



UF8010

Power MOSFET

80A, 100V N-CHANNEL POWER MOSFET

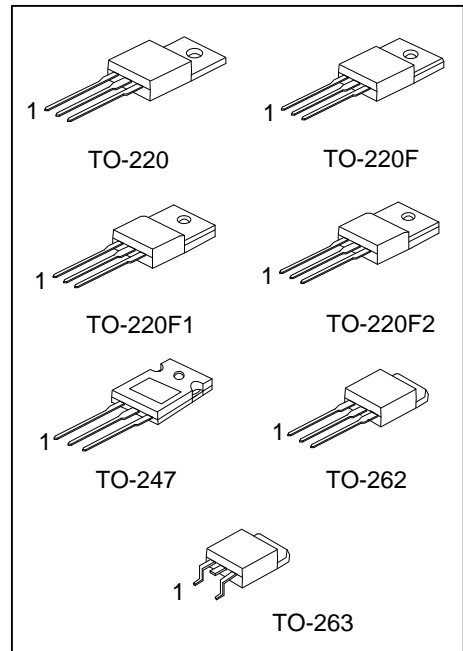
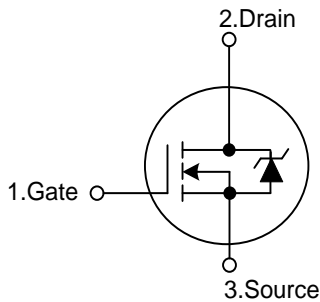
DESCRIPTION

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

- * $R_{DS(ON)}$:12 m Ω (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



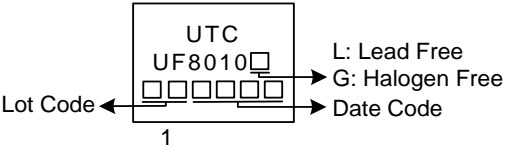
ORDERING INFORMATION

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-TF1-T	UF8010G-TF1-T	TO-220F1	G	D	S	Tube
UF8010L-TF2-T	UF8010G-TF2-T	TO-220F2	G	D	S	Tube
UF8010L-TF3-T	UF8010G-TF3-T	TO-220F	G	D	S	Tube
UF8010L-T47-T	UF8010G-T47-T	TO-247	G	D	S	Tube
UF8010L-T2Q-T	UF8010G-T2Q-T	TO-262	G	D	S	Tube
UF8010L-TQ2-T	UF8010G-TQ2-T	TO-263	G	D	S	Tube
UF8010L-TQ2-R	UF8010G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>UF8010G-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TF3: TO-220F, TF1: TO-220F1, TF2: TO-220F2, T47: TO-247, T2Q: TO-262, TQ2: TO-263</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



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

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)	E _{AS}	310	mJ
	Repetitive	E _{AR}	26	mJ
Avalanche Current		I _{AR}	45	A
Peak Diode Recovery dv/dt (Note 3)		dv/dt	16	V/ns
Power Dissipation (T _C =25°C)	TO-220/TO-262 TO-263	P _D	260	W
	TO-220F/TO-220F1 TO-220F2		54	W
	TO-247		300	W
Junction Temperature		T _J	+150	°C
Storage Temperature		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. Starting T_J = 25°C, L = 0.31mH, R_G = 25Ω, I_{AS} = 45A.

3. I_{SD} ≤ 45A, di/dt ≤ 110A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C

■ THERMAL DATA

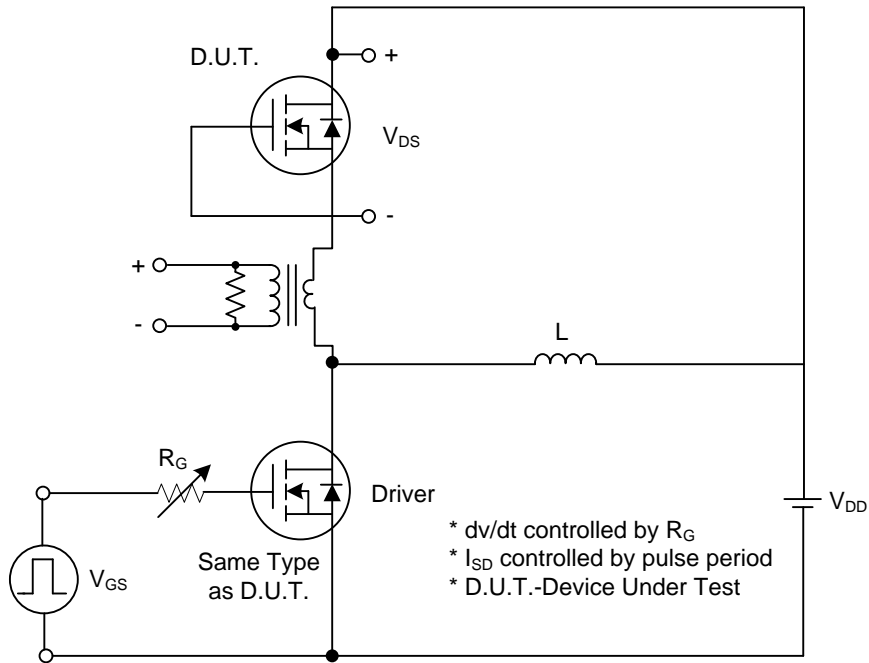
PARAMETER		SYMBOL	RATING	UNIT	
Junction to Ambient	TO-220/TO-220F TO-220F1/TO-220F2 TO-262/TO-263 TO-247	θ _{JA}	62.5	°C/W	
	Junction to Case		TO-220/TO-262 TO-263		0.57
			TO-220F/TO-220F1 TO-220F2		2.3
			TO-247		0.41

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

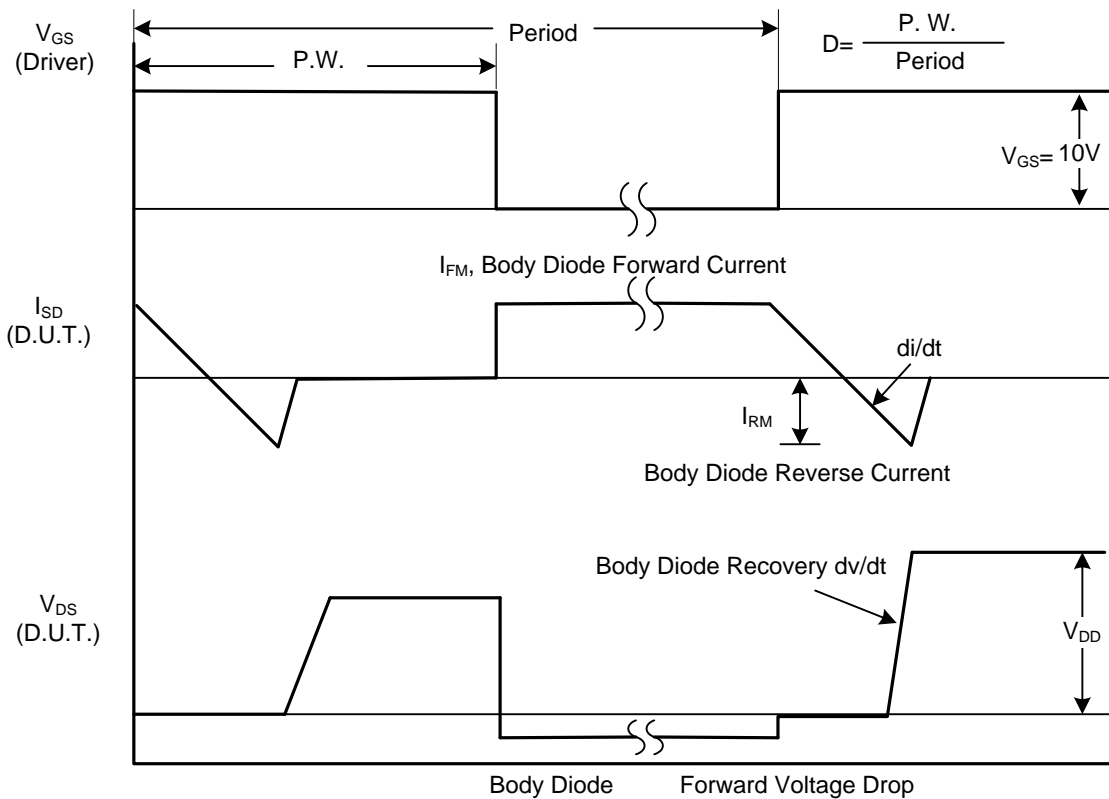
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250μA	100			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V			20	μA
Gate-Source Forward Current	I _{GSS}	V _{GS} = 20 V			200	nA
Gate-Source 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		3617		pF
Output Capacitance	C _{OSS}			620		pF
Reverse Transfer Capacitance	C _{RSS}			59		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _G	V _{DS} = 80V, V _{GS} = 10V I _D = 80A (Note 1)		399	450	nC
Gate-Source Charge	Q _{GS}			41		nC
Gate-Drain Charge	Q _{GD}			96		nC
Turn-On Delay Time	t _{D(ON)}	V _{DS} = 30V, I _D = 1A, R _G = 39Ω V _{GS} = 10V (Note 1)		174	200	ns
Rise Time	t _R			370	450	ns
Turn-Off Delay Time	t _{D(OFF)}			757	850	ns
Fall Time	t _F			392	450	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				80	A
Maximum Pulsed Drain-Source Diode Forward Current (Note 1)	I _{SM}				320	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S = 80 A, V _{GS} = 0 V, T _J = 25°C (Note 1)			1.3	V
Reverse Recovery Time	t _{rr}	I _F = 80A, V _{DD} = 50V, T _J = 150°C di/dt = 100 A/μs (Note 1)		99	150	ns
Reverse Recovery Charge	Q _{rr}			460	700	nC

Note: Pulse width ≤ 300μs; duty cycle ≤ 2%.

■ TEST CIRCUITS AND WAVEFORMS

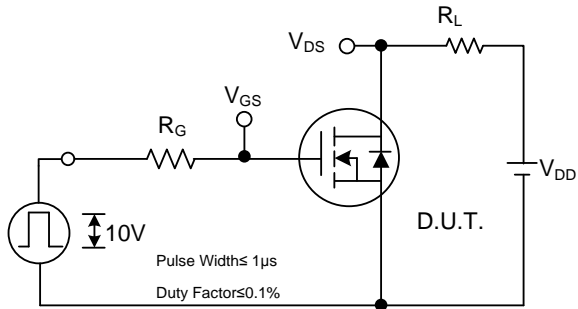


Peak Diode Recovery dv/dt Test Circuit

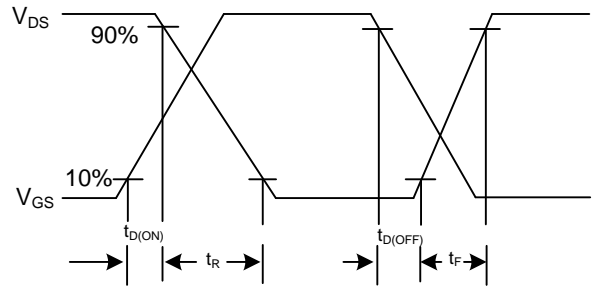


Peak Diode Recovery dv/dt Waveforms

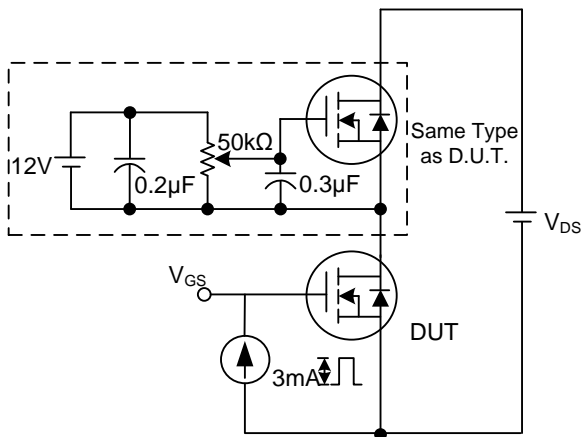
TEST CIRCUITS AND WAVEFORMS



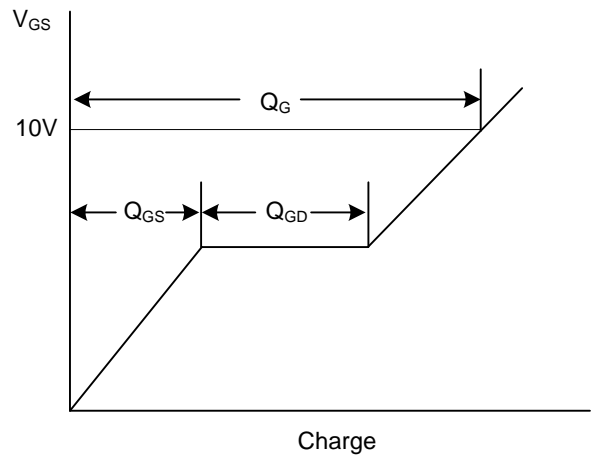
Switching Test Circuit



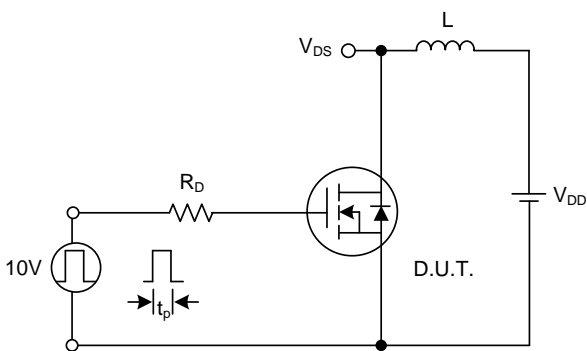
Switching Waveforms



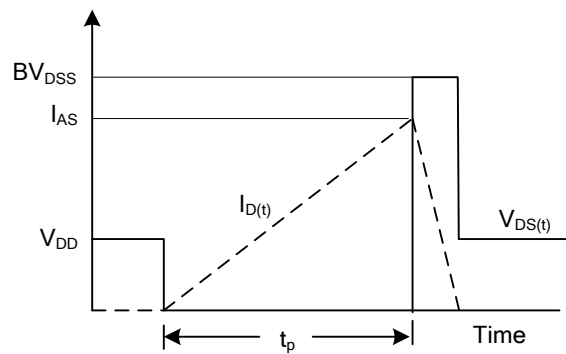
Gate Charge Test Circuit



Gate Charge Waveform

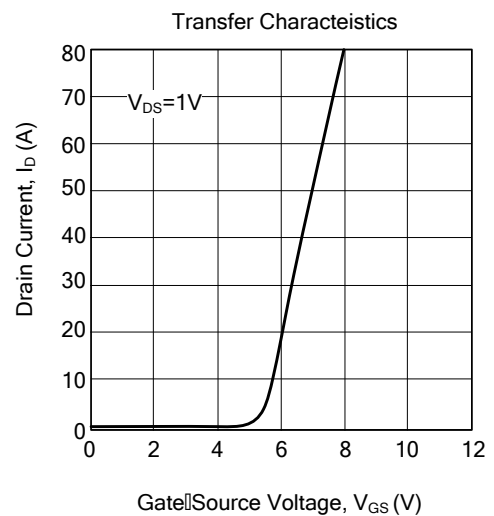
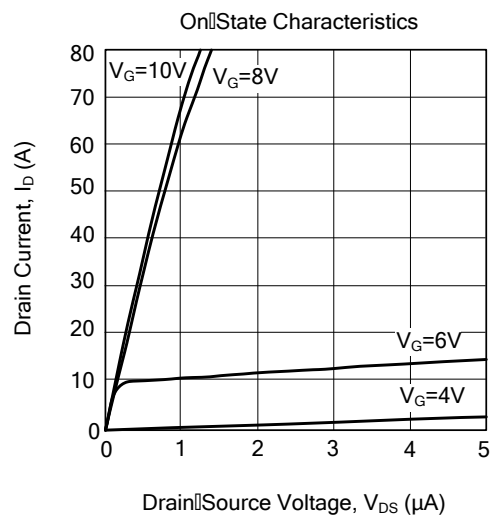
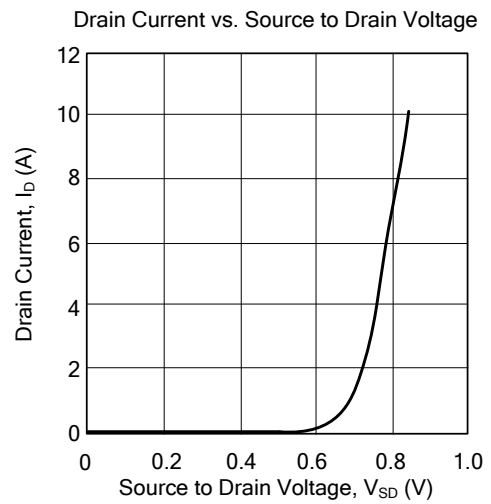
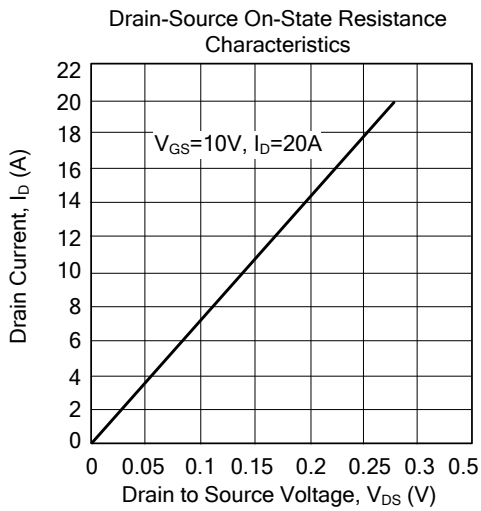
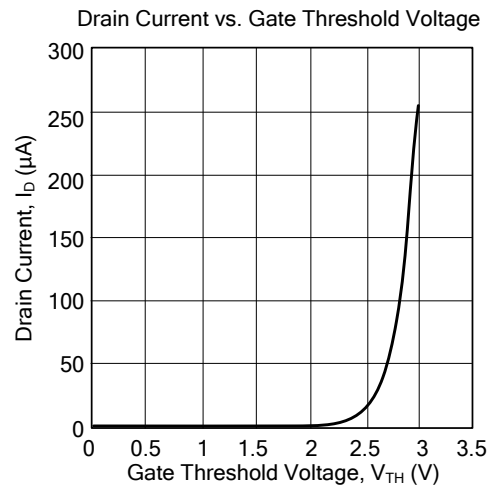
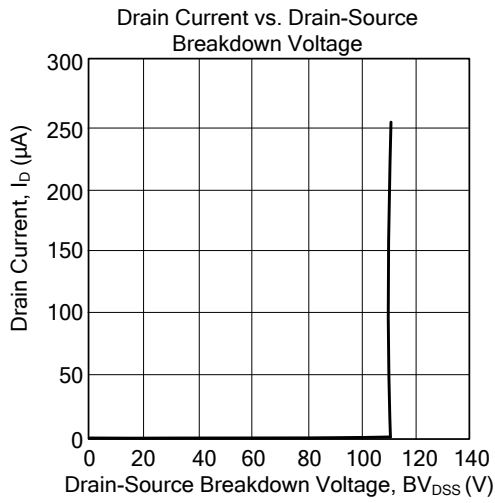


Unclamped Inductive Switching Test Circuit

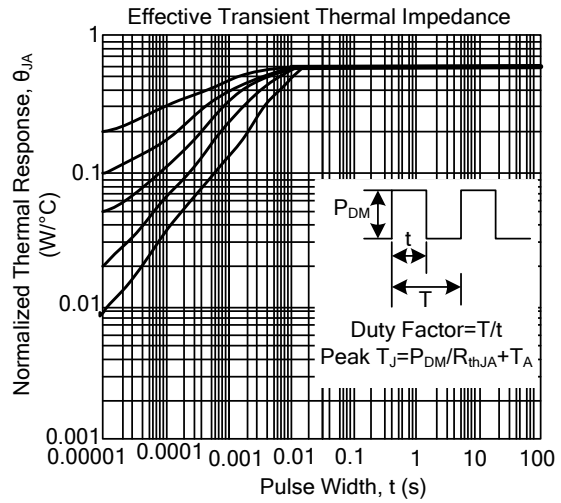
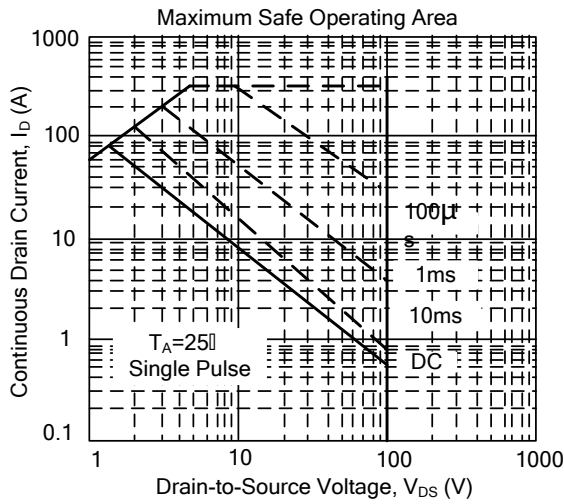


Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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