



UT8N06Z

Preliminary

POWER MOSFET

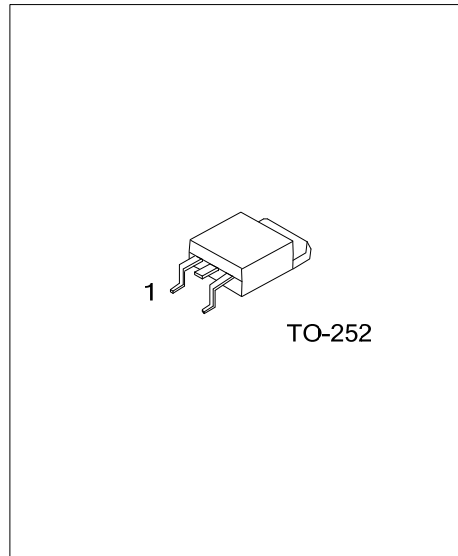
N-CHANNEL ENHANCEMENT MODE POWER MOSFET

■ DESCRIPTION

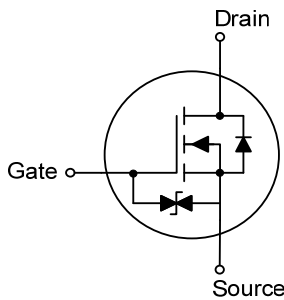
This **UT8N06Z** is an N-channel power MOSFET providing very low on-resistance. It has high efficiency and perfect cost-effectiveness. It can be generally applied in the commercial and industrial fields.

■ FEATURES

- * $R_{DS(ON)} \leq 65 \text{ m}\Omega @ V_{GS}=10V, I_D=4.0A$
- $R_{DS(ON)} \leq 98 \text{ m}\Omega @ V_{GS}=4.5V, I_D=4.0A$
- * Fast switching capability
- * Enhanced ESD capability



■ SYMBOL



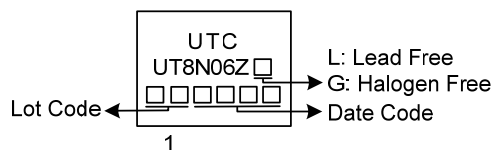
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT8N06ZL-TN3-R	UT8N06ZG-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UT8N06ZG-TN3-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATING (T_c=25°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	8	A
	Pulsed (Note 2)	I _{DM}	16	A
Avalanche Energy (Note 3)	Single Pulsed (Note 3)	E _{AS}	8	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.7	V/nS
Power Dissipation		P _D	30	W
Junction Temperature		T _J	+150	°C
Storage Temperature Range		T _{STG}	-20 ~ +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

3. L = 0.1mH, I_{AS} = 12.6A, V_{DD}=50V, R_G = 25Ω, Starting T_J = 25°C

4. I_{SD} ≤ 8.0A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	110	°C/W
Junction to Case	θ _{JC}	4.16 (Note)	°C/W

Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

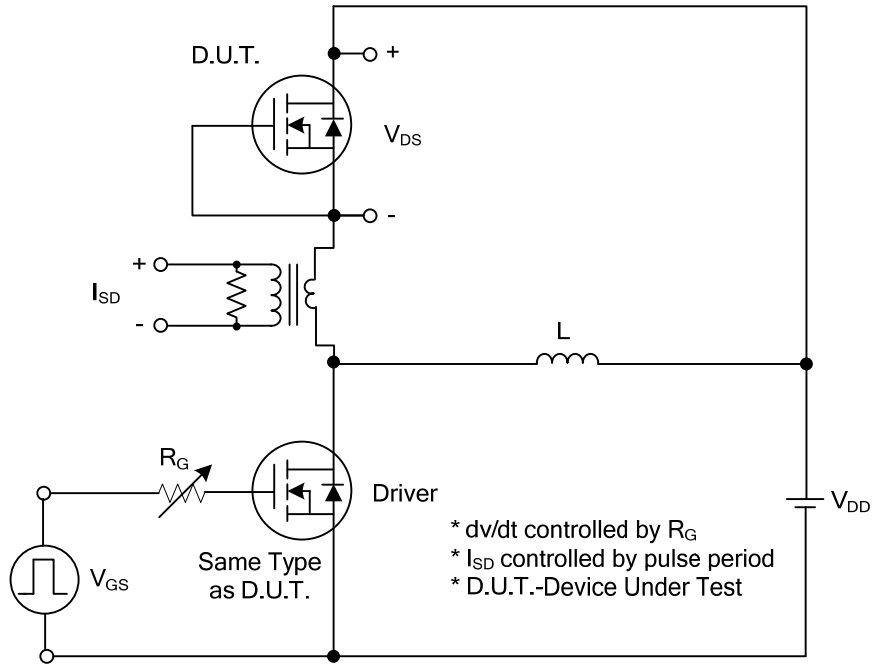
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	60			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	Forward			+10	μA
		Reverse			-10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		2.5	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =4.0A			65	mΩ
		V _{GS} =4.5V, I _D =4.0A			98	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		499		pF
Output Capacitance	C _{OSS}			53		pF
Reverse Transfer Capacitance	C _{RSS}			38		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =48V, V _{GS} =10V, I _D =8.0A (Note 1, 2)		18		nC
Gate to Source Charge	Q _{GS}			4		nC
Gate to Drain Charge	Q _{GD}			5		nC
Turn-on Delay Time (Note 1)	t _{D(ON)}	V _{DS} =30V, V _{GS} =10V, I _D =8.0A, R _G = 3Ω (Note 1, 2)		5		ns
Rise Time	t _R			17		ns
Turn-off Delay Time	t _{D(OFF)}			14		ns
Fall-Time	t _F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				8	A
Maximum Body-Diode Pulsed Current	I _{SM}				16	A
Drain-Source Diode Forward Voltage (Note 1)	V _{SD}	I _S =8.0A, V _{GS} =0V			1.4	V
Reverse Recovery Time (Note 1)	t _{rr}	I _S =8.0A, V _{GS} =0V,		15		nS
Reverse Recovery Charge	Q _{rr}	di/dt=100A/μs		9.5		nC

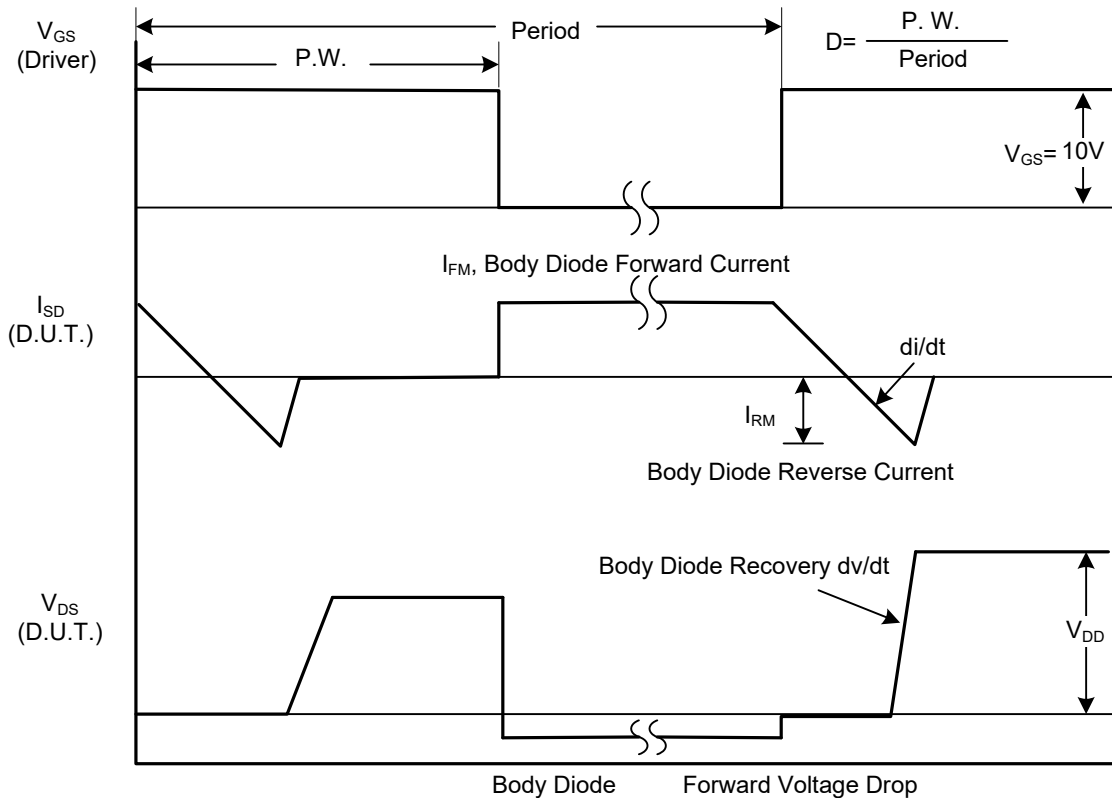
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

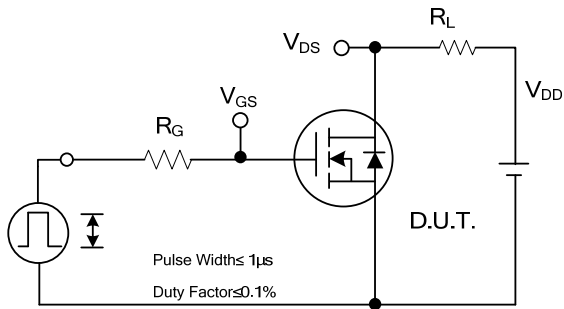


Peak Diode Recovery dv/dt Test Circuit

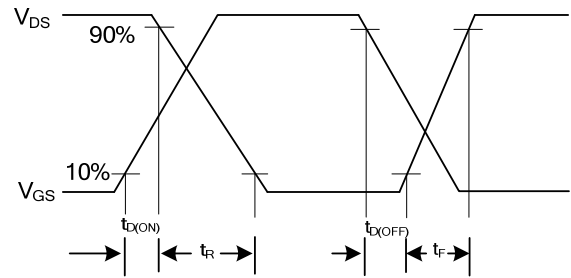


Peak Diode Recovery dv/dt Waveforms

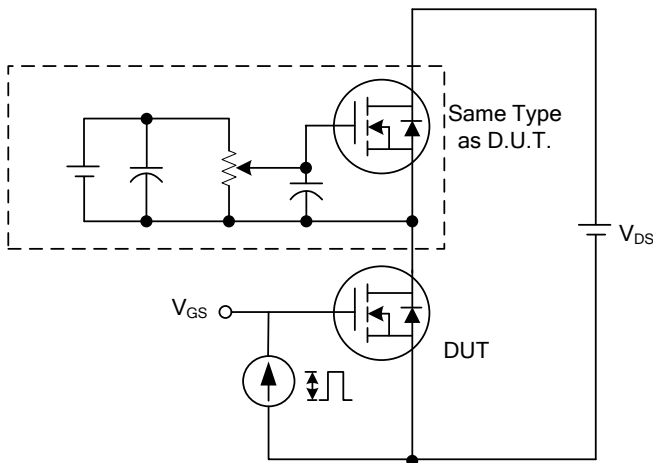
■ TEST CIRCUITS AND WAVEFORMS



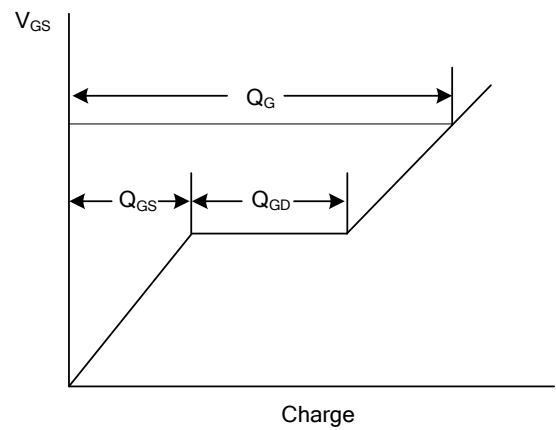
Switching Test Circuit



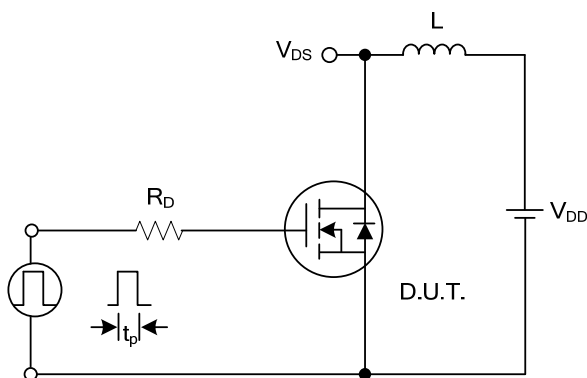
Switching Waveforms



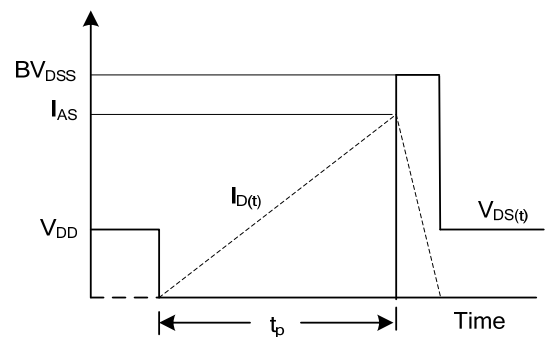
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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