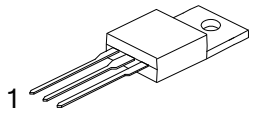
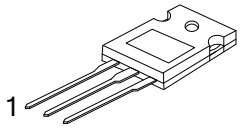
UFB7537H

Preliminary ***POWER MOSFET***

172A, 60V N-CHANNEL POWER MOSFET



TO-220



TO-247

■ DESCRIPTION

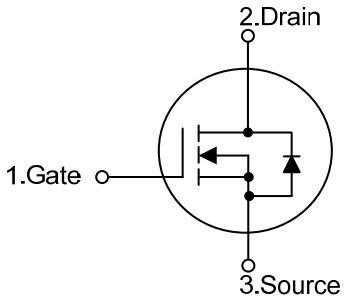
The UTC **UFB7537H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on-state resistance, etc.

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

■ FEATURES

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

■ SYMBOL



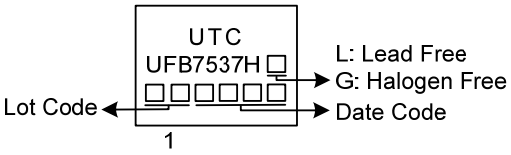
■ ORDERING INFORMATION

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

■ MARKING



■ ABSOLUTE MAXIMUM RATING (T_C=25°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	°C
Storage Temperature Range		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. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. L=0.1mH, I_{AS}=118.7A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C.
4. I_{SD} ≤ 30A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J=25°C.

■ THERMAL DATA

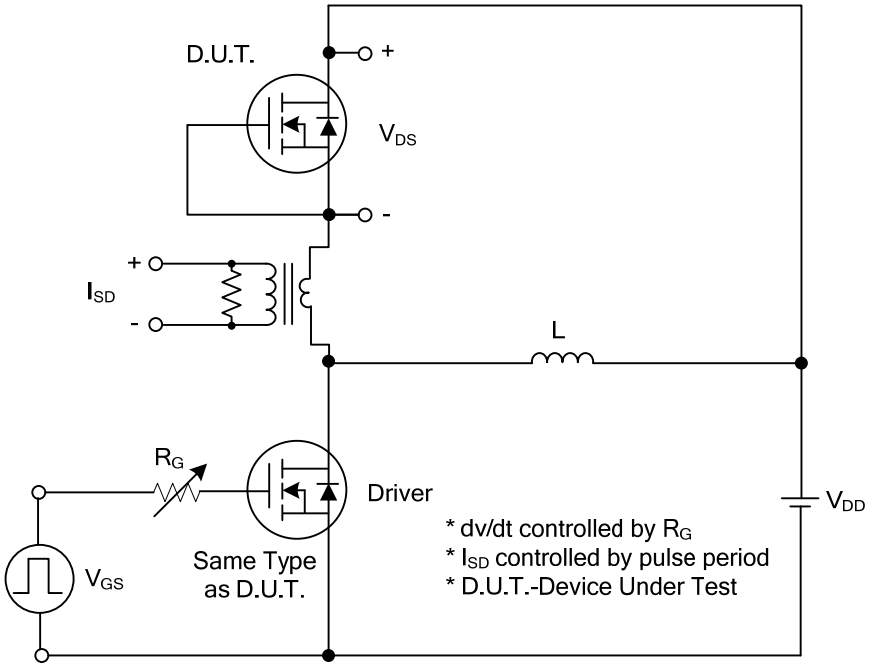
PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	°C/W
	TO-247		50	°C/W
Junction to Case	TO-220	θ_{JC}	0.5	°C/W
	TO-247		0.4	°C/W

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

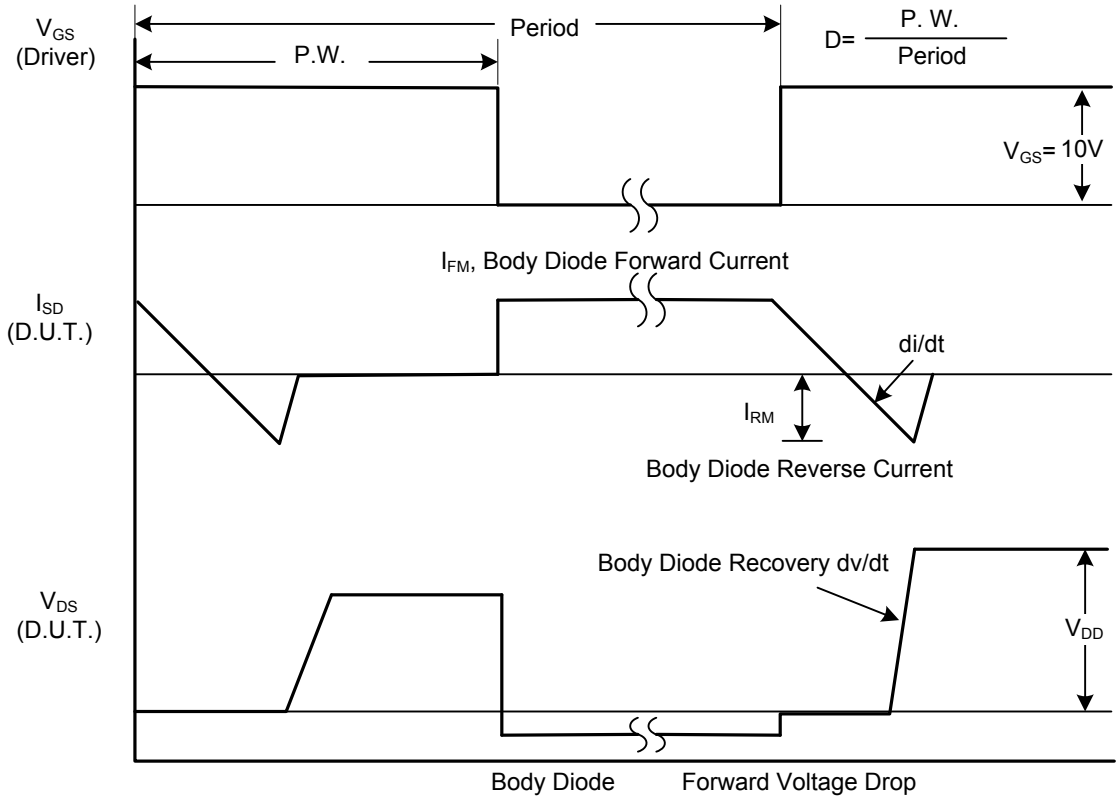
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	60			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+10	μA
	Reverse		V_{GS}=-20V, 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, dI_F/dt = 100 A/μs		62		ns
Reverse Recovery Charge (Note 1)		Q_{rr}			120		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

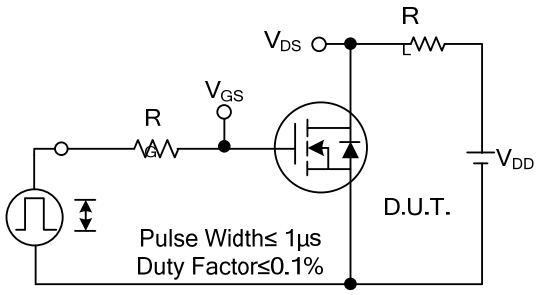


Peak Diode Recovery dv/dt Test Circuit

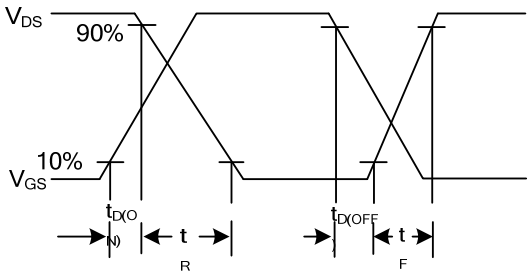


Peak Diode Recovery dv/dt Waveforms

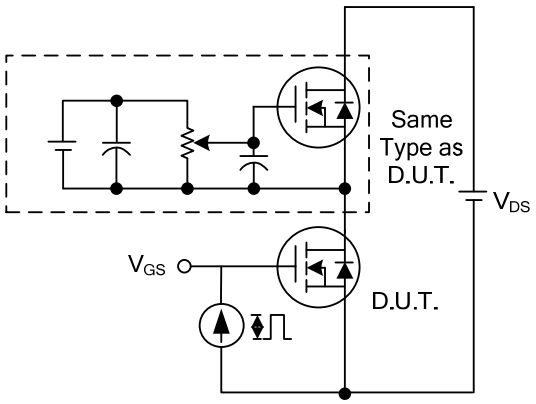
■ TEST CIRCUITS AND WAVEFORMS



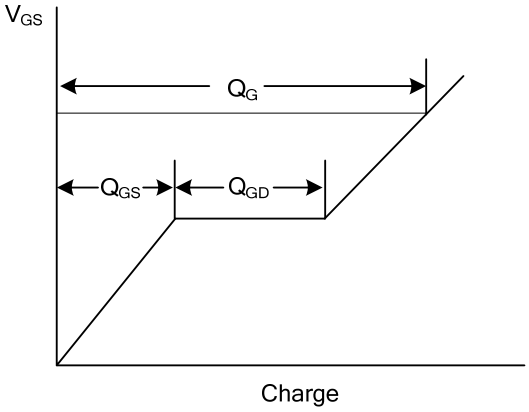
Switching Test Circuit



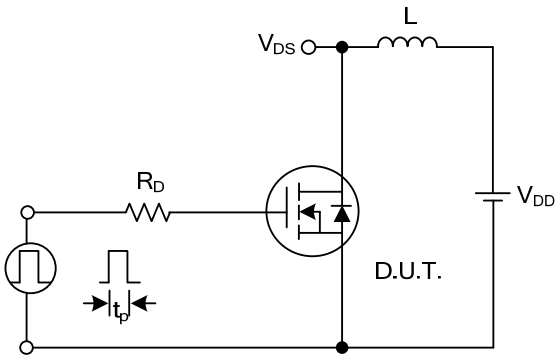
Switching Waveforms



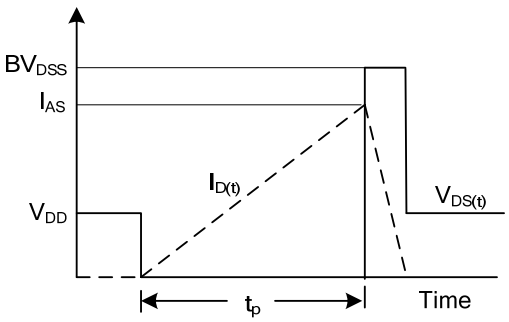
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms