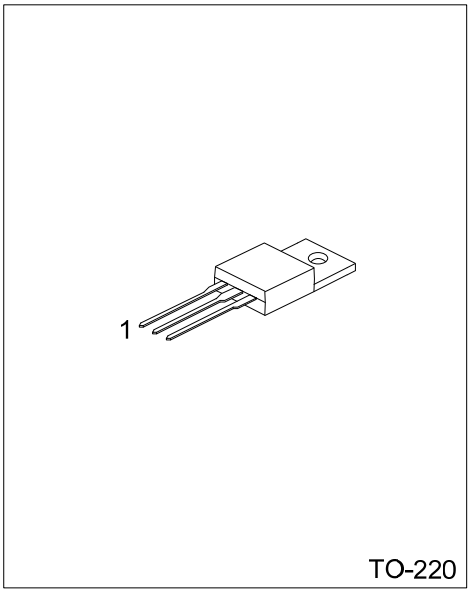
80 Amps, 100 Volts
N-CHANNEL POWER MOSFET



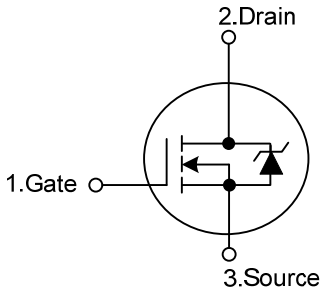
■ DESCRIPTION

The UTC **UF8010** uses advanced technology to provide excellent $R_{DS(ON)}$, fast switching speed, low gate charge, and excellent efficiency. This device is suitable for high frequency DC-DC converters, UPS and motor control.

■ FEATURES

* $R_{DS(ON)}$:12mΩ (Typ.)
* Lower gate-drain charge for lower switching losses
* Perfect avalanche voltage and current performance
* Fully characterized capacitance including effective C_{OSS} to simplify design

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF8010L-TA3-T	UF8010G-TA3-T	TO-220	G	D	S	Tube

UF8010L-TA3-T

(1)Packing Type

(2)Package Type

(3)Halogen Free

(1) T: Tube

(2) TA3: TO-220

(3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Gate to Source Voltage		V_{GS}	±20	V
Continuous Drain Current (V_{GS}=10V,T_C=25°C)		I_D	80 (Note 2)	A
Pulsed Drain Current		I_{DM}	320	A
Avalanche Energy	Single Pulse (Note 2,3)	E_{AS}	310	mJ
	Repetitive	E_{AR}	26	mJ
Avalanche Current		I_{AR}	45	A
Peak Diode Recovery dv/dt (Note 4)		dv/dt	16	V/ns
Power Dissipation (T_C=25°C)		P_D	260	W
Derating above 25°C			1.8	W/°C
Junction Temperature		T_J	+175	°C
Storage Temperature		T_{STG}	-55 ~ + 175	°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. Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.
3. Starting T_J = 25°C, L = 0.31mH, R_G =25Ω, I_{AS} = 45A.
4. I_{SD}≤45A, di/dt≤110A/μs, V_{DD}≤BV_{DSS}, T_J≤ 175°C

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ_{JA}			62	°C/W
Junction to Case	θ_{JC}			0.57	°C/W

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

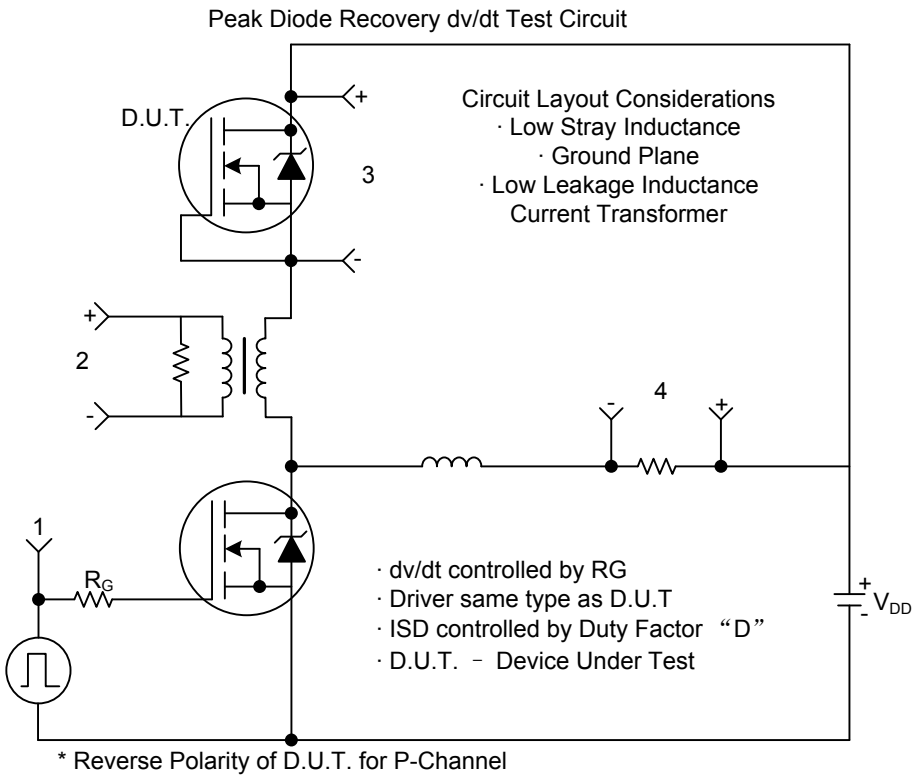
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_D =250μA	100			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V,V_{GS} =0V			20	μA
Gate-Source Forward Current	I_{GSS}	V_{GS} = 20 V			200	nA
Gate-Source Reverse Current		V_{GS} = -20 V			-200	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0		4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 10 V, I_D = 45A (Note 1)		12	15	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} =25 V,V_{GS} =0V, f =1.0MHz		3830		pF
Output Capacitance	C_{OSS}			480		pF
Reverse Transfer Capacitance	C_{RSS}			59		pF
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} =50V,I_D = 80A, R_G = 39Ω V_{GS} = 10V (Note 1)		15		ns
Rise Time	t_R			130		ns
Turn-Off Delay Time	$t_{D(OFF)}$			61		ns
Fall Time	t_F			120		ns
Total Gate Charge	Q_G	V_{DS}=80V, V_{GS}=10V I_D= 80A (Note 1)		81	120	nC
Gate-Source Charge	Q_{GS}			22		nC
Gate-Drain Charge	Q_{GD}			26		nC

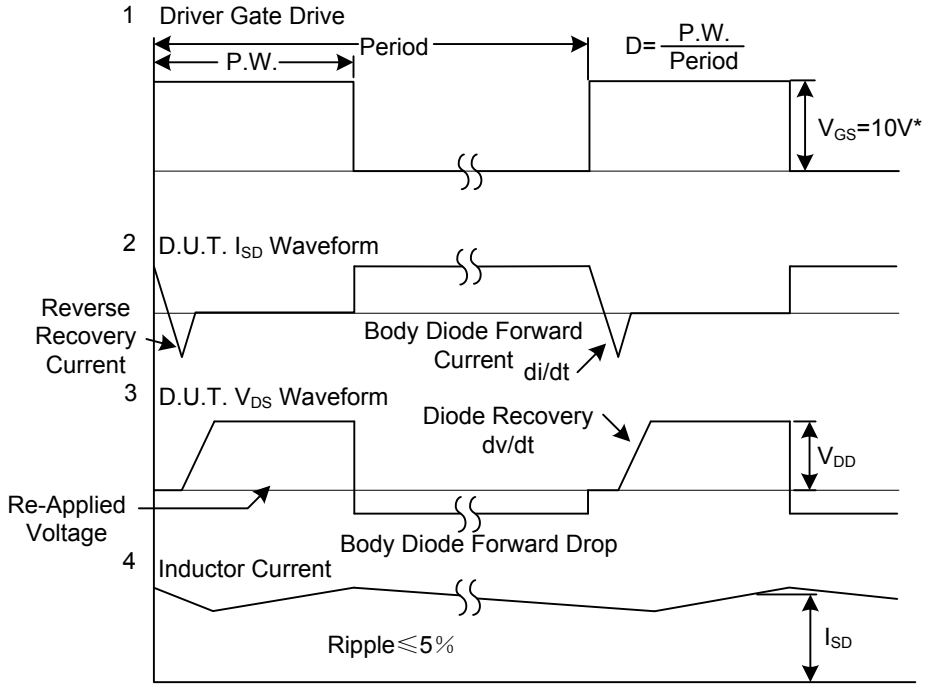
■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=80 A ,V_{GS} =0 V, T_J = 25°C (Note 1)			1.3	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				80	A
Maximum Pulsed Drain-Source Diode Forward Current (Note 1,2)	I_{SM}				320	A
Reverse Recovery Time	t_{RR}	I_F=80 A, V_{DD}=50V, T_J = 150℃ di/dt = 100 A/μs (Note 1)		99	150	ns
Reverse Recovery Charge	Q_{RR}			460	700	nC

Notes: 1. Pulse width ≤ 300μs; duty cycle ≤ 2%
2. Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.

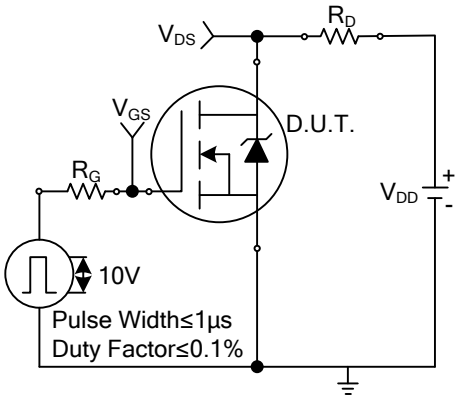
■ TEST CIRCUITS AND WAVEFORMS



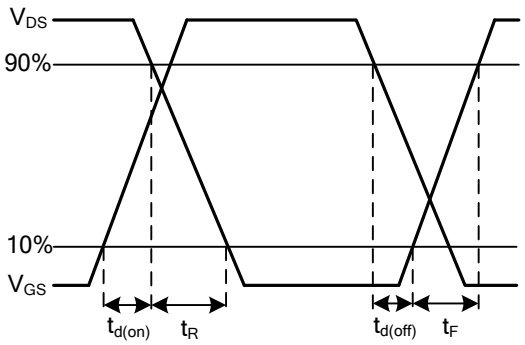


■ TEST CIRCUITS AND WAVEFORMS(Cont.)

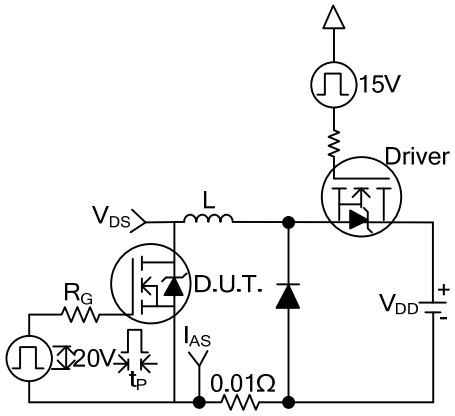
Switching Time Test Circuit



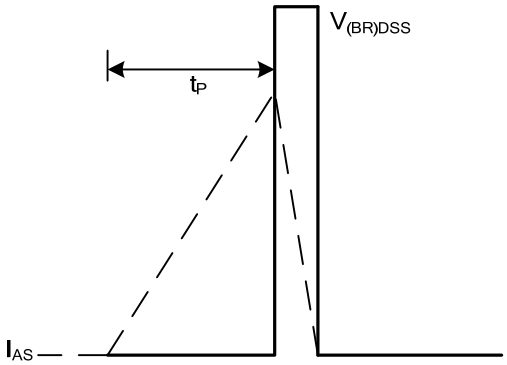
Switching Time Waveforms



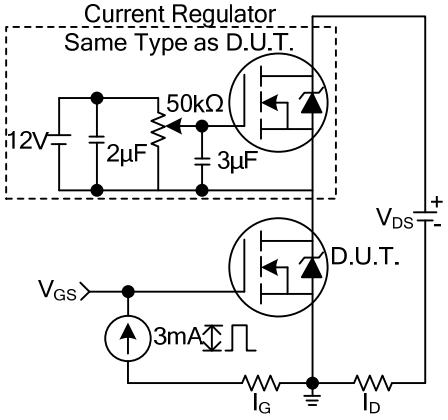
Unclamped Inductive Test Circuit



Unclamped Inductive Waveforms



Gate Charge Test Circuit



Basic Gate Charge Waveforms