



**USG10R800H**

Preliminary

*Power MOSFET*

**N-CHANNEL SGT  
ENHANCEMENT POWER  
MOSFET**

■ DESCRIPTION

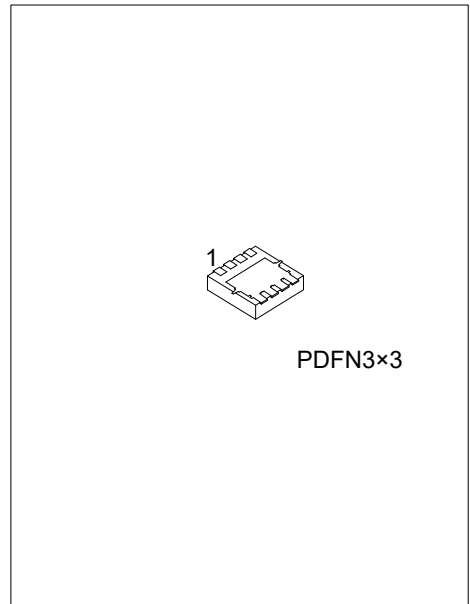
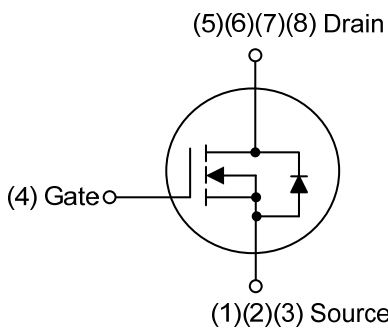
The UTC **USG10R800H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and low gate charge, etc.

The UTC **USG10R800H** applies to primary side switch, synchronous rectifier, Motor Drives, etc.

■ FEATURES

- \*  $R_{DS(ON)} \leq 80 \text{ m}\Omega$  @  $V_{GS}=10\text{V}$ ,  $I_D=6.0\text{A}$
- \* High Cell Density Trench Technology
- \* High Power and Current Handling Capability

■ SYMBOL



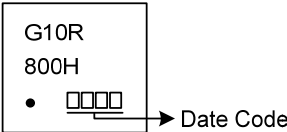
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing		
Lead Free	Halogen Free		1	2	3	4	5	6		7	8
USG10R800HL-P3030-R	USG10R800HG-P3030-R	PDFN3x3	S	S	S	G	D	D	D	D	Tape Reel

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

USG10R800HG-P3030-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) P3030: PDFN3x3
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	100	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	12
	Pulsed (Note 2)	$I_{DM}$	24
Single Pulsed Avalanche Energy (Note 3)	$E_{AS}$	0.2	mJ
Power Dissipation	$P_D$	6.7	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. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$ .

3.  $L = 0.1\text{mH}$ ,  $I_{AS} = 2.1\text{A}$ ,  $V_{DD} = 50\text{V}$ ,  $R_G = 25\Omega$ , Starting  $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	130	$^\circ\text{C/W}$
Junction to Case (Note)	$\theta_{JC}$	18.6	$^\circ\text{C/W}$

Note: Device mounted on FR-4 substrate  $P_c$  board, 2oz copper, with 1inch square copper plate.

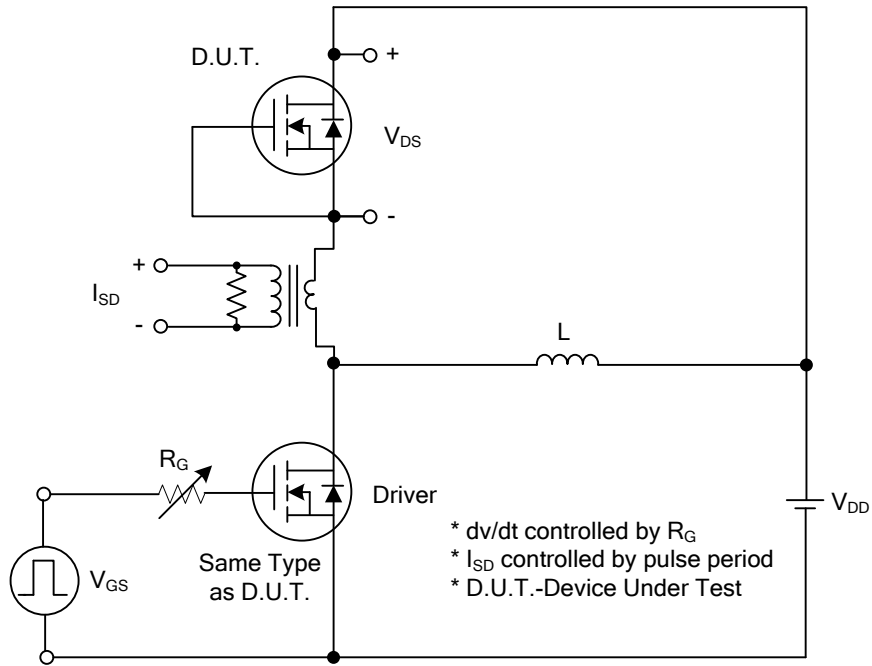
■ ELECTRICAL CHARACTERISTICS ( $T_J=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Source Leakage Current	Forward	$I_{GSS}$			+100	nA
	Reverse					
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=6.0\text{A}$			80	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25\text{V}$ , $V_{GS}=0\text{V}$ , $f=1.0\text{MHz}$		217		pF
Output Capacitance	$C_{OSS}$			130		pF
Reverse Transfer Capacitance	$C_{RSS}$			18		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{DS}=80\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=6\text{A}$		11		nC
Gate to Source Charge	$Q_{GS}$			3		nC
Gate to Drain Charge	$Q_{GD}$			2		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=50\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=6\text{A}$ , $R_G=3\Omega$		3		ns
Rise Time	$t_r$			18		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			14		ns
Fall-Time	$t_f$			19		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				12	A
Maximum Body-Diode Pulsed Current	$I_{SM}$				24	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_{SD}=12\text{A}$			1.4	V

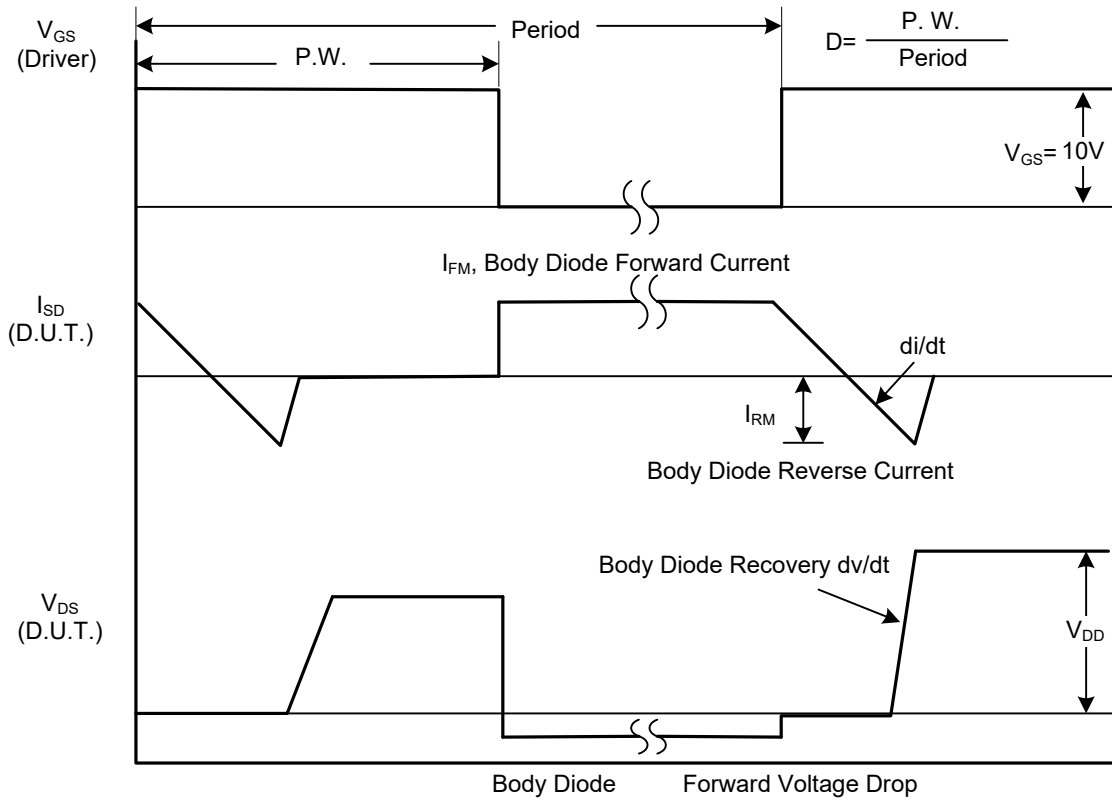
Notes: 1. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$ .

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

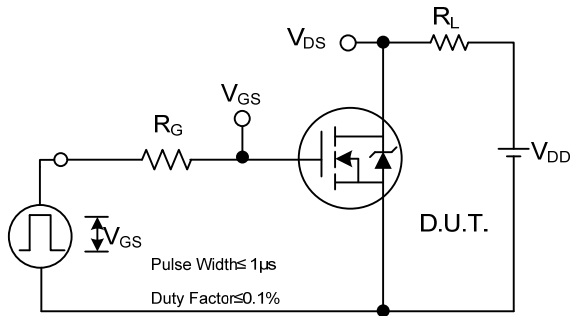


Peak Diode Recovery dv/dt Test Circuit

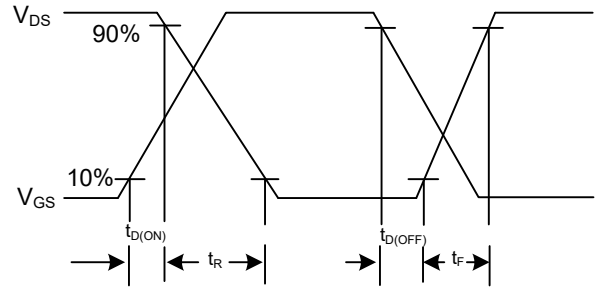


Peak Diode Recovery dv/dt Waveforms

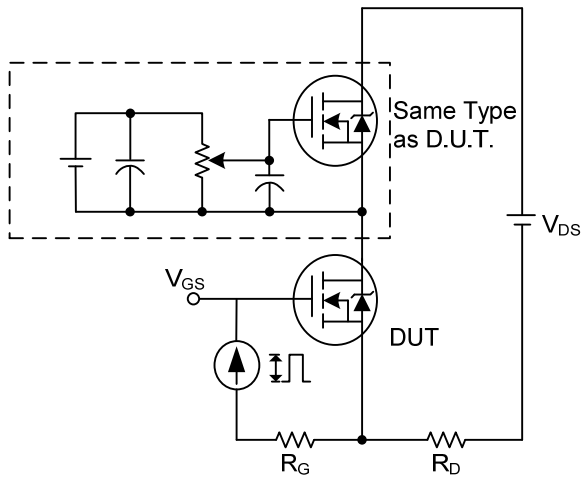
■ TEST CIRCUITS AND WAVEFORMS



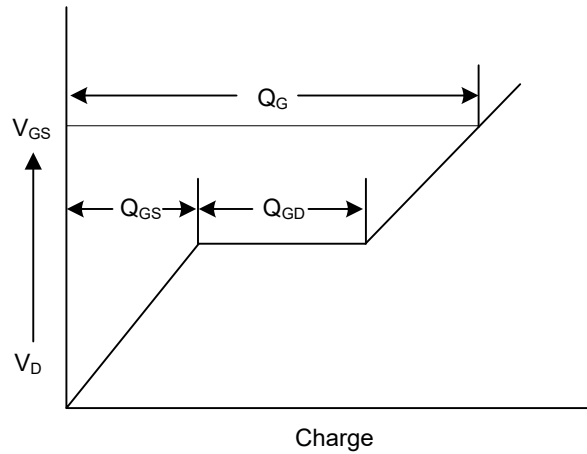
Switching Test Circuit



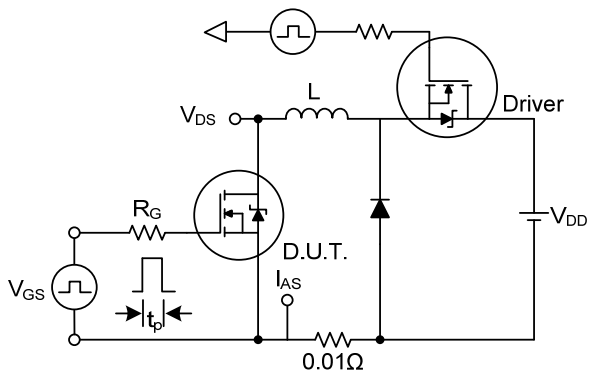
Switching Waveforms



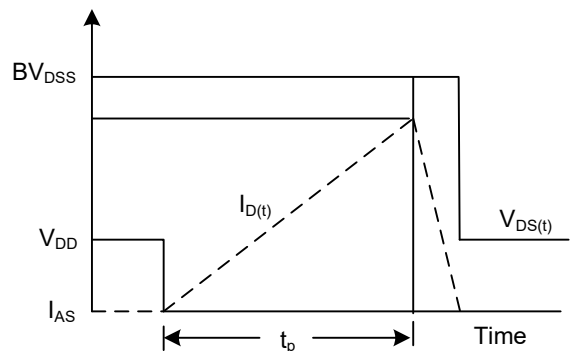
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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