



UTT08N02Z-F

Power MOSFET

800mA, 20V N-CHANNEL POWER MOSFET

DESCRIPTION

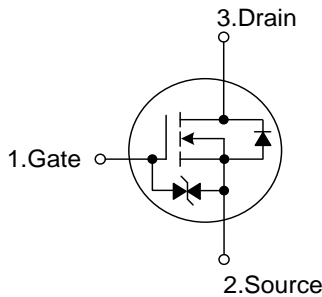
UTC **UTT08N02Z-F** is a N-Channel enhancement mode power field effect transistors are using trench DMOS technology.

This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

FEATURES

- * $R_{DS(ON)} \leq 300 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=0.5\text{A}$
- * Suit for 1.5V gate drive applications
- * Improved dv/dt capability
- * Fast switching
- * Green device available

SYMBOL

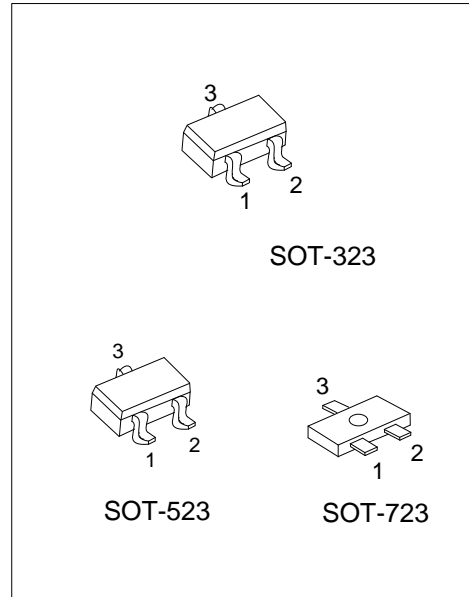


ORDERING INFORMATION

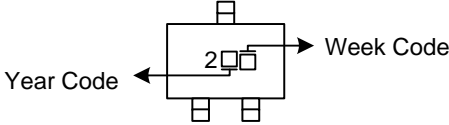
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT08N02ZL-AL3-R	UTT08N02ZG-AL3-R	SOT-323	G	S	D	Tape Reel
UTT08N02ZL-AN3-R	UTT08N02ZG-AN3-R	SOT-523	G	S	D	Tape Reel
UTT08N02ZL-AQ3-R	UTT08N02ZG-AQ3-R	SOT-723	G	S	D	Tape Reel

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

UTT08N02ZG-AL3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AL3: SOT-323, AN3: SOT-523, AQ3: SOT-723
	(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		V _{DSS}	20	V
Gate-Source Voltage		V _{GSS}	±8	V
Drain Current	Continuous	I _D	800	mA
	Pulsed (Note 2)	I _{DM}	3.2	A
Power Dissipation	SOT-323	P _D	260	mW
	SOT-523		200	mW
	SOT-723		150	mW
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 CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-323	θ _{JA}	450	°C/W
	SOT-523		625	°C/W
	SOT-723		833	°C/W

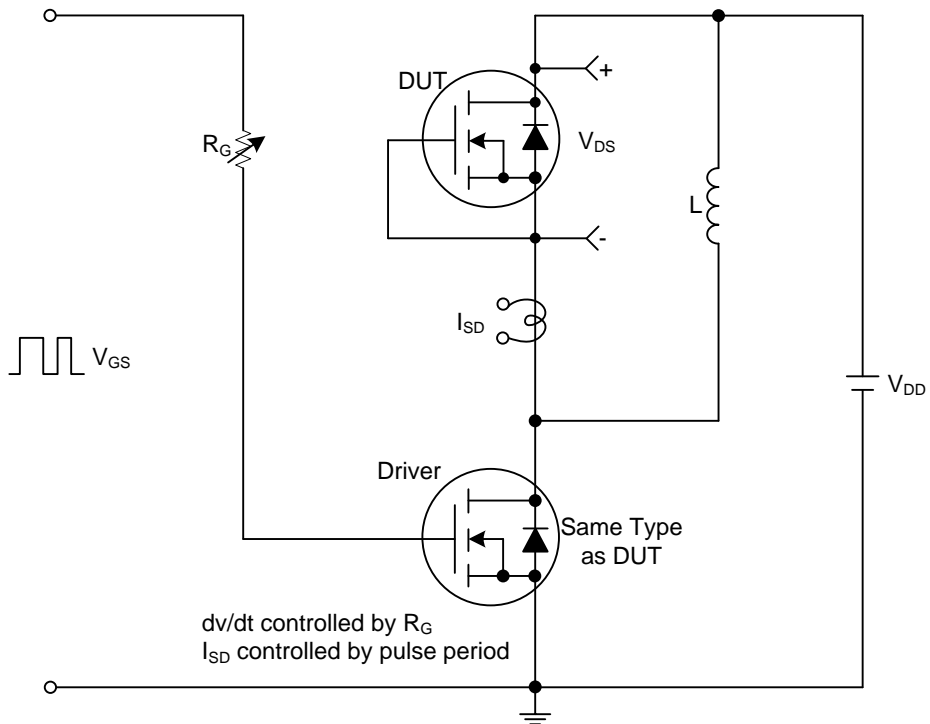
■ ELECTRICAL CHARACTERISTICS (T_J = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	20			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _J =25°C			1	μA
			V _{DS} =16V, V _{GS} =0V, T _J =125°C			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+8V, V _{DS} =0V			20	μA
	Reverse		V _{GS} =-8V, V _{DS} =0V			-20	μA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.3	0.5	0.85	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =4.5V, I _D =0.5A		200	300	mΩ
			V _{GS} =2.5V, I _D =0.4A		300	450	mΩ
			V _{GS} =1.8V, I _D =0.2A		500	700	mΩ
			V _{GS} =1.5V, I _D =0.1A		800	1200	mΩ
DYNAMIC PARAMETERS							
Input Capacitance	C _{ISS}	V _{DS} =10V, V _{GS} =0V, f=1.0MHz		38.2	75		pF
Output Capacitance	C _{OSS}			14.4	28		pF
Reverse Transfer Capacitance	C _{RSS}			6	12		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)	Q _G	V _{DS} =10V, V _{GS} =4.5V, I _D =0.5A		1	2		nC
Gate to Source Charge	Q _{GS}			0.26	0.5		nC
Gate to Drain Charge	Q _{GD}			0.2	0.4		nC
Turn-on Delay Time (Note 1)	t _{D(ON)}	V _{DS} =10V, V _{GS} =4.5V, I _D =0.5A, R _G =10Ω		5	10		ns
Rise Time	t _R			3.5	7		ns
Turn-off Delay Time	t _{D(OFF)}			14	28		ns
Fall-Time	t _F			6	12		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				0.8	A
Maximum Body-Diode Pulsed Current		I _{SM}				1.6	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =0.2A, V _{GS} =0V			1	V

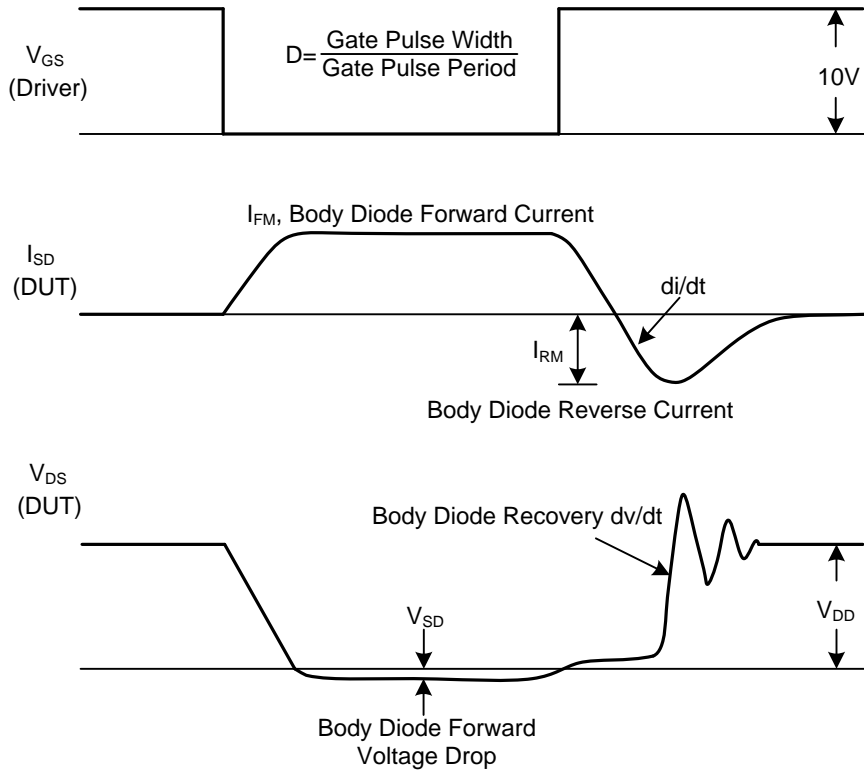
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



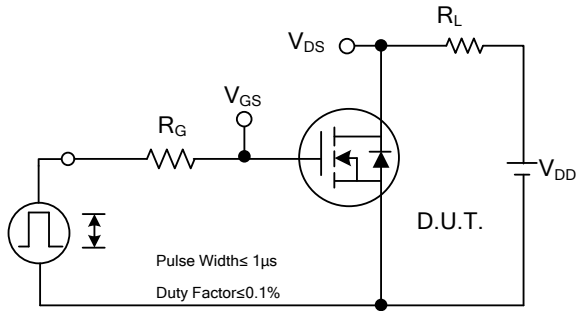
Peak Diode Recovery dv/dt Test Circuit



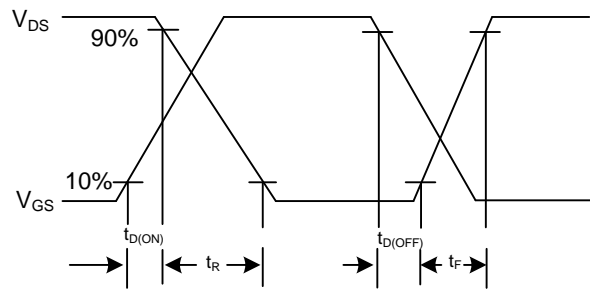
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

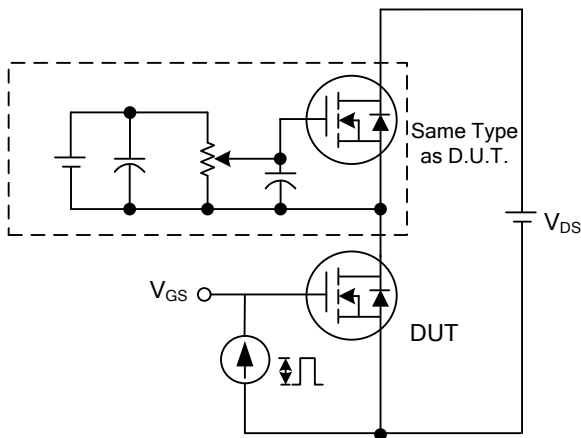
TEST CIRCUITS AND WAVEFORMS



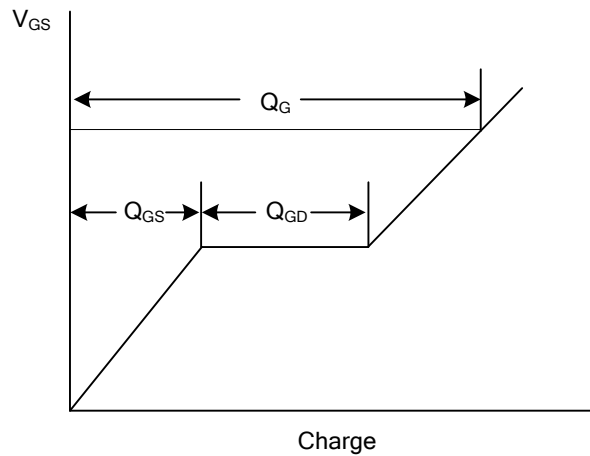
Switching Test Circuit



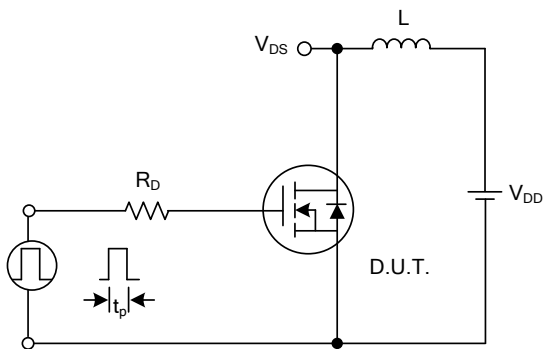
Switching Waveforms



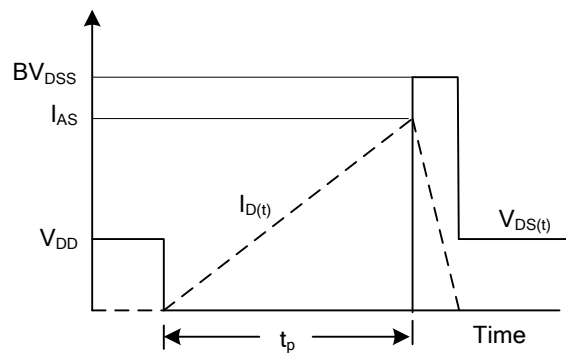
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS

Fig.1 Continuous Drain Current vs. Case Temperature

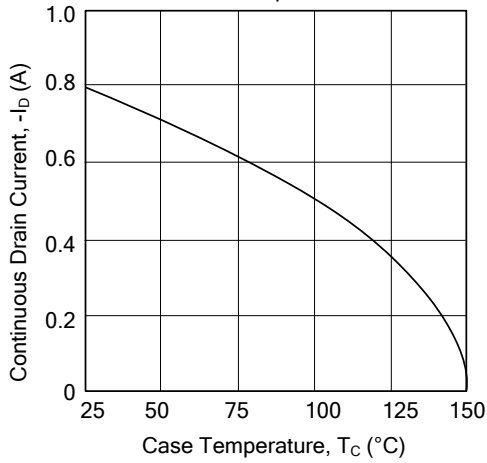


Fig.2 Normalized $R_{DS(on)}$ vs. Junction Temperature

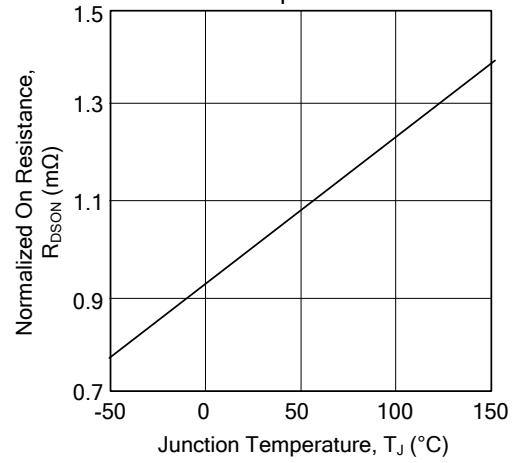


Fig.3 Normalized V_{th} vs. Junction Temperature

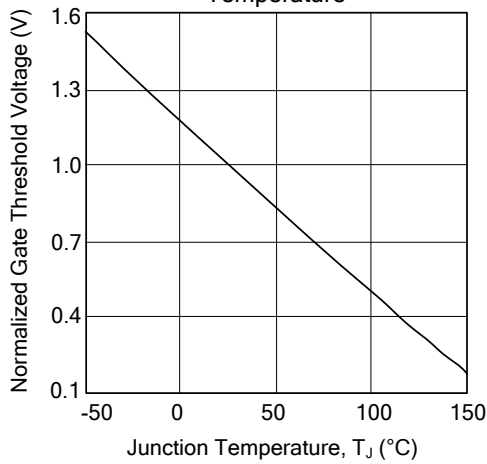


Fig.4 Gate Charge Waveform

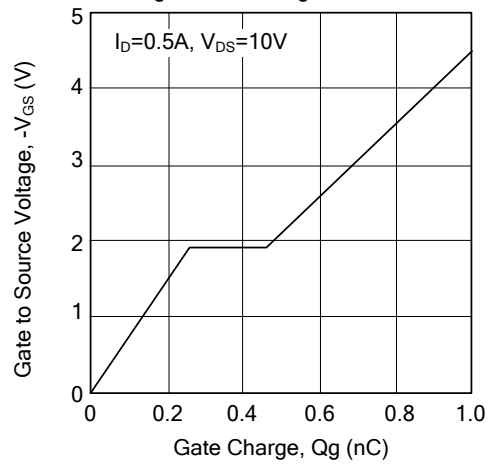


Fig.5 Normalized Transient Impedance

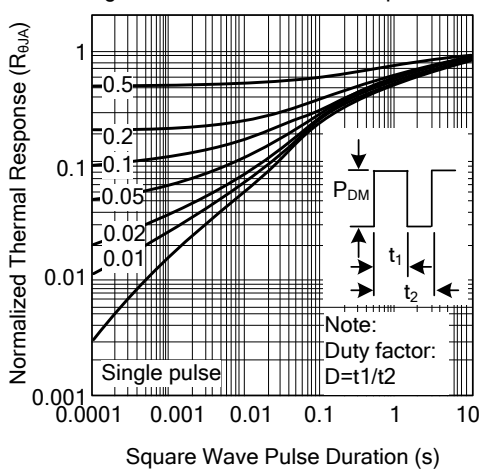
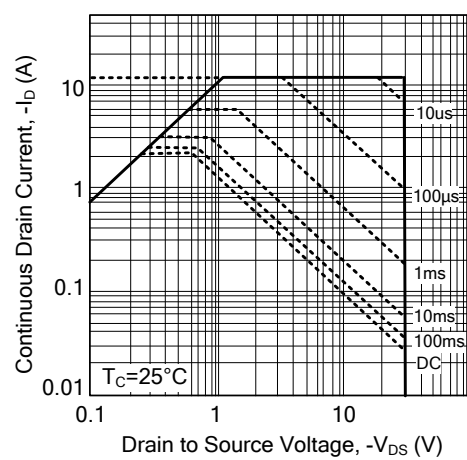
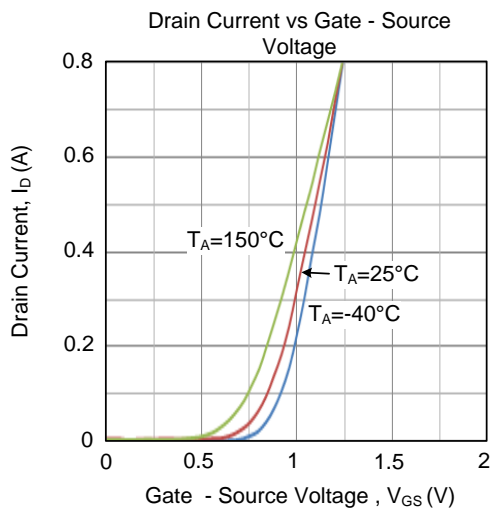


Fig.6 Maximum Safe Operation Area



■ TYPICAL CHARACTERISTICS (Cont.)



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