

**UFB7537H**

Preliminary

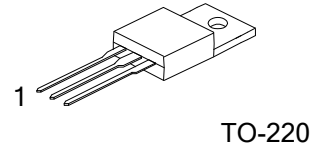
POWER MOSFET**172A, 60V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UFB7537H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on-state resistance, etc.

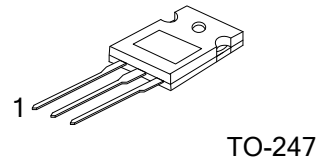
The UTC **UFB7537H** is suitable for hard switched and high frequency circuits, etc.

FEATURES

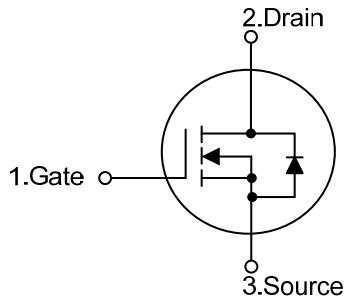
- * $R_{DS(ON)} \leq 3.3 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=100\text{A}$
- * High switching speed
- * Improved dv/dt capability



TO-220



TO-247

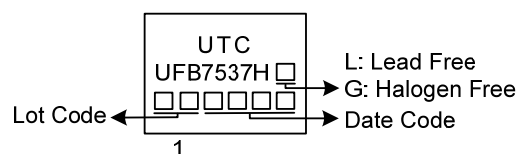
SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UFB7537HL-TA3-T	UFB7537HG-TA3-T	TO-220	G	D	S	Tube
UFB7537HL-T47-T	UFB7537HG-T47-T	TO-247	G	D	S	Tube

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

UFB7537HG-TA3-T	(1)Packing Type	(1) T: Tube
	(2)Package Type	(2) TA3: TO-220, T47: TO-247
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	172	A
	Pulsed (Note 2)	I_{DM}	344	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	704	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	3	V/ns
Power Dissipation	TO-220	P_D	250	W
	TO-247		310	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature Range		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.

3. $L=0.1\text{mH}$, $I_{AS}=118.7\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.

4. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^{\circ}\text{C}$.

■ **THERMAL DATA**

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
	TO-247		50	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220	θ_{JC}	0.5	$^{\circ}\text{C}/\text{W}$
	TO-247		0.4	$^{\circ}\text{C}/\text{W}$

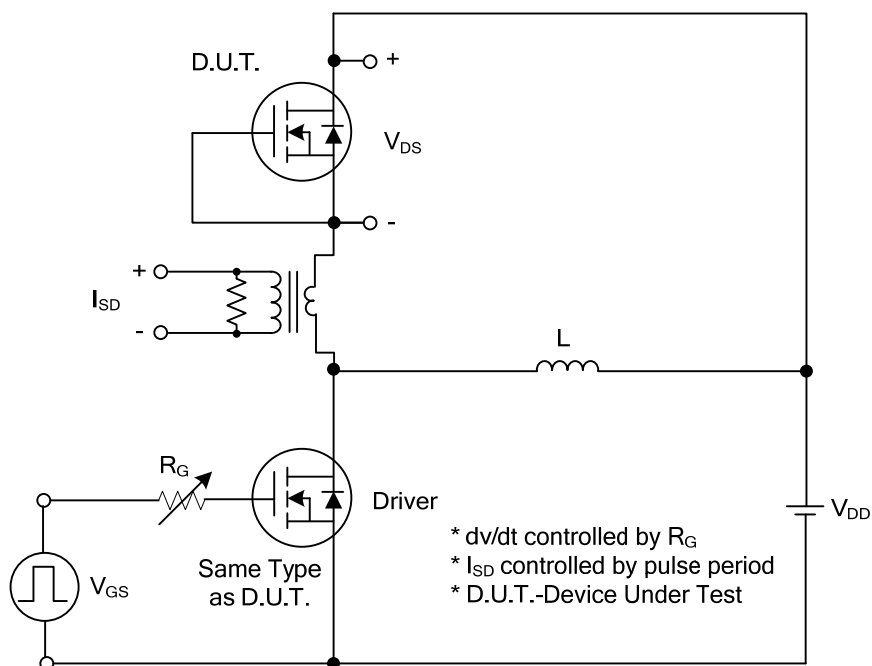
■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^\circ\text{C}$ unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	60			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+10	μA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-10	μA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} = V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =100A			3.3	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		17		nF
Output Capacitance		C _{OSS}			1230		pF
Reverse Transfer Capacitance		C _{RSS}			950		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =48V, V _{GS} =10V, I _D =172A (Note 1, 2)		300		nC
Gate to Source Charge		Q _{GS}			76		nC
Gate to Drain Charge		Q _{GD}			96		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =172A, R _G =25Ω (Note 1, 2)		58		ns
Rise Time		t _R			42		ns
Turn-OFF Delay Time		t _{D(OFF)}			126		ns
Fall-Time		t _F			54		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				172	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				344	A
Diode Forward Voltage		V _{SD}	I _F =172A, V _{GS} =0V			1.4	V
Reverse Recovery Time		t _{rr}	I _S =172A, V _{GS} =0V,		62		ns
Reverse Recovery Charge (Note 1)		Q _{rr}	dI _F /dt = 100 A/μs		120		nC

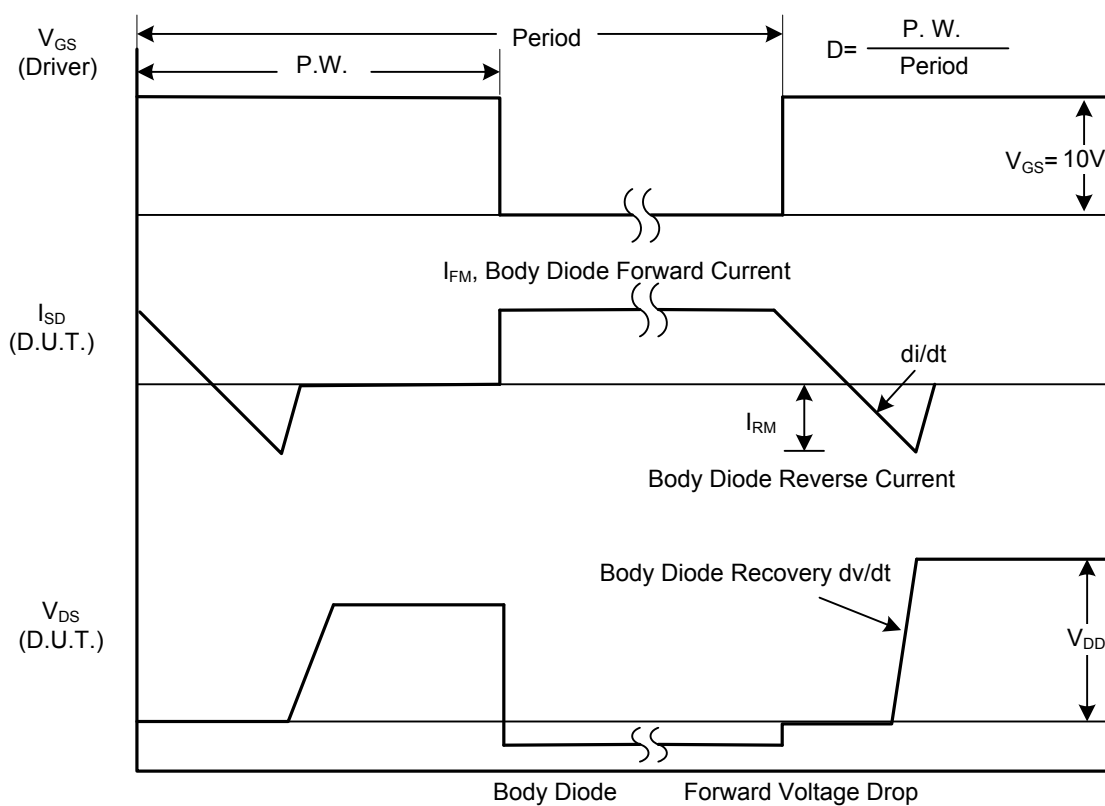
Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

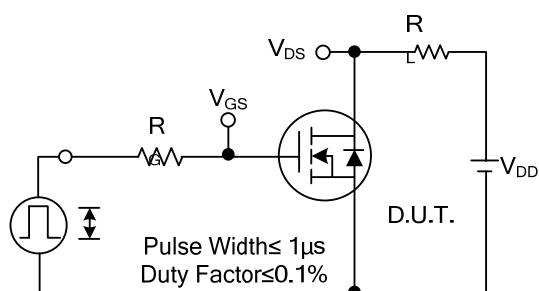


Peak Diode Recovery dv/dt Test Circuit

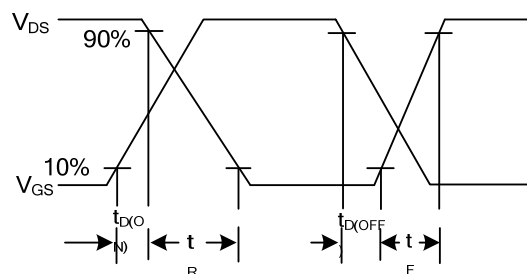


Peak Diode Recovery dv/dt Waveforms

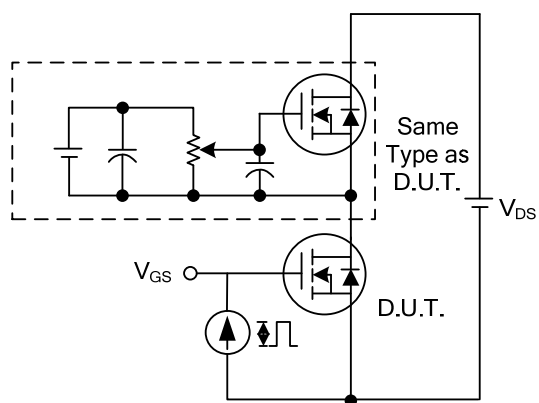
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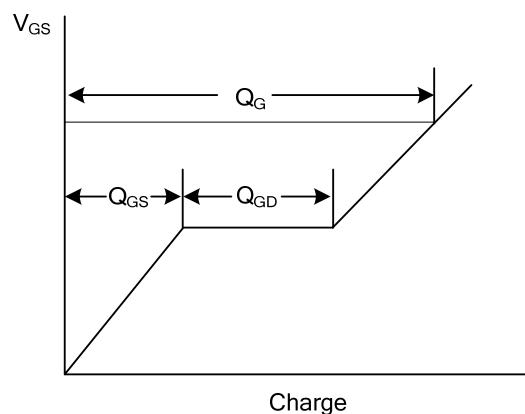
Switching Test Circuit



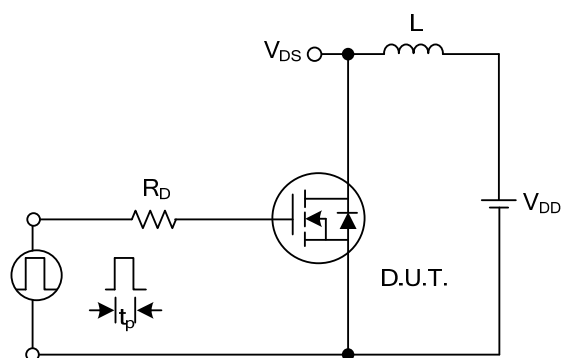
Switching Waveforms



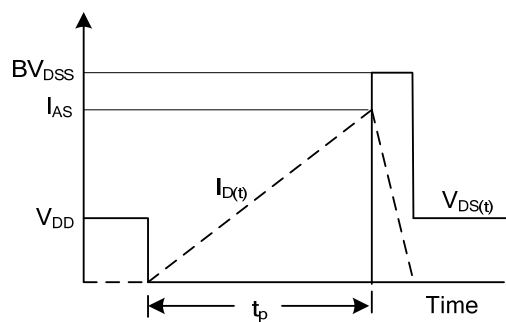
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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