



UF8010

Power MOSFET

80A, 100V N-CHANNEL POWER MOSFET

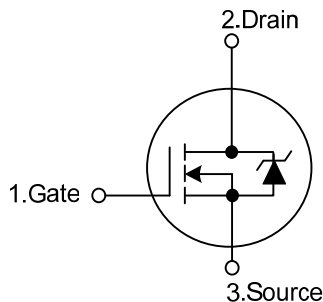
DESCRIPTION

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

- * $R_{DS(ON)}$: 12m 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

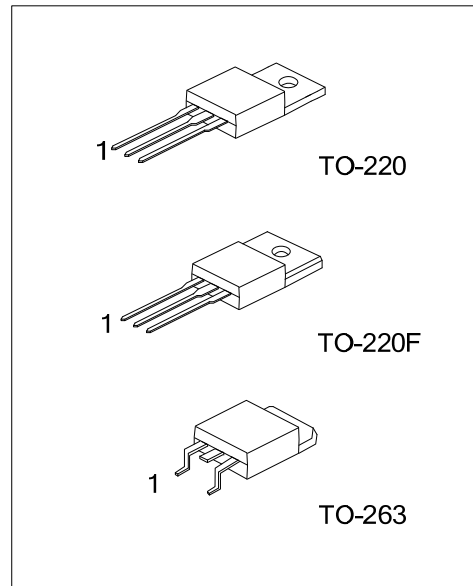


ORDERING INFORMATION

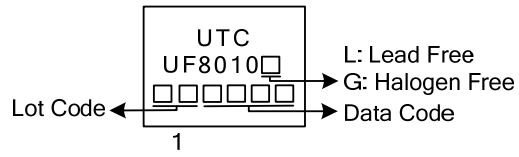
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF8010L-TA3-T	UF8010G-TA3-T	TO-220	G	D	S	Tube
UF8010L-TF3-T	UF8010G-TF3-T	TO-220F	G	D	S	Tube
UF8010L-TQ2-T	UF8010G-TQ2-T	TO-263	G	D	S	Tube

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

<p>UF8010L-TA3-T</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220, TF3: TO-220F, TQ2: TO-263</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ MARKING



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■ ABSOLUTE MAXIMUM RATINGS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Gate to Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ($V_{GS}=10\text{V}, T_C=25^{\circ}\text{C}$)		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 ($T_C=25^{\circ}\text{C}$)	TO-220 / TO-263	P_D	260	W
	TO-220F		54	W
Derating above 25°C	TO-220 / TO-263		1.8	W/ $^{\circ}\text{C}$
	TO-220F		0.36	W/ $^{\circ}\text{C}$
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ + 150	$^{\circ}\text{C}$

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 $T_J = 25^{\circ}\text{C}$, $L = 0.31\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 45\text{A}$.

3. $I_{SD} \leq 45\text{A}$, $di/dt \leq 110\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}\text{C}$

■ THERMAL DATA

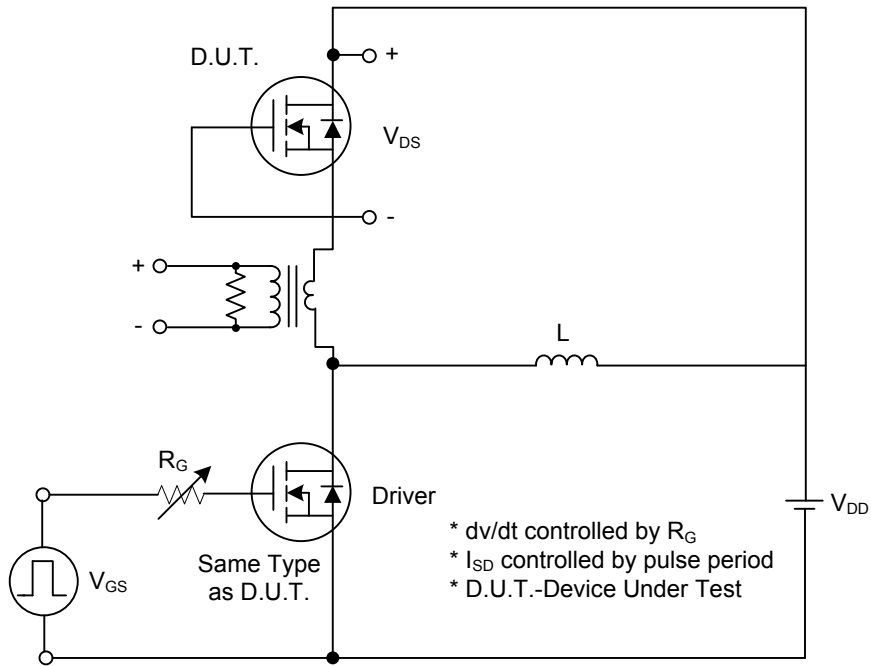
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220 / TO-263	θ_{JC}	0.57	$^{\circ}\text{C}/\text{W}$
	TO-220F		2.3	$^{\circ}\text{C}/\text{W}$

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

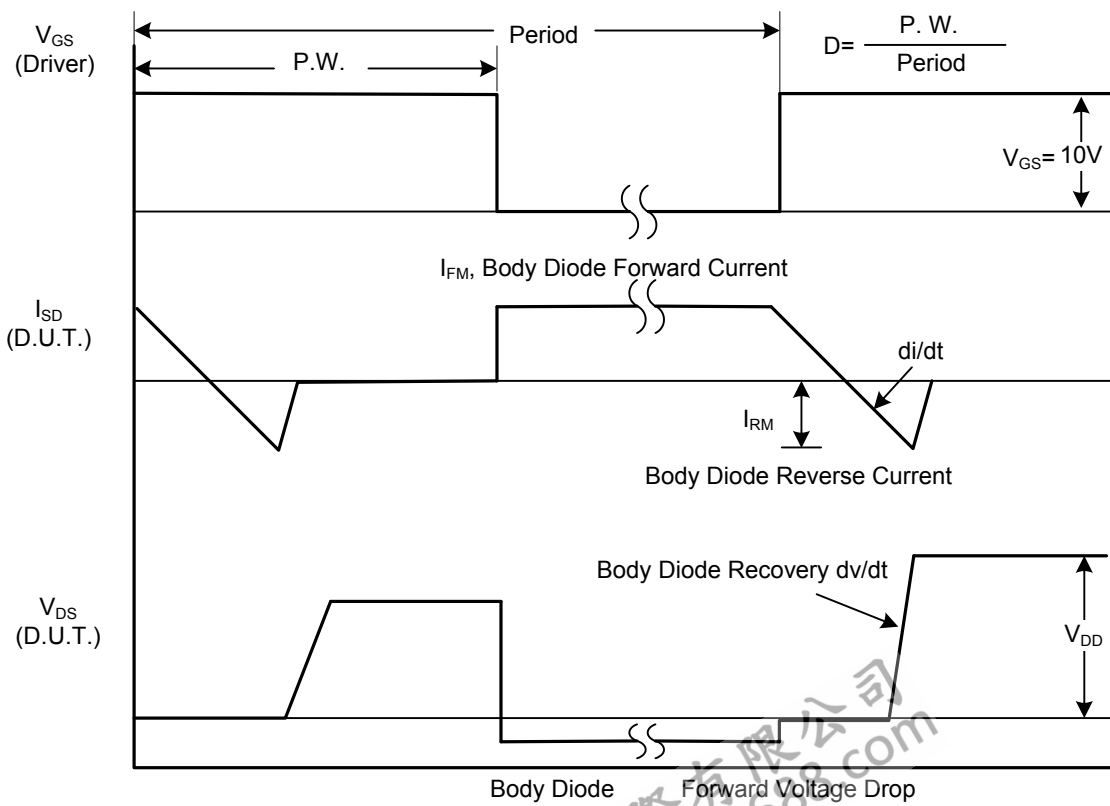
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250μA	100			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V			20	μA
Gate-Source Forward Current	I _{GSS}	V _{GS} = 20 V			200	nA
Gate-Source 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		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

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

■ TEST CIRCUITS AND WAVEFORMS

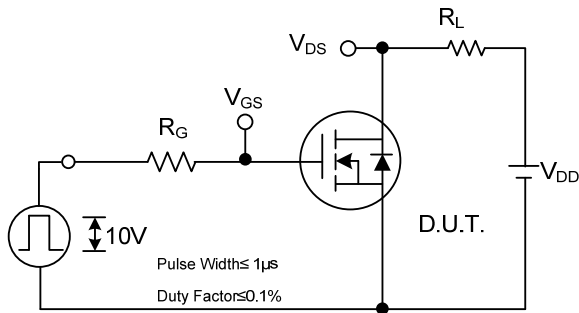


Peak Diode Recovery dv/dt Test Circuit

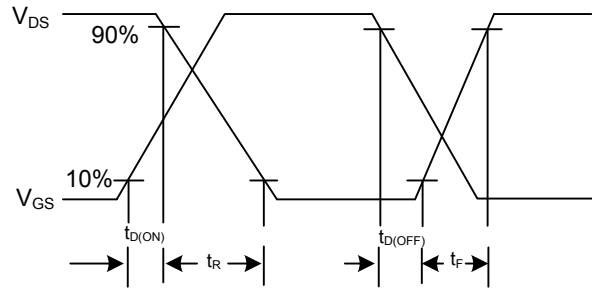


Peak Diode Recovery dv/dt Waveforms

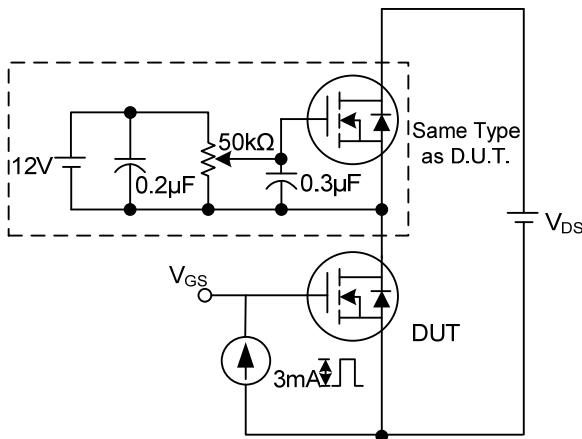
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



Switching Test Circuit



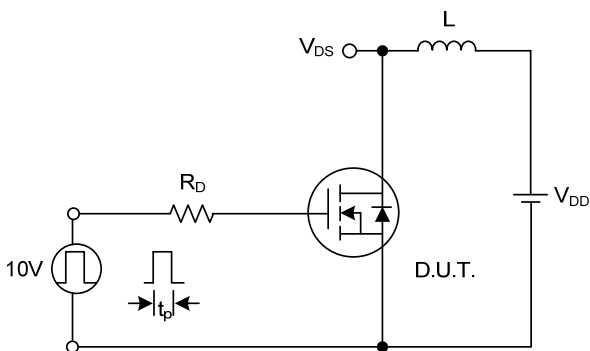
Switching Waveforms



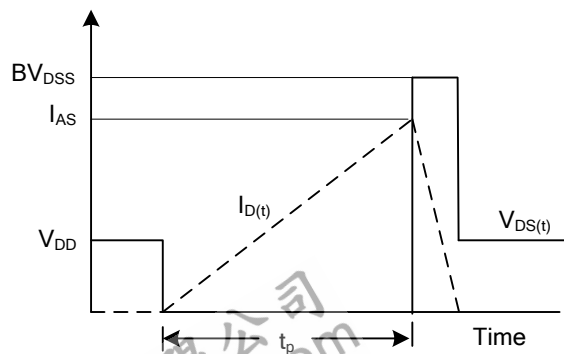
Gate Charge Test Circuit



Gate Charge Waveform

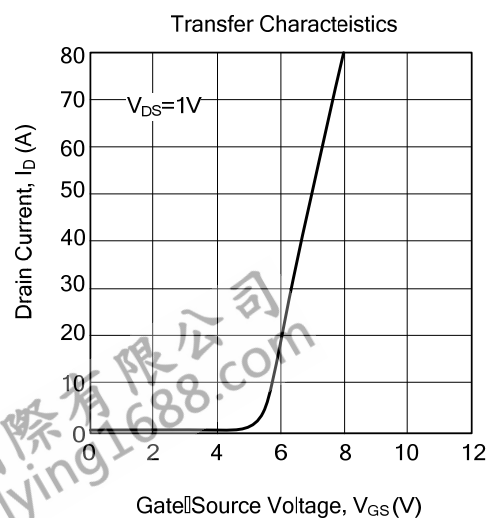
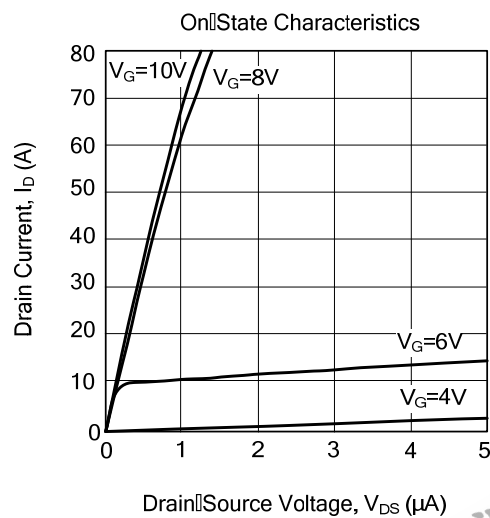
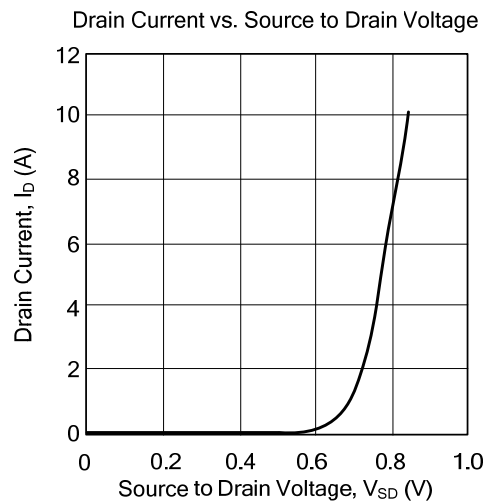
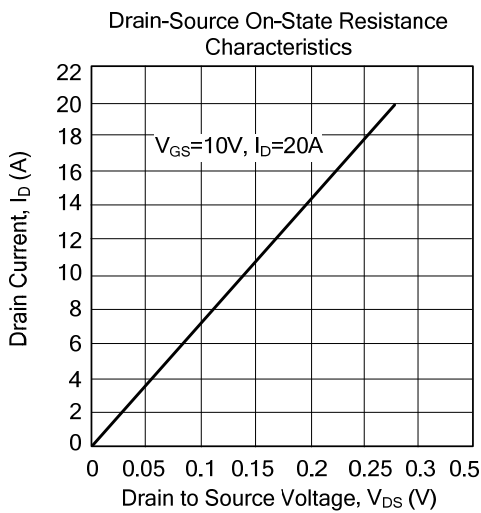
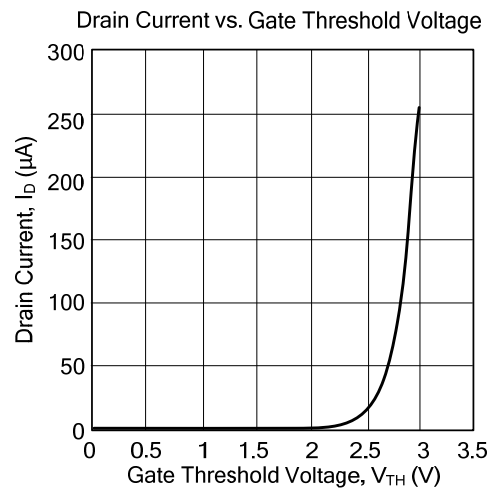
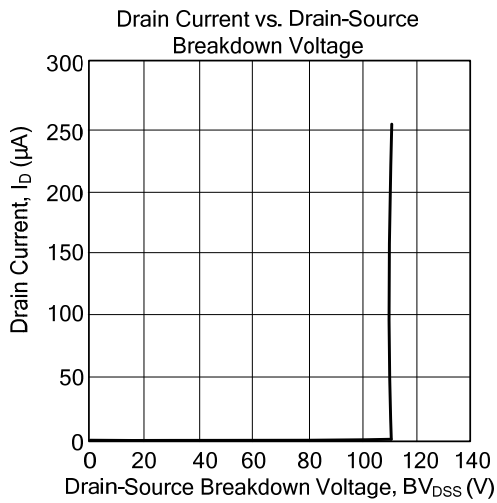


Unclamped Inductive Switching Test Circuit

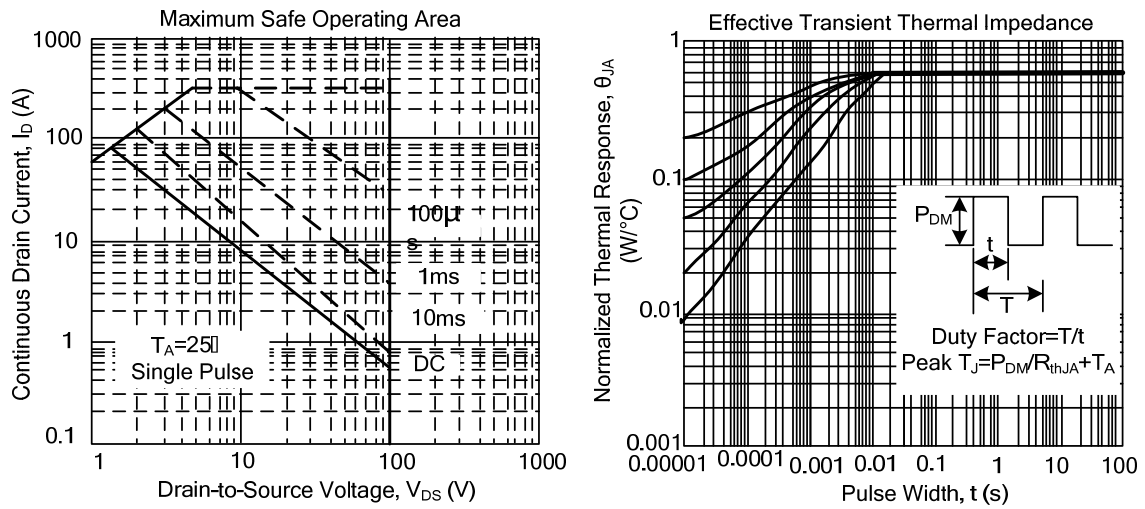


Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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