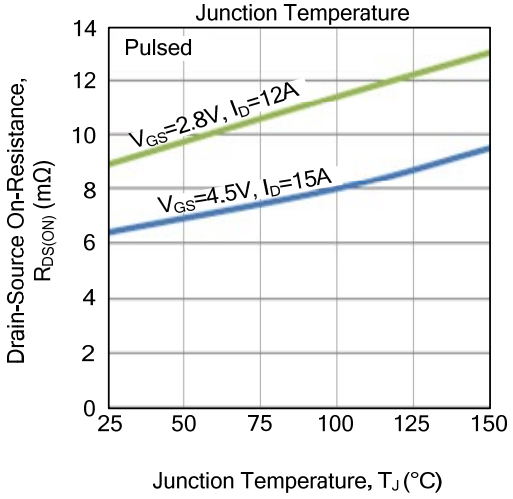
Gate Charge Characteristics



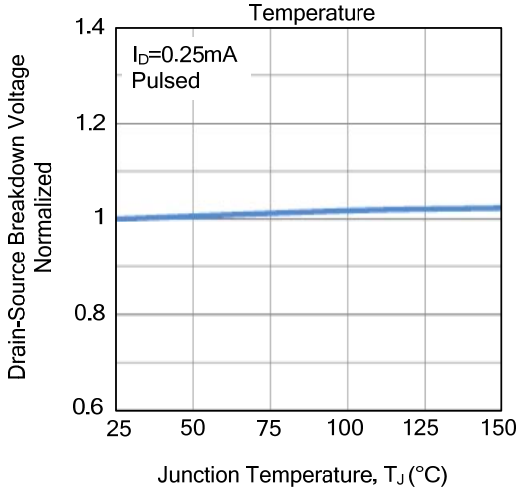
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

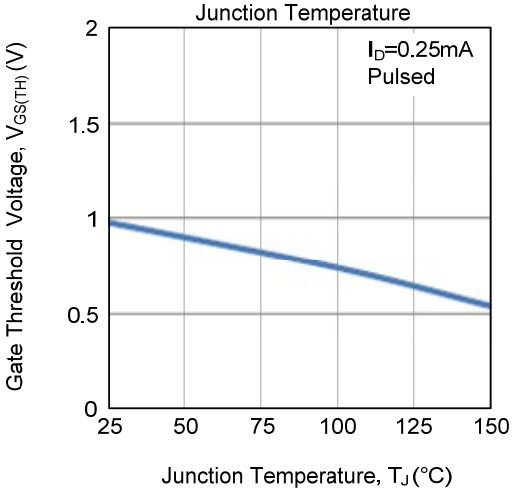


Breakdown Voltage vs. Junction Temperature

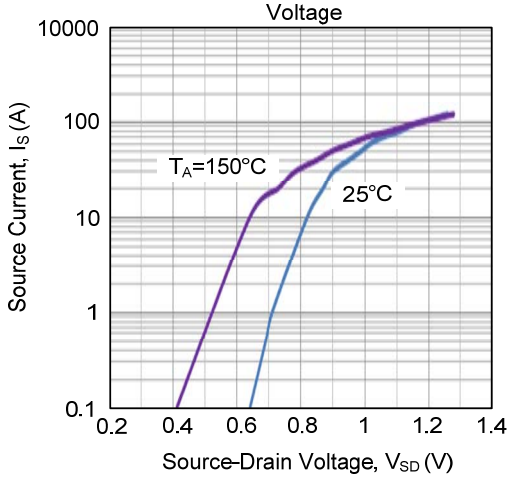


■ TYPICAL CHARACTERISTICS (Cont.)

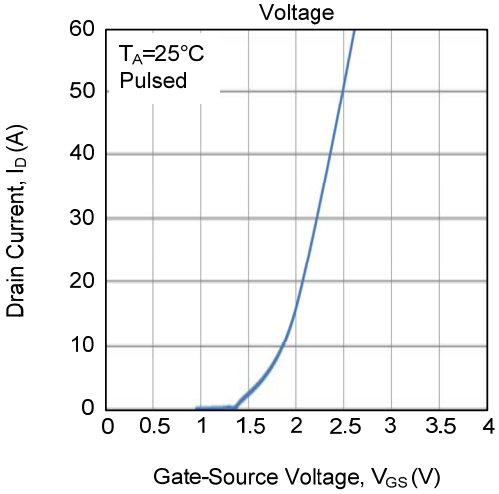
Gate Threshold Voltage vs. Junction Temperature



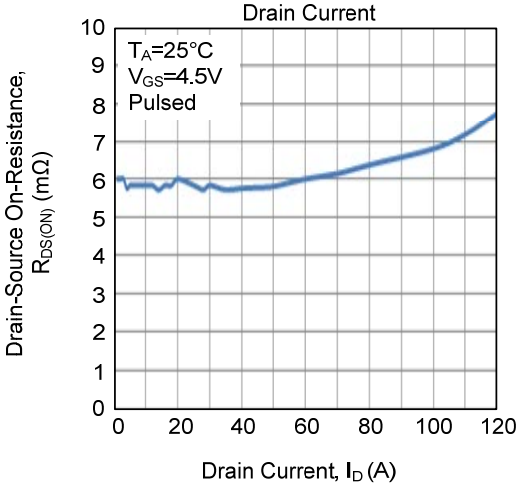
Source Current vs. Source-Drain Voltage



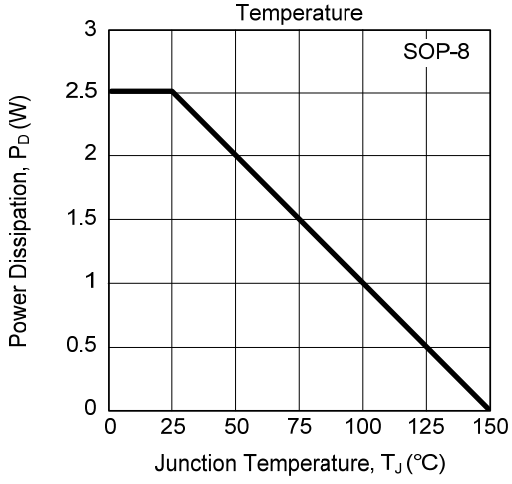
Drain Current vs. Gate-Source Voltage



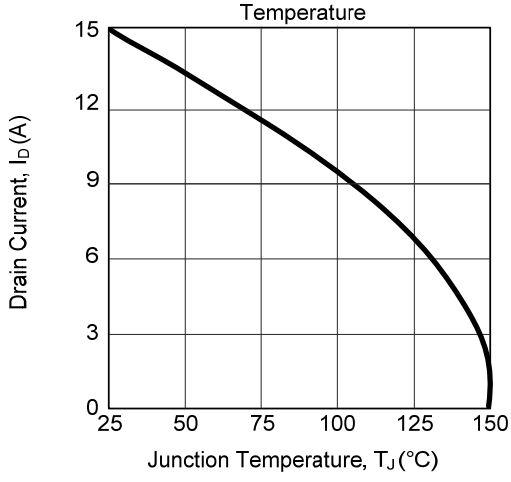
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)