

**USG35N06**

Preliminary

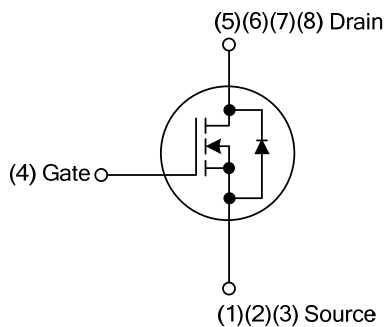
*Power MOSFET***34.5A, 60V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **USG35N06** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low $R_{DS(ON)}$ characteristic by high cell density trench technology.

The UTC **USG35N06** is suitable for high efficiency synchronous rectification in SMPS, UPS, hard switched and high frequency circuits.

FEATURES

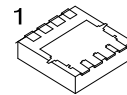
- * $R_{DS(ON)} < 15\text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=10\text{A}$
- * Low $R_{DS(ON)}$
- * High Cell Density Trench Technology
- * High Power and Current Handling Capability

SYMBOL**ORDERING INFORMATION**

Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
USG35N06G-K08-3030-R	DFN-8(3×3)	S	S	S	G	D	D	D	D	Tape Reel

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

USG35N06G-K08-3030-R		(1) Packing Type	(1) R: Tape Reel
		(2) Package Type	(2) K08-3030: DFN-8(3×3)
		(3) Green Package	(3) G: Halogen Free and Lead Free

MARKING

DFN-8(3×3)

■ 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	Continuous	I_D	34.5	A
	Pulsed (Note 2)	I_{DM}	138	A
Avalanche Current (Note 2)		I_{AR}	20	A
Avalanche Energy (Note 3)	Single Pulsed (Note 3)	E_{AS}	20	mJ
Power Dissipation		P_D	34.7	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. $L=0.1\text{mH}$, $I_{AS}=20\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	40	$^{\circ}\text{C/W}$
Junction to Case	θ_{JC}	3.6	$^{\circ}\text{C/W}$

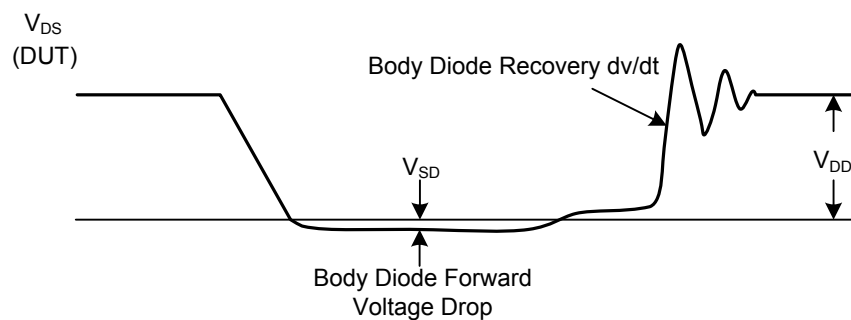
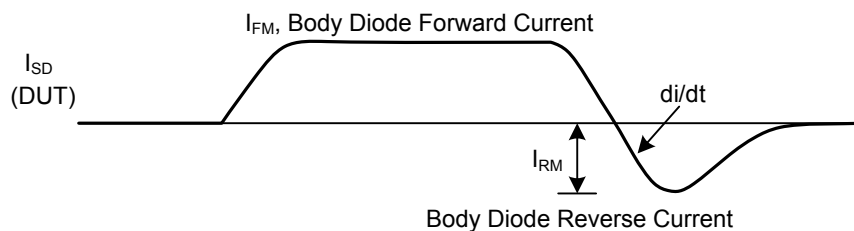
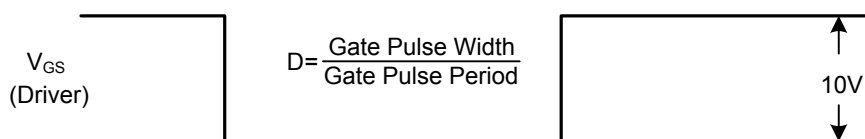
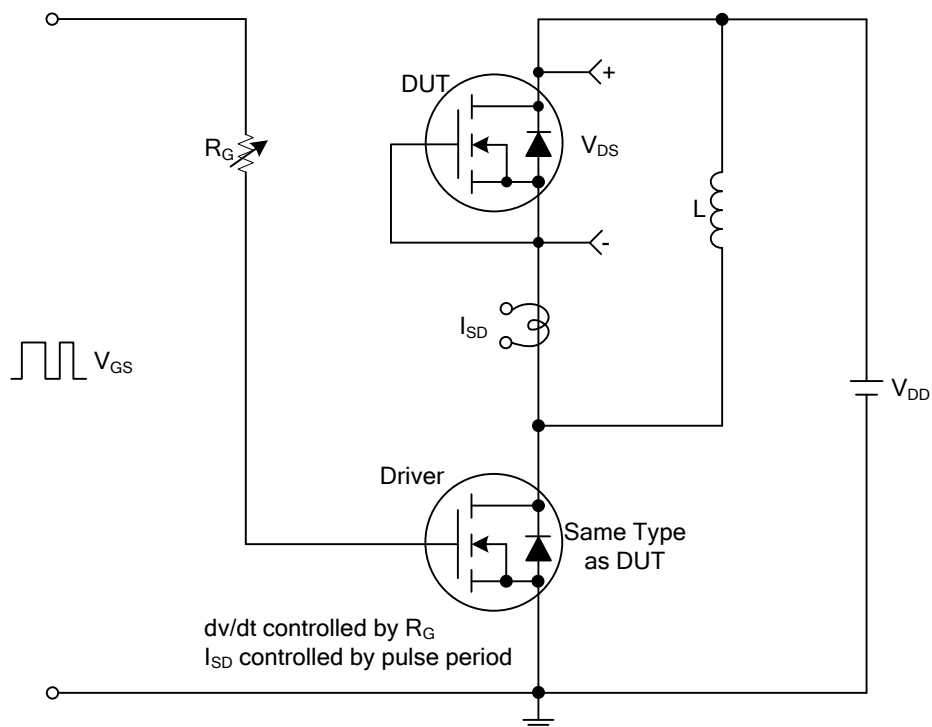
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20 V, V _{DS} =0V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.5		2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A		12	15	mΩ
		V _{GS} =4.5V, I _D =9.0A		15	19	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =30V, f=1.0MHz		1340		pF
Output Capacitance	C _{OSS}			123		pF
Reverse Transfer Capacitance	C _{RSS}			10		pF
SWITCHING PARAMETERS						
Total Gate Charge at 10V	Q _G	V _{DS} =30V, V _{GS} =10V, I _D =10A		21		nC
Gate-to-Source Charge	Q _{GS}			4.7		nC
Gate-to-Drain Charge	Q _{GD}			2.6		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =30V, V _{GS} =10V, R _L =3.0Ω, R _G =3.0Ω		6.0		ns
Rise Time	t _R			2.5		ns
Turn-OFF Delay Time	t _{D(OFF)}			22		ns
Fall Time	t _F			2.5		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current (Note)	I _S				34.5	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				138	A
Diode Forward Voltage	V _{SD}	I _S =1.0A, V _{GS} =0V			1.0	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =10A, dI/dt=500A/μs		15.5		ns
Body Diode Reverse Recovery Charge	Q _{rr}			55.5		nC

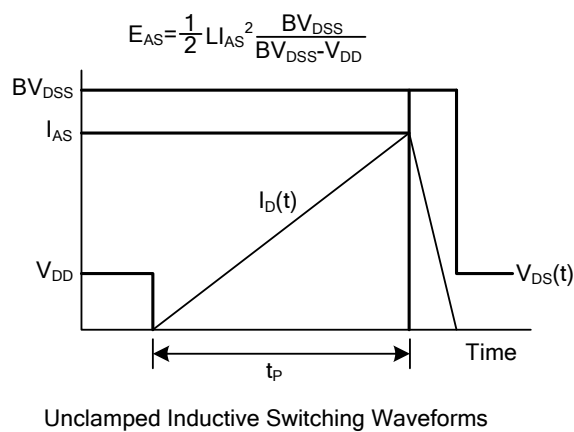
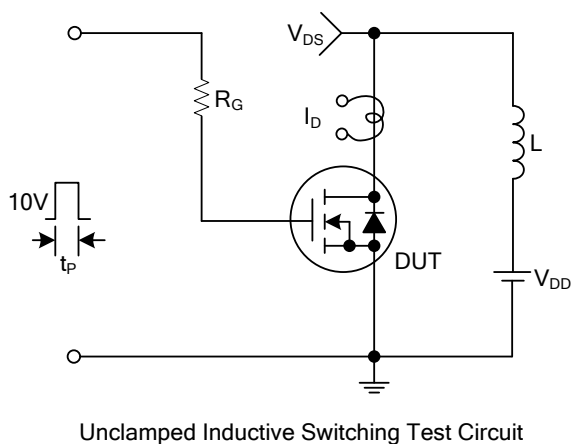
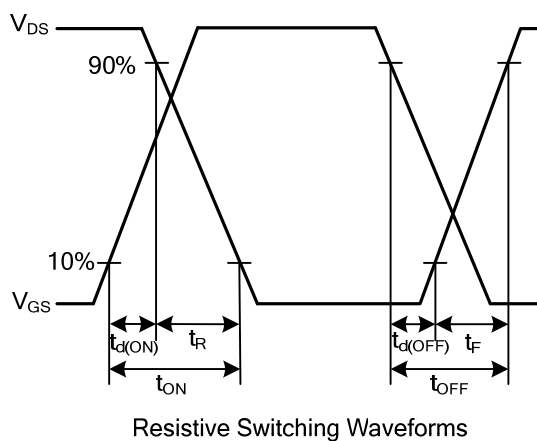
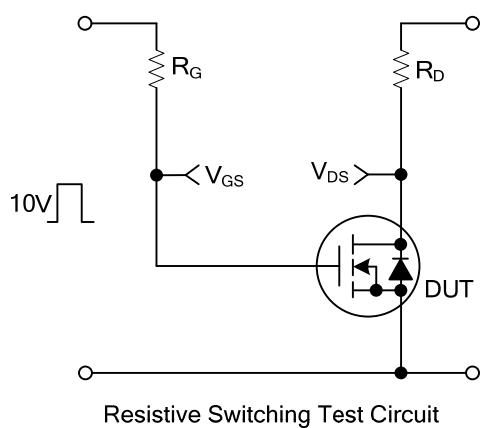
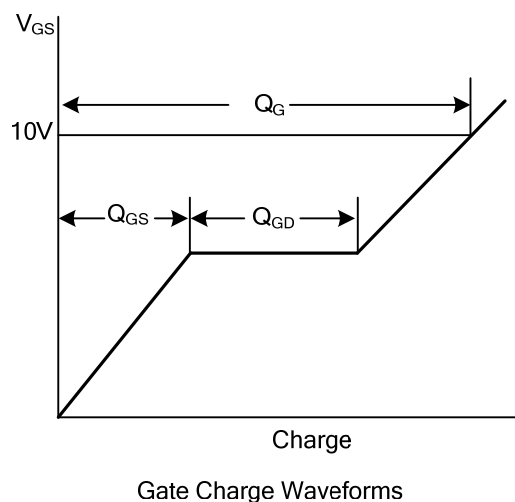
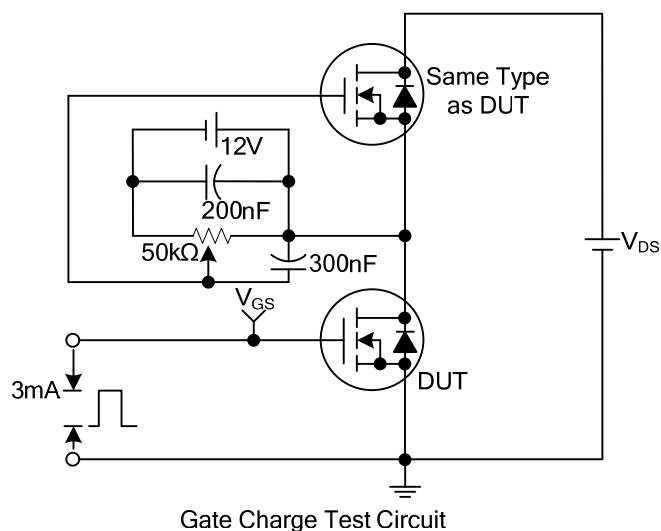
Notes: 1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

Peak Diode Recovery dv/dt Test Circuit and Waveforms

■ TEST CIRCUITS AND WAVEFORMS (Cont.)



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