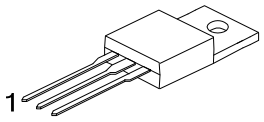
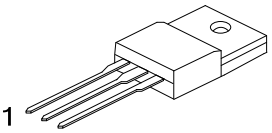
UNA06R032H

Preliminary ***POWER MOSFET***

120A, 60V N-CHANNEL POWERTRENCH MOSFET



TO-220



TO-220F2

■ DESCRIPTION

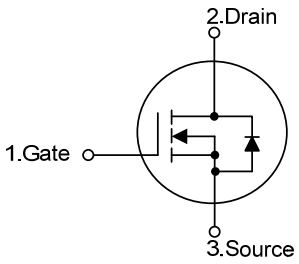
The UTC **UNA06R032H** is an N-channel Power Trench MOSFET, it uses UTC's advanced technology to provide the customers with fast switching speed and a minimum on-state resistance, etc.

The UTC **UNA06R032H** is suitable for battery protection circuit, motor drives and uninterruptible power supplies, etc.

■ FEATURES

* $R_{DS(ON)}$ < 3.2 mΩ @ V_{GS}=10V, I_D=75A
* Low gate charge
* Fast switching speed

■ SYMBOL



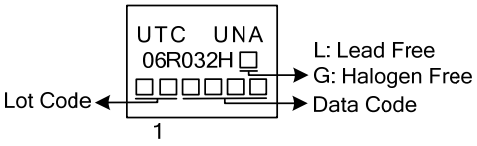
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UNA06R032HL-TA3-T	UNA06R032HG-TA3-T	TO-220	G	D	S	Tube
UNA06R032HL-TF2-T	UNA06R032HG-TF2-T	TO-220F2	G	D	S	Tube

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

UNA06R032HG-TA3-T (1)Packing Type (2)Package Type (3)Green Package	(1) T: Tube (2) TA3: TO-220, TF2: TO-220F2 (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	Continuous	I_D	120	A
	Pulsed (Note 1)	I_{DM}	480	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	1434	mJ
Peak Diode Recovery (Note 3)		dv/dt	6.0	V/ns
Power Dissipation	TO-220	P_D	231	W
	TO-220F2		77	W
Junction Temperature		T_J	-55 ~ +175	°C
Storage Temperature Range		T_{STG}	-55 ~ +175	°C

Note: 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.

■ THERMAL RESISTANCE

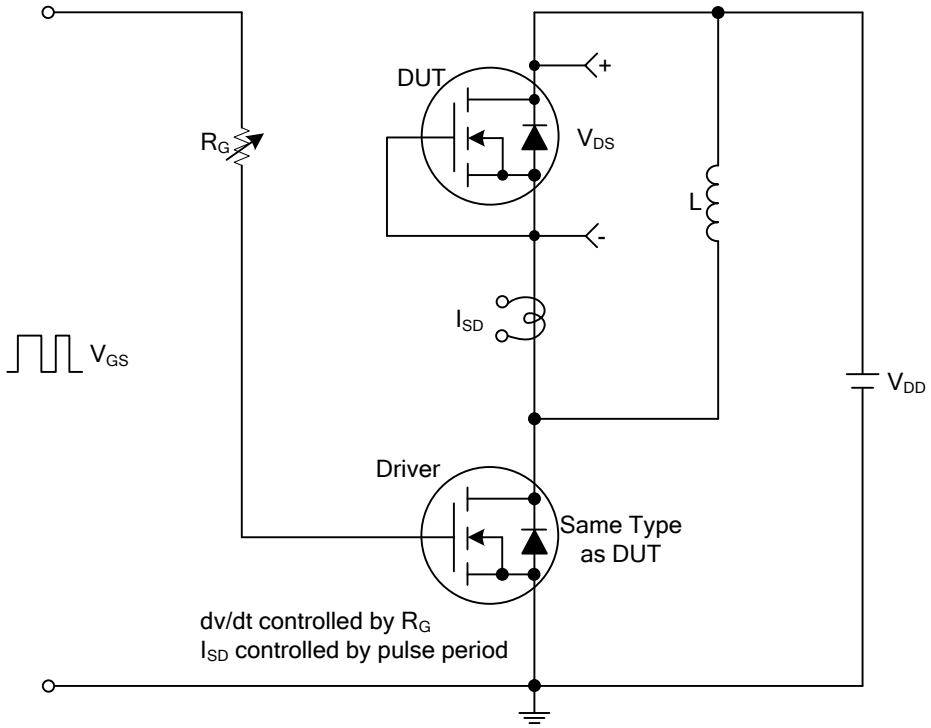
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	62.5	°C/W
Junction to Case	TO-220	θ_{JC}	0.54	°C/W
	TO-220F2		1.62	°C/W

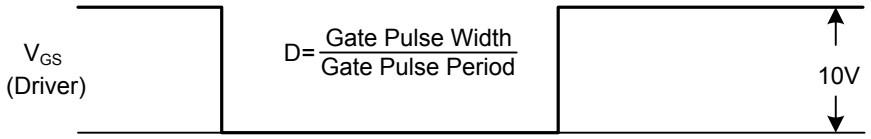
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

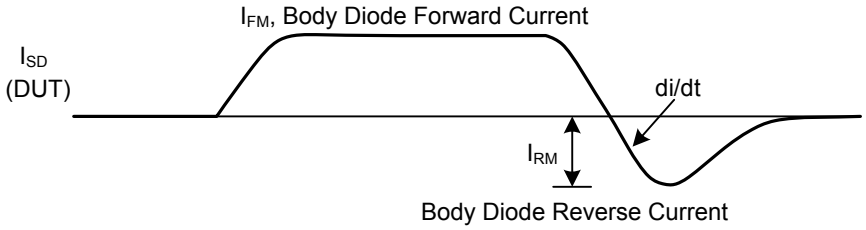
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA, T_C=25°C	60			V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=1mA		0.05		V/°C
Zero Gate Voltage Drain Current		I_{DSS}	V_{DS}=48V, V_{GS}=0V			1	μA
			V_{DS}=48V, T_C=150°C			500	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2.5	3.5	4.5	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=75A			3.2	mΩ
Forward Transconductance		g_{FS}	V_{DS}=10V, I_D=75A		154		S
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		1571		pF
Output Capacitance		C_{OSS}			693		pF
Reverse Transfer Capacitance		C_{RSS}			308		pF
SWITCHING PARAMETERS							
Total Gate Charge at 10V		Q_G	I_D=1.3A, V_{DS}=50V, V_{GS}=10V, (Note 4)		612		nC
Gate-to-Source Charge		Q_{GS}			60		nC
Gate-to-Drain ("Miller") Charge		Q_{GD}			78		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=30V, I_D=0.5A, R_G=25Ω V_{GS}=10V, (Note 4)		440		ns
Rise Time		t_R			455		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			1370		ns
Fall Time		t_F			677		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain to Source Diode Forward Current		I_S				193	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}				772	A
Drain-Source Diode Forward Voltage		V_{SD}	I_{SD}=75A, V_{GS}=0V			1.3	V
Reverse Recovery Time		t_{rr}	I_{SD}=75A, V_{GS}=0V, dI_F/dt=100A/μs		46		ns
Reverse Recovery Charge		Q_{rr}			50		nC

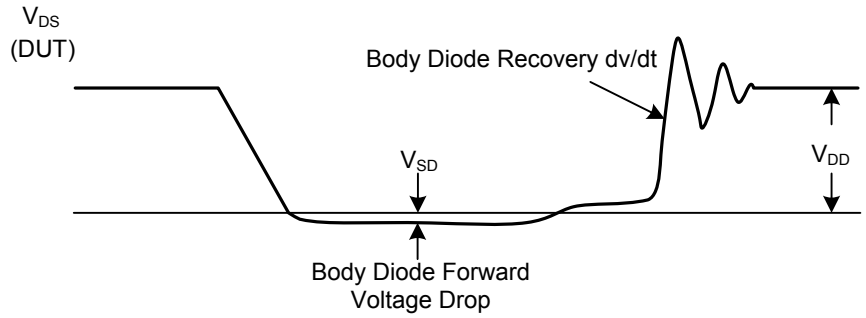
Notes: 1. Repetitive rating: pulse-width limited by maximum junction temperature.
2. L=0.51mH, I_{AS}=75A, V_{DD}=50V, R_G=25Ω, starting T_J=25°C.
3. I_{SD}≤75A, di/dt≤450A/μs, V_{DD}≤BV_{DSS}, starting T_J=25°C.
4. Essentially independent of operating temperature typical characteristics.

■ TEST CIRCUITS AND WAVEFORMS



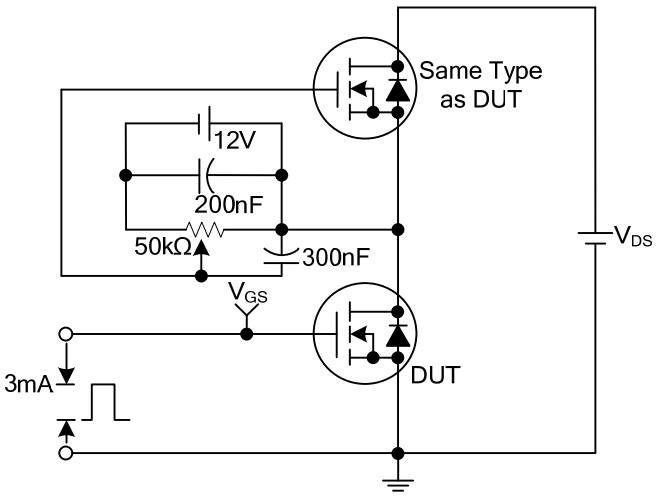




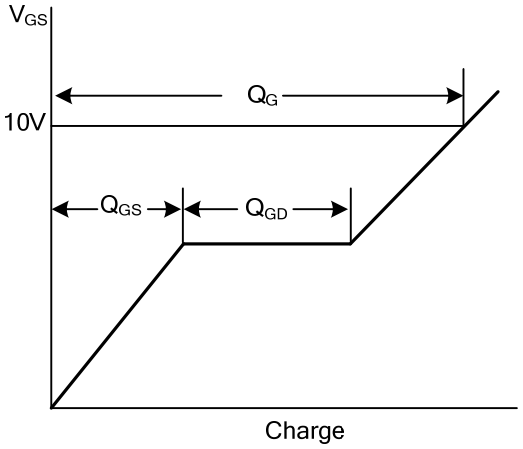


Peak Diode Recovery dv/dt Test Circuit and Waveforms

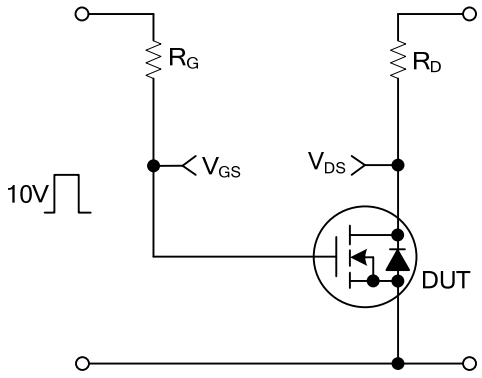
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



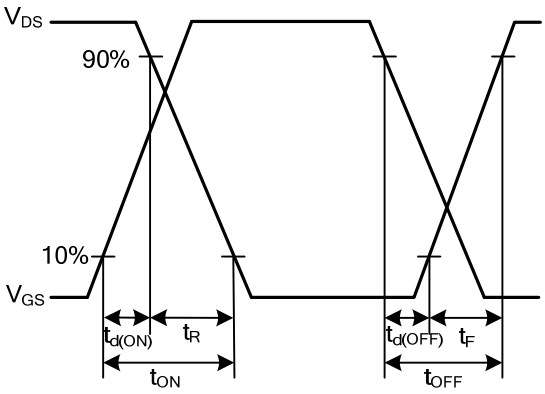
Gate Charge Test Circuit



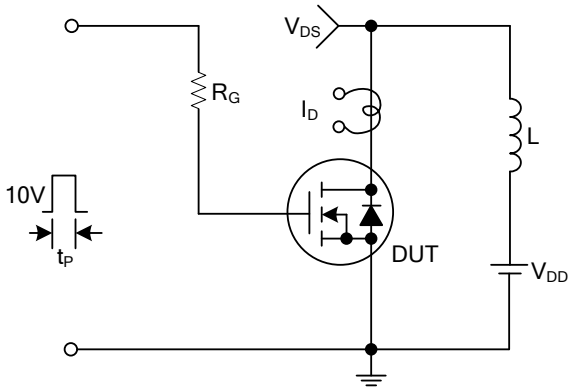
Gate Charge Waveforms



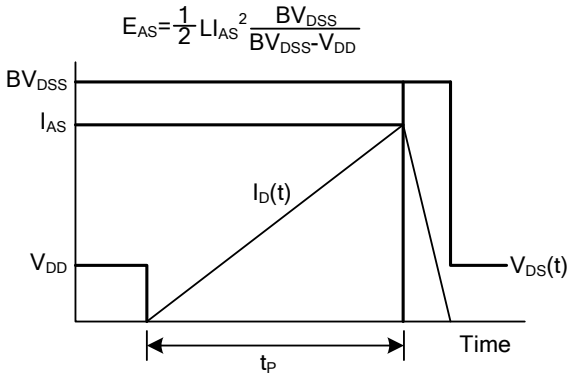
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms