



USG70N11

Advance

POWER MOSFET

70A, 115V N-CHANNEL ENHANCEMENT MODE TRENCH POWER MOSFET

DESCRIPTION

The UTC **USG70N11** 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 **USG70N11** is suitable for high efficiency synchronous rectification in SMPS, UPS, hard switched and high frequency circuits.

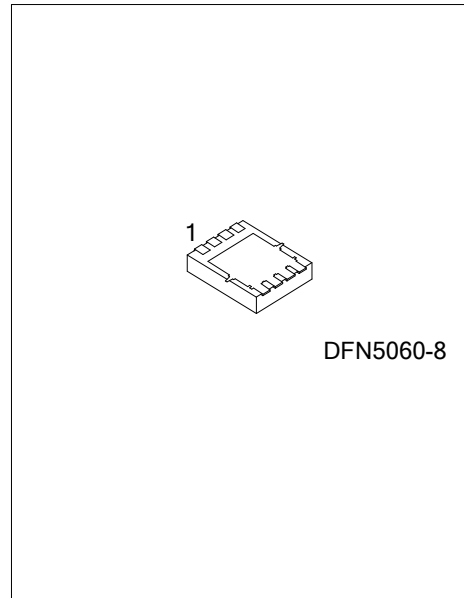
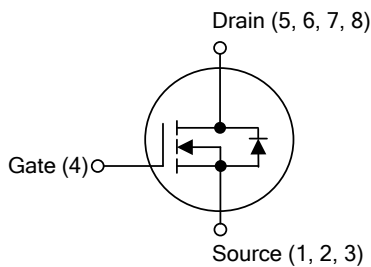
APPLICATION

- * Synchronous Rectification in SMPS
- * Hard Switching and High Speed Circuit
- * DC/DC in Telecoms and Industrial

FEATURES

- * $R_{DS(ON)} \leq 12.5 \text{ m}\Omega @ V_{GS}=10\text{V}, I_D=15\text{A}$
- * $R_{DS(ON)} \leq 19 \text{ m}\Omega @ V_{GS}=4.5\text{V}, I_D=8.0\text{A}$
- * Optimized for high speed switching, Logic level
- * Enhanced Body diode dv/dt capability
- * Enhanced Avalanche Ruggedness

SYMBOL



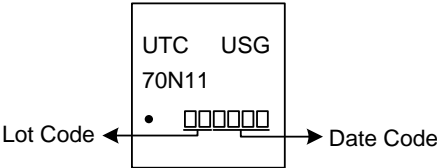
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
USG70N11L-K08-5060-R	USG70N11G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

USG70N11G-K08-5060-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) K08-5060: DFN5060-8
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	115	V
Gate-Source Voltage		V _{GSS}	20 / -12	V
Continuous Drain Current	Continuous	I _D	70	A
Pulsed Drain Current	Pulsed (Note 2)	I _{DM}	140	A
Power Dissipation		P _D	20	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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note)		θ _{JA}	35	°C/W
Junction to Case		θ _{JC}	6.25 (Note)	°C/W

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

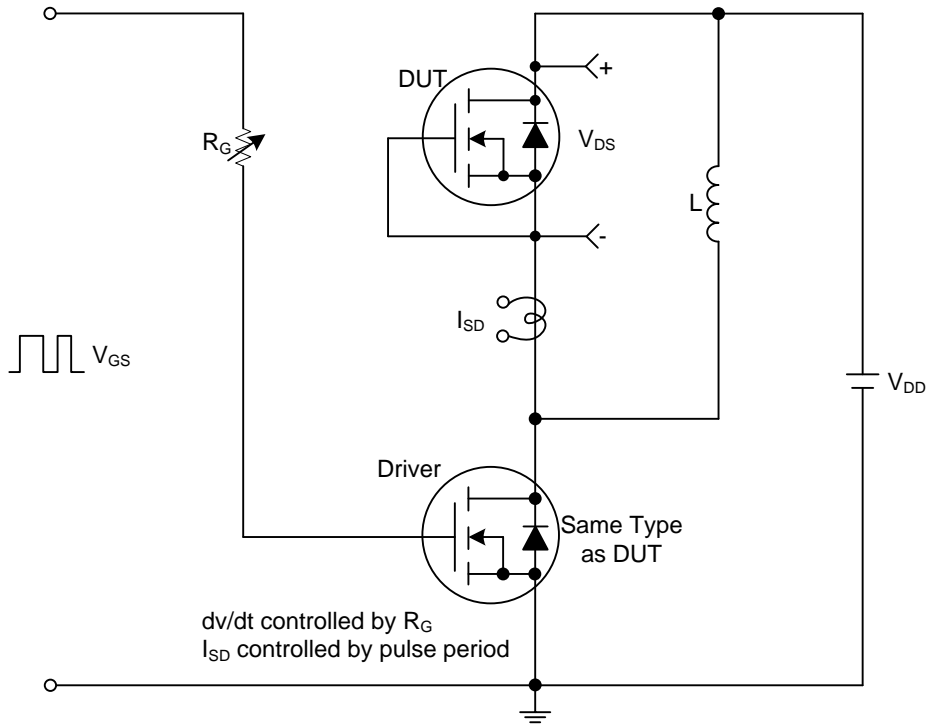
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	115			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-12V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.2		2.5	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =15A		10	12.5	mΩ
			V _{GS} =4.5V, I _D =8.0A		15	19	mΩ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				70	A
Maximum Body-Diode Pulsed Current		I _{SM}				140	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _F =70A, V _{GS} =0V			1.4	V

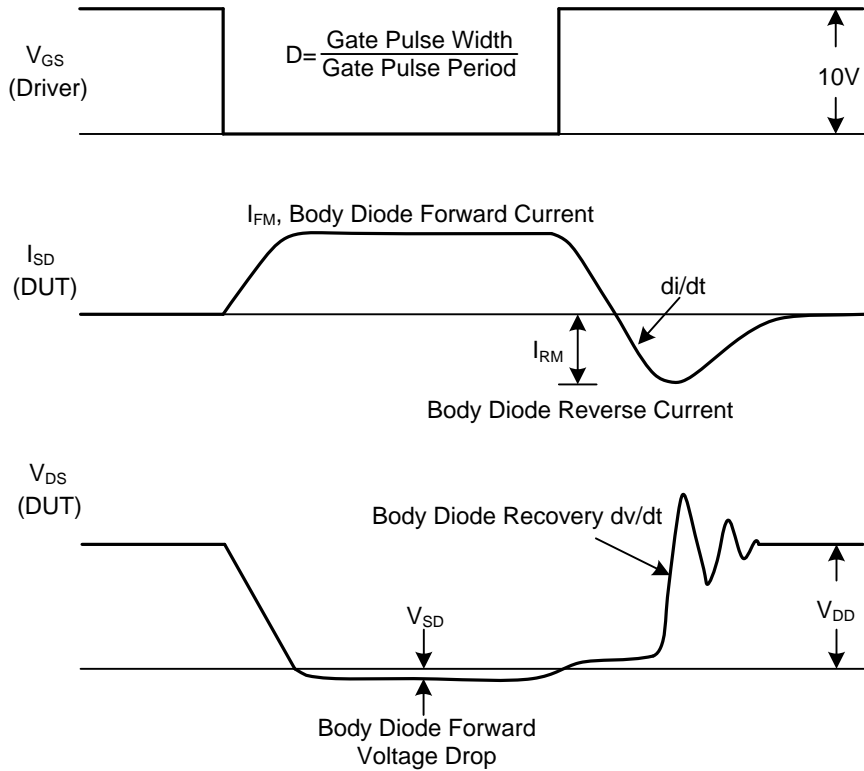
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



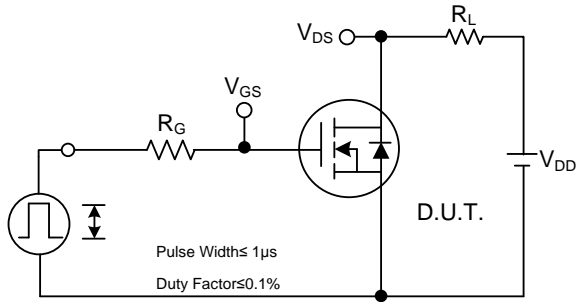
Peak Diode Recovery dv/dt Test Circuit



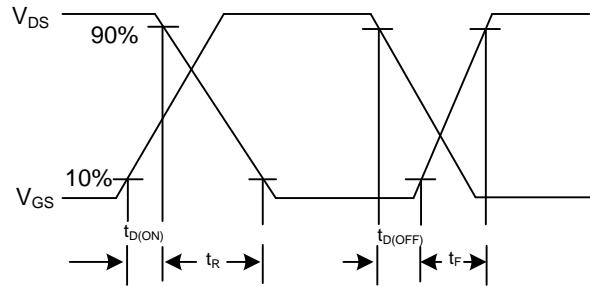
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

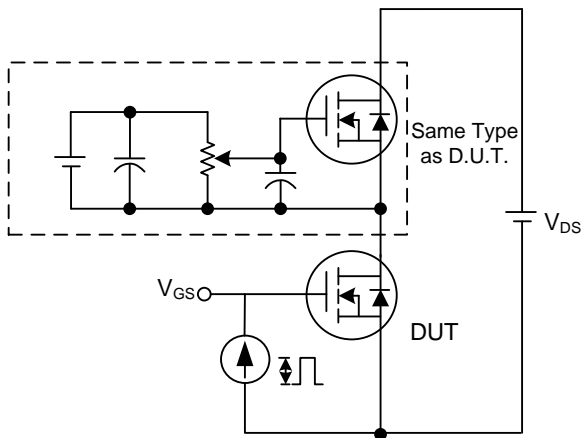
■ TEST CIRCUITS AND WAVEFORMS



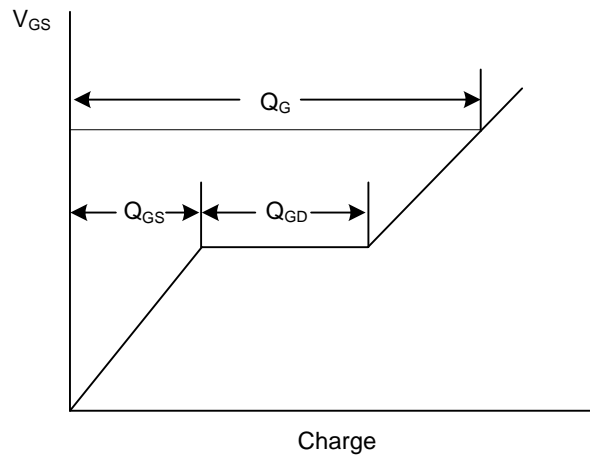
Switching Test Circuit



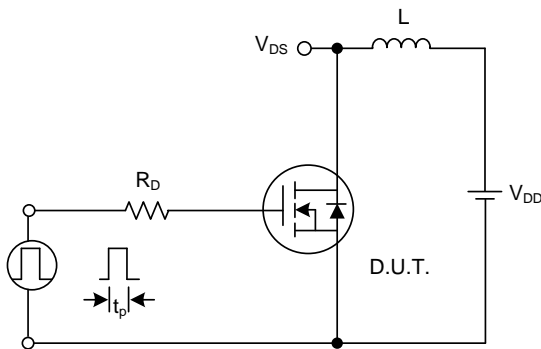
Switching Waveforms



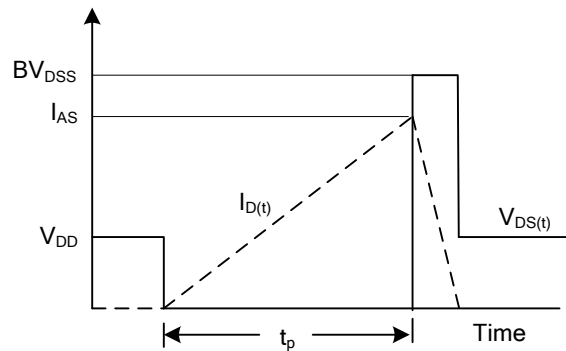
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.