



UF50N20-HC

Preliminary

Power MOSFET

**50A, 200V N-CHANNEL
POWER MOSFET****DESCRIPTION**

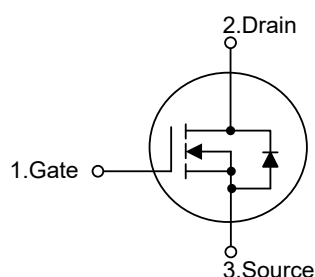
The UTC **UF50N20** is an N-channel power MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

The UTC **UF50N20** is suitable for motor control, AC-DC converters and audio amplifiers, etc.

FEATURES

* $R_{DS(ON)} \leq 50 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=25\text{A}$

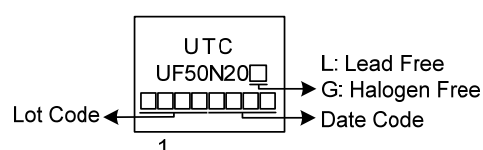
* High Switching Speed

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF50N20L-T47-T	UF50N20G-T47-T	TO-247	G	D	S	Tube
UF50N20L-TQ2-T	UF50N20G-TQ2-T	TO-263	G	D	S	Tube
UF50N20L-TQ2-R	UF50N20G-TQ2-R	TO-263	G	D	S	Tape Reel

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

UF50N20G-T47-T (1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube, R: Tape Reel (2) T47: TO-247, TQ2: TO-263 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 30	V
Drain Current	Continuous	I_D	50	A
	Pulsed (Note 2)	I_{DM}	100	A
Power Dissipation	TO-247	P_D	270	W
	TO-263		232	W
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. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ **THERMAL DATA**

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-247	θ_{JA}	50	$^\circ\text{C/W}$
	TO-263		62.5	$^\circ\text{C/W}$
Junction to Case	TO-247	θ_{JC}	0.46	$^\circ\text{C/W}$
	TO-263		0.53	$^\circ\text{C/W}$

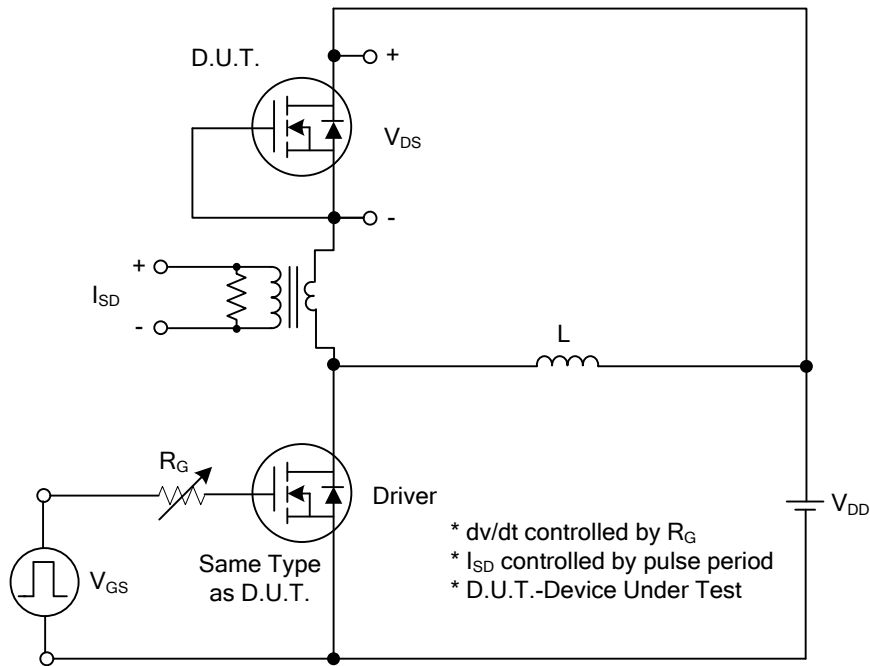
■ **ELECTRICAL CHARACTERISTICS** ($T_C=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	200			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =200V, V _{GS} =0V			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{DS} =0V ,V _{GS} =30V			100	nA
	Reverse		V _{DS} =0V ,V _{GS} =-30V			-100	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} =10V, I _D =25A			50	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V,V _{DS} =25V, f=1.0MHz		3230		pF
Output Capacitance		C _{OSS}			880		pF
Reverse Transfer Capacitance		C _{RSS}			140		pF
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				50	A
Maximum Body-Diode Pulsed Current		I _{SM}				100	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =50A, V _{GS} =0V			1.4	V

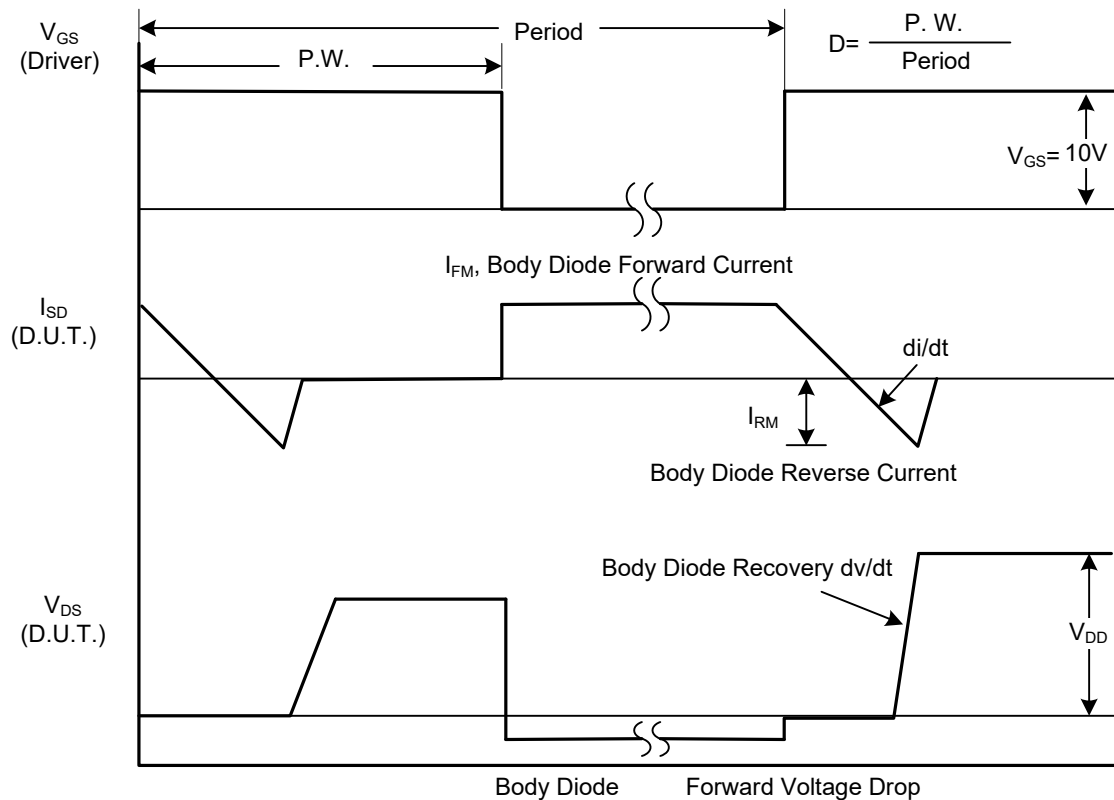
Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

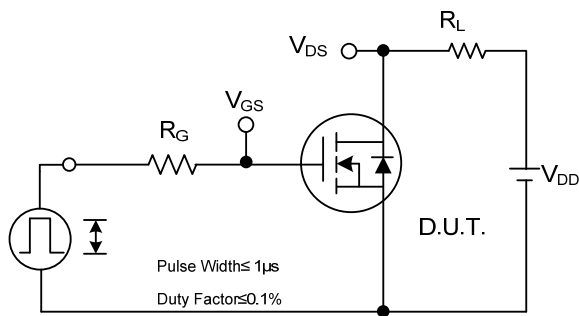


Peak Diode Recovery dv/dt Test Circuit

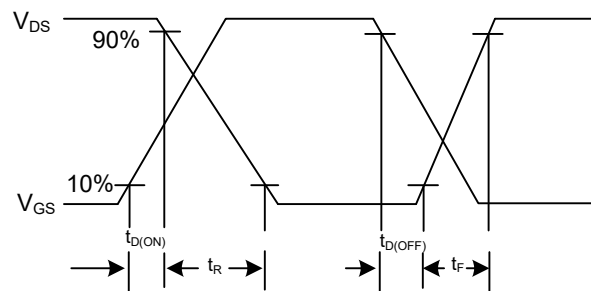


Peak Diode Recovery dv/dt Waveforms

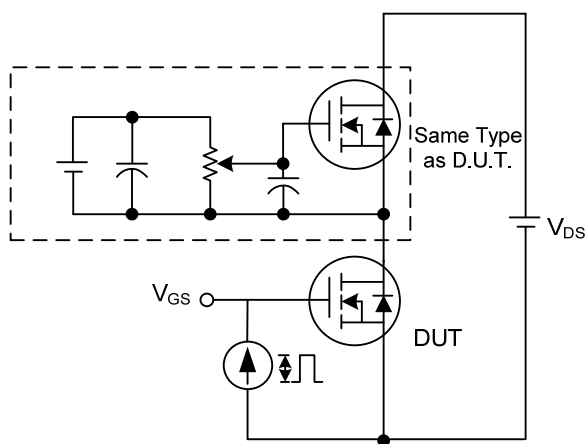
■ TEST CIRCUITS AND WAVEFORMS



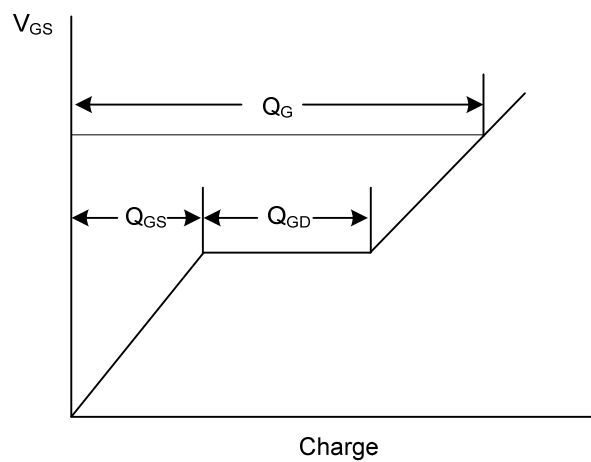
Switching Test Circuit



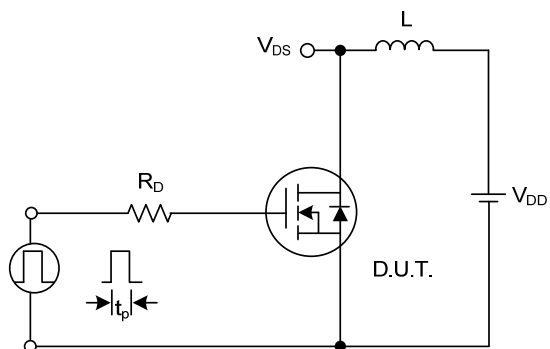
Switching Waveforms



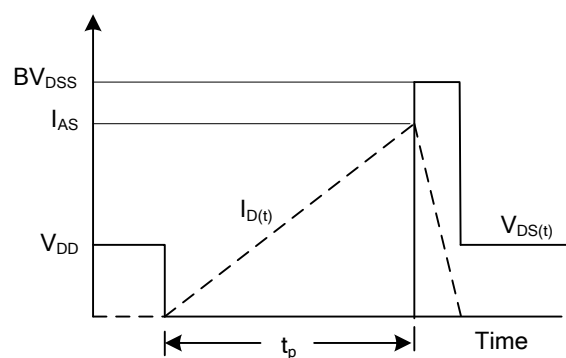
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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