



01N60Z-ML

Preliminary

Power MOSFET

0.1A, 600V N-CHANNEL POWER MOSFET

DESCRIPTION

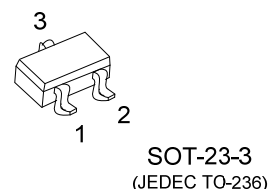
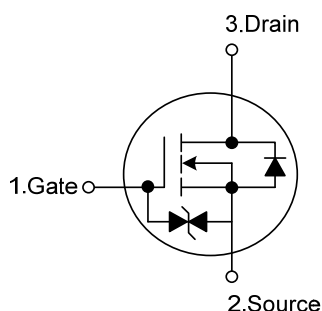
The UTC **01N60Z-ML** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, high switching speed, low gate charge and low input capacitance.

The UTC **01N60Z-ML** is universally applied in high efficiency switch mode power supply.

FEATURES

- * $R_{DS(ON)} \leq 60 \Omega$ @ $V_{GS}=10V$, $I_D=50mA$
- * High switching speed
- * With ESD protection

SYMBOL



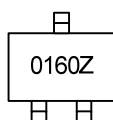
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
01N60ZL-AE2-R	01N60ZG-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

<p>01N60ZG-AE2-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>		<p>(1) R: Tape Reel (2) AE2: SOT-23-3 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	600	V
Gate-Source Voltage (Note 2)		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	0.1	A
	Pulsed	I_{DM}	0.3	A
Power Dissipation($T_a=25^\circ\text{C}$)		P_D	0.5	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	250	$^\circ\text{C/W}$
Junction to Case		θ_{JC}	208	$^\circ\text{C/W}$

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

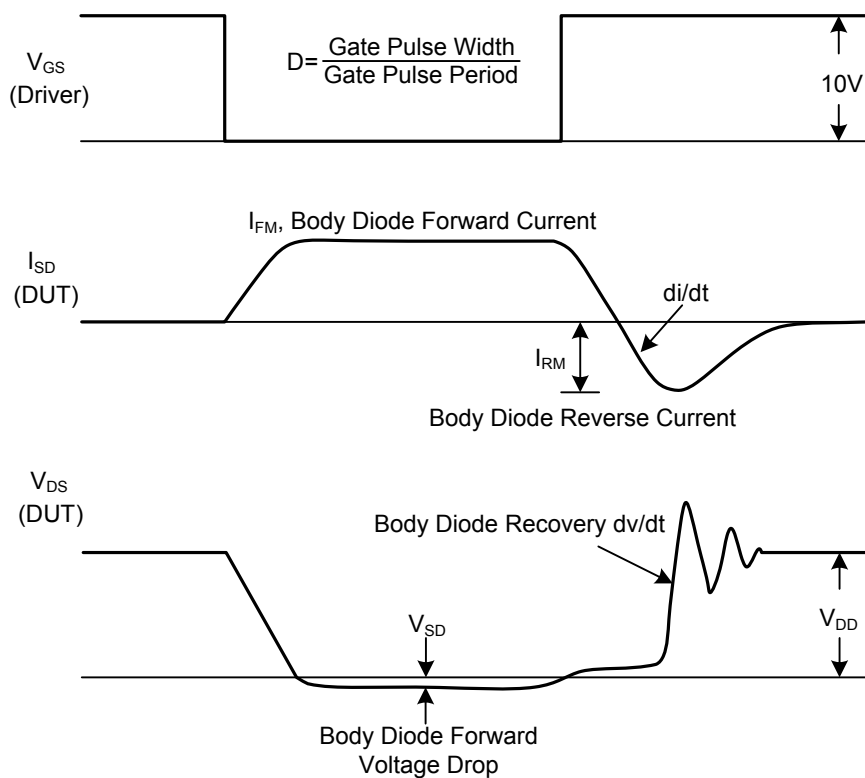
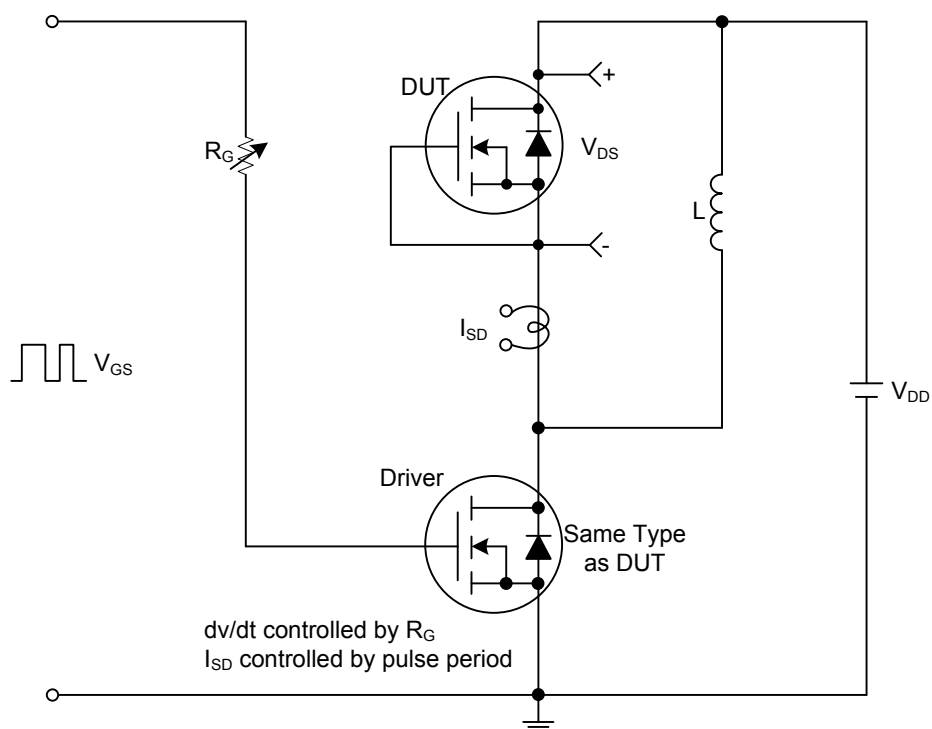
■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	600			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =600V			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =20V, V _{DS} =0V			10	uA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-10	uA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =50mA			60	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz (Note 1, 2)		27		pF
Output Capacitance		C _{OSS}			11		pF
Reverse Transfer Capacitance		C _{RSS}			2.9		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =100V, V _{GS} =10V, I _D =0.1A		8.2		nC
Gate-Source Charge		Q _{GS}			2.9		nC
Gate-Drain Charge		Q _{GD}			1		nC
Turn-On Delay Time (Note 1)		t _{D(ON)}	V _{DD} =100V, V _{GS} =10V, I _D =50mA, R _G =3.3Ω (Note 1, 2)		4.4		ns
Turn-On Rise Time		t _R			18		ns
Turn-Off Delay Time		t _{D(OFF)}			20		ns
Turn-Off Fall Time		t _F			320		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				0.1	A
Maximum Body-Diode Pulsed Current (Note 1)		I _{SM}				0.3	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =0.1A, V _{GS} =0V			1.4	V

Notes: 1. Pulse Test: Pulse width $\leq 250\mu\text{s}$, Duty cycle $\leq 2\%$

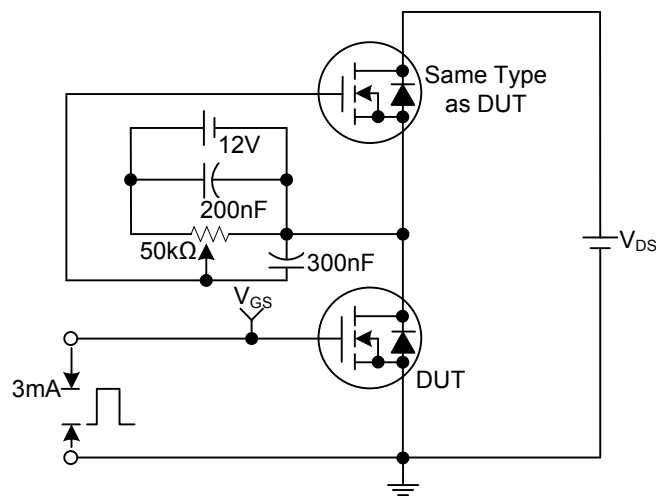
2. Essentially independent of operating temperature

■ TEST CIRCUITS AND WAVEFORMS

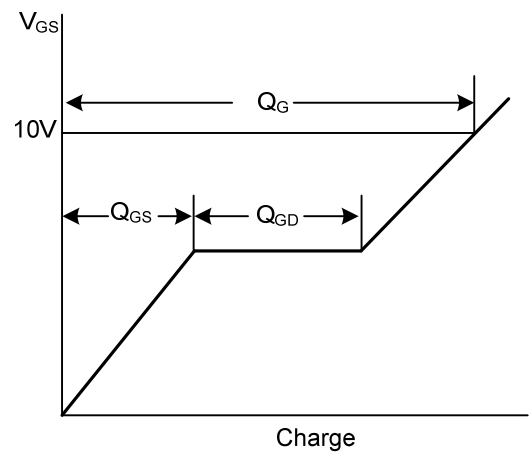


Peak Diode Recovery dv/dt Test Circuit and Waveforms

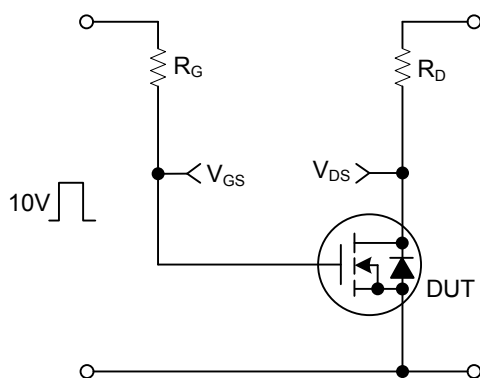
TEST CIRCUITS AND WAVEFORMS



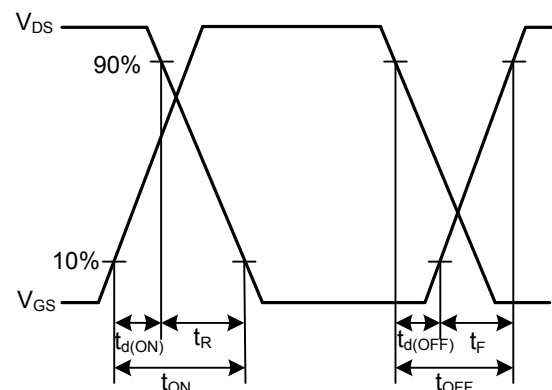
Gate Charge Test Circuit



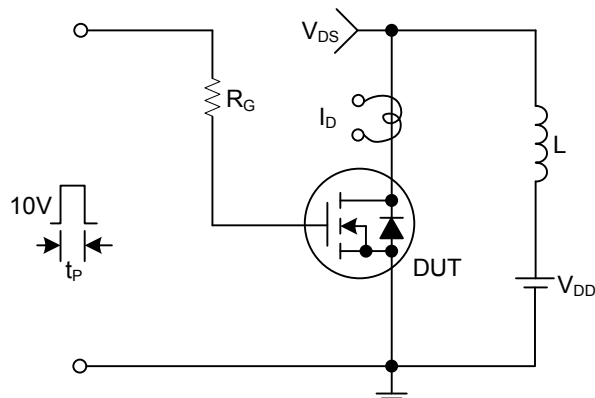
Gate Charge Waveforms



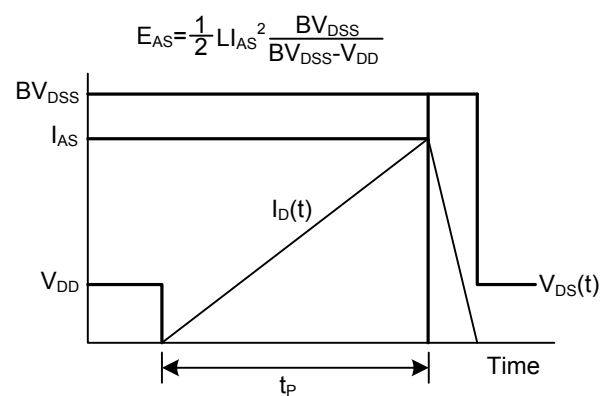
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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