



UF701Z

Power MOSFET

0.185A, 700V N-CHANNEL DEPLETION-MODE POWER MOSFET

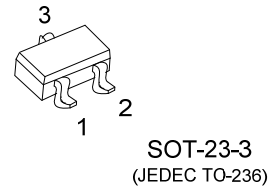
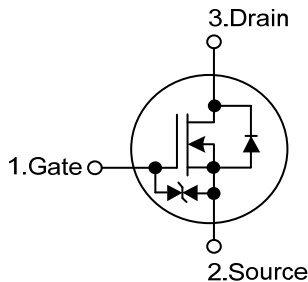
DESCRIPTION

The UTC **UF701Z** is a N-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed.

FEATURES

- * $R_{DS(ON)} \leq 600 \Omega$ @ $V_{GS}=0V$, $I_D=3.0mA$
- * High Switching Speed

SYMBOL



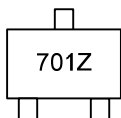
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF701ZL-AE2-R	UF701ZG-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

UF701ZG-AE2-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE2: SOT-23-3
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage (Note 2)		V _{DSS}	700	V
Drain-Gate Voltage (Note 2)		V _{DGX}	700	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous	I _D	0.185	A
	Pulsed	I _{DM}	0.740	A
Power Dissipation		P _D	0.50	W
Junction Temperature		T _J	+150	°C
Storage Temperature		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	θ _{JA}	250 (Note)	°C/W

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

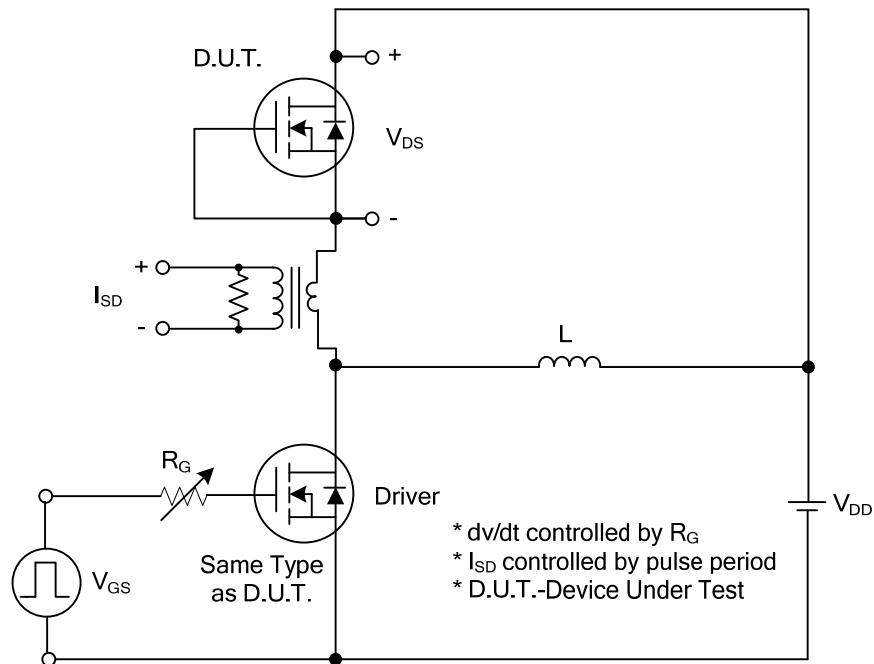
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =-5.0V	700			V
Drain-Source Leakage Current		I _{D(OFF)}	V _{DS} =700V, V _{GS} =-5.0V			0.1	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 to Source Cut Off Voltage		V _{GS(OFF)}	V _{DS} =3V, I _D =8μA	-1.0		-3.0	V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =25V, V _{GS} =0V	7.0			mA
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =0V, I _D =3.0mA		400	600	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =-5V, V _{DS} =25V, f=1.0MHz		12		pF
Output Capacitance		C _{OSS}			4		pF
Reverse Transfer Capacitance		C _{RSS}			1.5		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =100V, V _{GS} =-5~5V, I _D =3mA (Note 1, 2)		887		nC
Gate to Source Charge		Q _{GS}			222		nC
Gate to Drain Charge		Q _{GD}			264		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =100V, V _{GS} =-5~5V, I _D =3mA, R _G =25Ω (Note 1, 2)		27		ns
Rise Time		t _R			32		ns
Turn-OFF Delay Time		t _{D(OFF)}			83		μs
Fall-Time		t _F			188		μs
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V _{SD}	I _S =3mA , V _{GS} =-10V			1.4	V

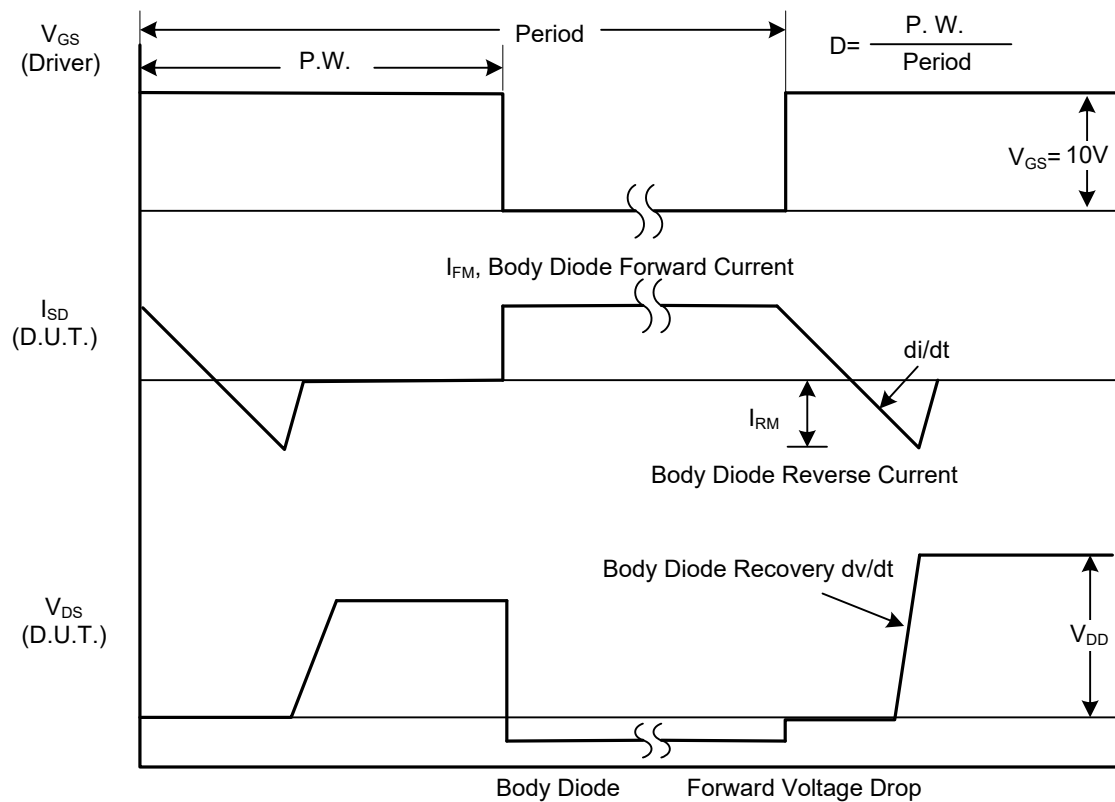
Notes: 1. Pulse Test: Pulse width ≤ 380μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

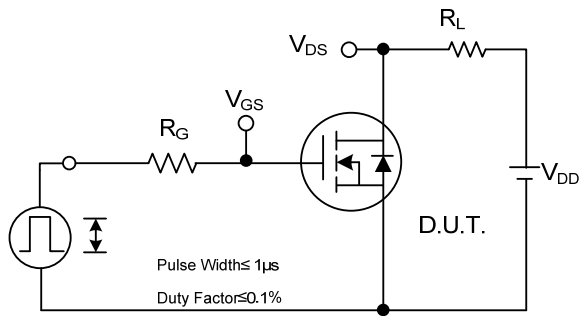


Peak Diode Recovery dv/dt Test Circuit

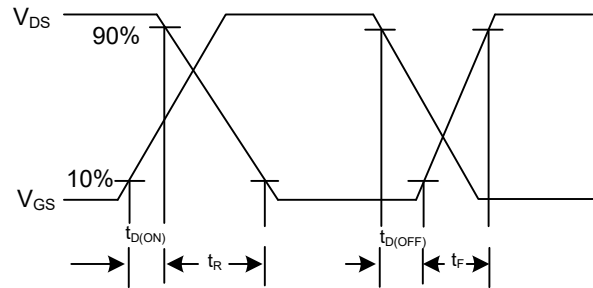


Peak Diode Recovery dv/dt Waveforms

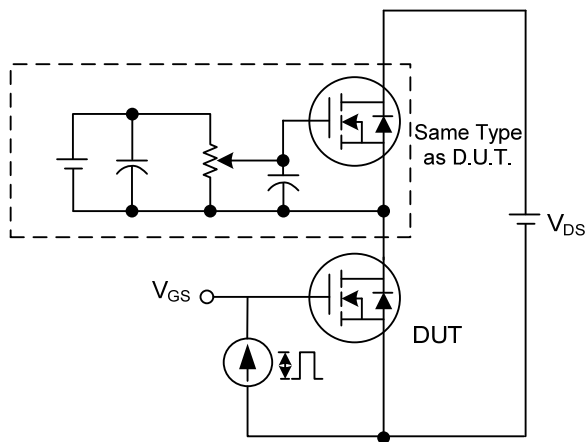
■ TEST CIRCUITS AND WAVEFORMS



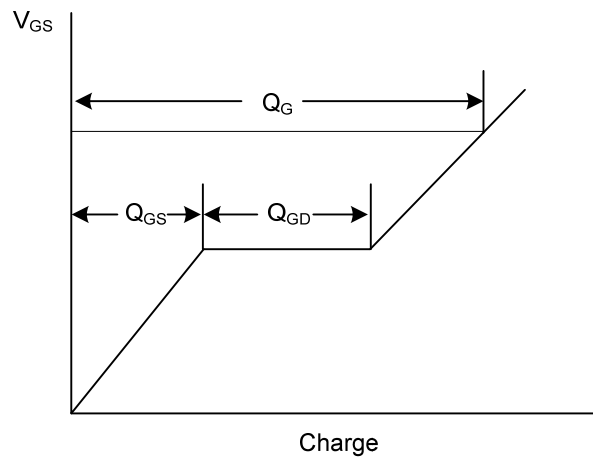
Switching Test Circuit



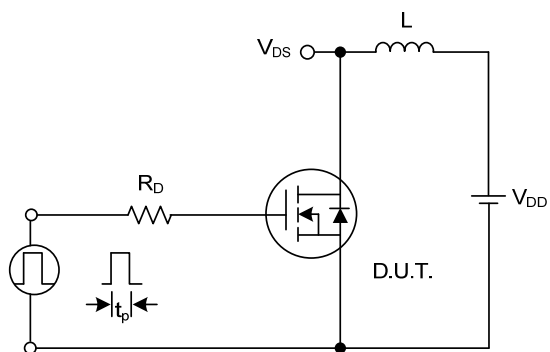
Switching Waveforms



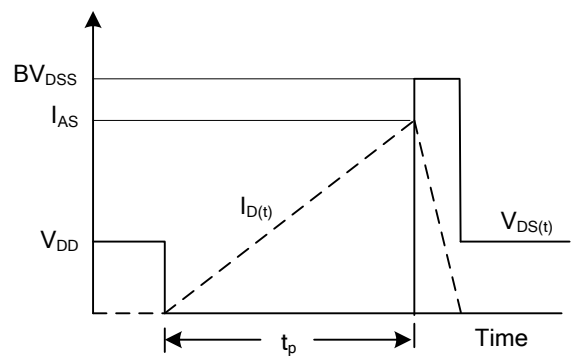
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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.