



UT3N01Z

Power MOSFET

N-CHANNEL SILICON MOSFET GENERAL-PURPOSE SWITCHING DEVICE APPLICATIONS

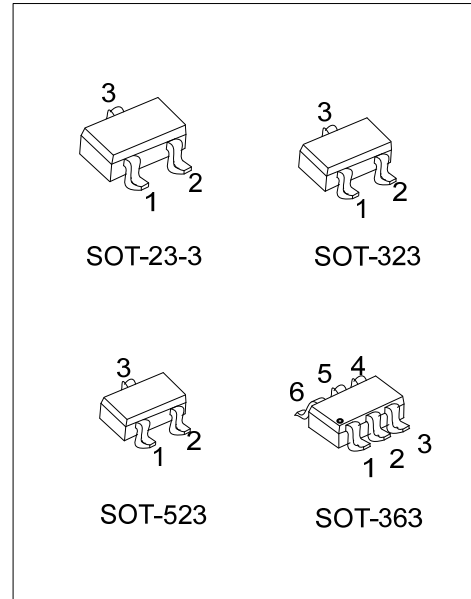
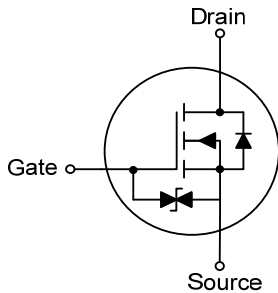
■ DESCRIPTION

The **UT3N01Z** uses UTC advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device's general purpose is for switching device applications.

■ FEATURES

- * $R_{DS(ON)} \leq 2.0\Omega @ V_{GS}=4V, I_D=80mA$
 $R_{DS(ON)} \leq 3.0\Omega @ V_{GS}=2.5V, I_D=40mA$
 $R_{DS(ON)} \leq 12.8\Omega @ V_{GS}=1.5V, I_D=10mA$
- * Ultra low gate charge (typical 5 nC)
- * Low reverse transfer capacitance (C_{RSS} = typical 7.5 pF)
- * Fast switching capability
- * Enhanced ESD capability

■ SYMBOL



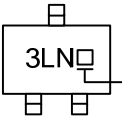
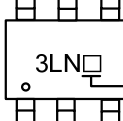
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT3N01ZL-AE2-R	UT3N01ZG-AE2-R	SOT-23-3	G	S	D	-	-	-	Tape Reel
UT3N01ZL-AL3-R	UT3N01ZG-AL3-R	SOT-323	G	S	D	-	-	-	Tape Reel
UT3N01ZL-AN3-R	UT3N01ZG-AN3-R	SOT-523	G	S	D	-	-	-	Tape Reel
UT3N01ZL-AL6-R	UT3N01ZG-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel

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

<p>UT3N01ZG-AE2-R</p>	<p>(1) R: Tape Reel (2) AE2: SOT-23-3, AL3: SOT-323, AN3: SOT-523 AL6: SOT-363 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

SOT-23-3 / SOT-323 / SOT-523	SOT-363
 <p>A schematic diagram of a MOSFET in a three-lead package (SOT-23-3, SOT-323, or SOT-523). The package is a rectangle with three leads: one on the top, one on the right, and one on the bottom. The marking '3LN' is shown on the top lead. An arrow points from the '3LN' marking to the text 'L: Lead Free' and 'G: Halogen Free'.</p>	 <p>A schematic diagram of a MOSFET in a six-lead package (SOT-363). The package is a rectangle with six leads: two on the top, one on the right, and three on the bottom. The marking '3LN' is shown on the top lead. An arrow points from the '3LN' marking to the text 'L: Lead Free' and 'G: Halogen Free'.</p>

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 10	V
Drain Current	DC	0.15	A
	Pulse(Note 2)	0.6	A
Power Dissipation	SOT-23-3	330	mW
	SOT-323	200	
	SOT-523	150	
	SOT-363	200	
Operating Temperature	T_{OPR}	$-40 \sim +85$	$^\circ\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

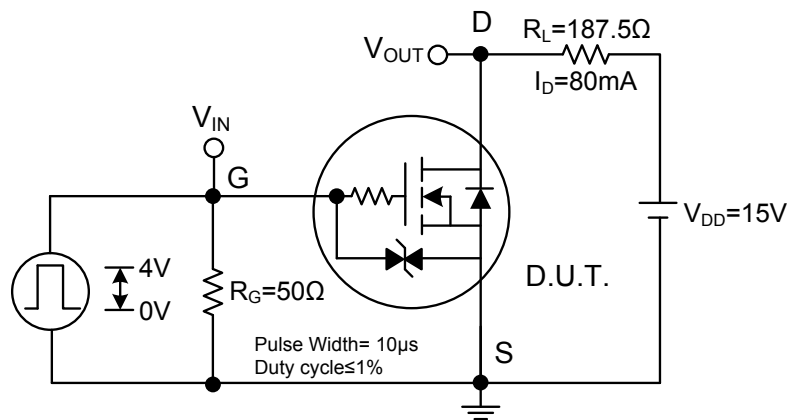
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse width $\leq 10\mu\text{s}$, Duty cycle $\leq 1\%$

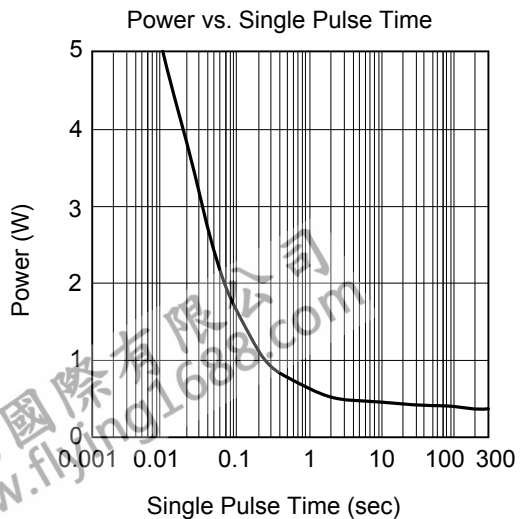
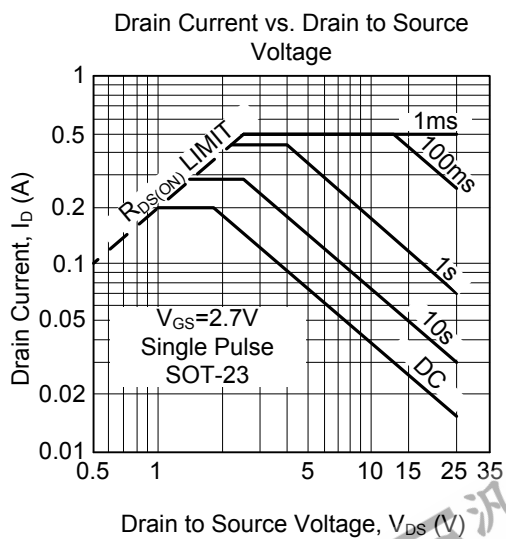
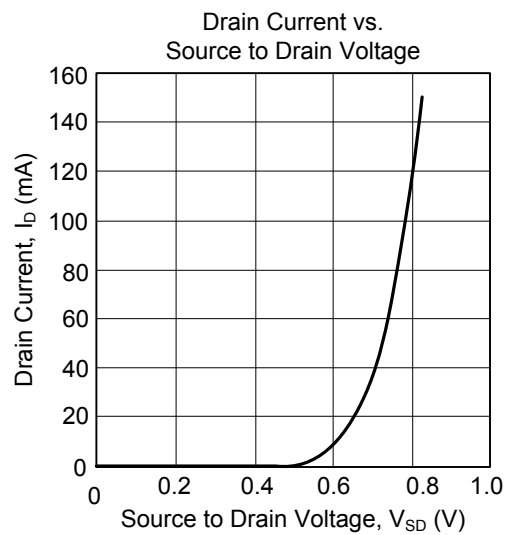
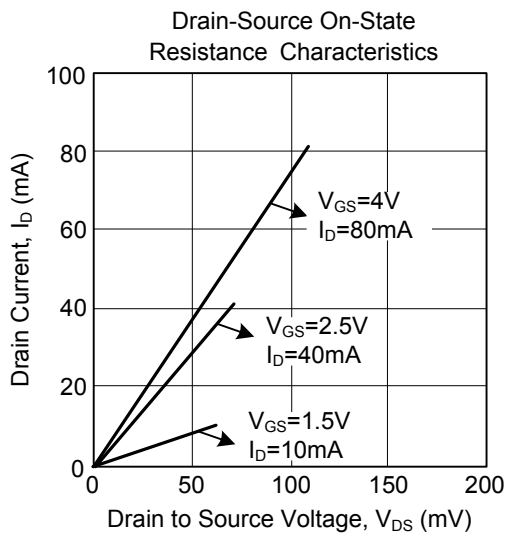
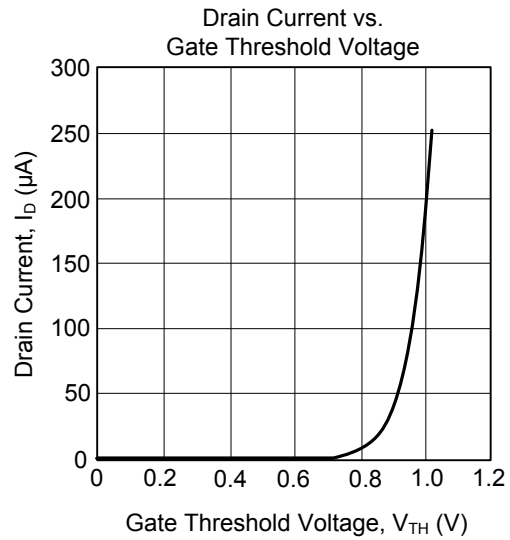
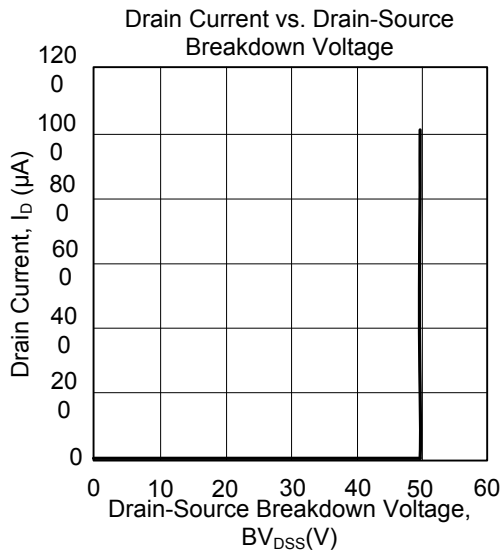
■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=1\text{mA}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			± 10	μA
ON CHARACTERISTICS						
Cutoff Threshold Voltage	$V_{GS(OFF)}$	$V_{DS}=10\text{V}, I_D=100\mu\text{A}$	0.4		1.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4\text{V}, I_D=80\text{mA}$		1.3	2.0	Ω
		$V_{GS}=2.5\text{V}, I_D=40\text{mA}$		1.7	3.0	Ω
		$V_{GS}=1.5\text{V}, I_D=10\text{mA}$		5.8	12.8	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=10\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		18		pF
Output Capacitance	C_{OSS}			11		pF
Reverse Transfer Capacitance	C_{RSS}			5.2		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=150\text{mA}$		5	8	nC
Gate Source Charge	Q_{GS}			0.46		nC
Gate Drain Charge	Q_{GD}			0.56		nC
Turn-ON Delay Time	$t_{D(ON)}$	See specified Test Circuit		31	35	ns
Turn-ON Rise Time	t_R			19	23	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			55	60	ns
Turn-OFF Fall-Time	t_F			22	28	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=150\text{mA}, V_{GS}=0\text{V}$		0.87	1.2	V

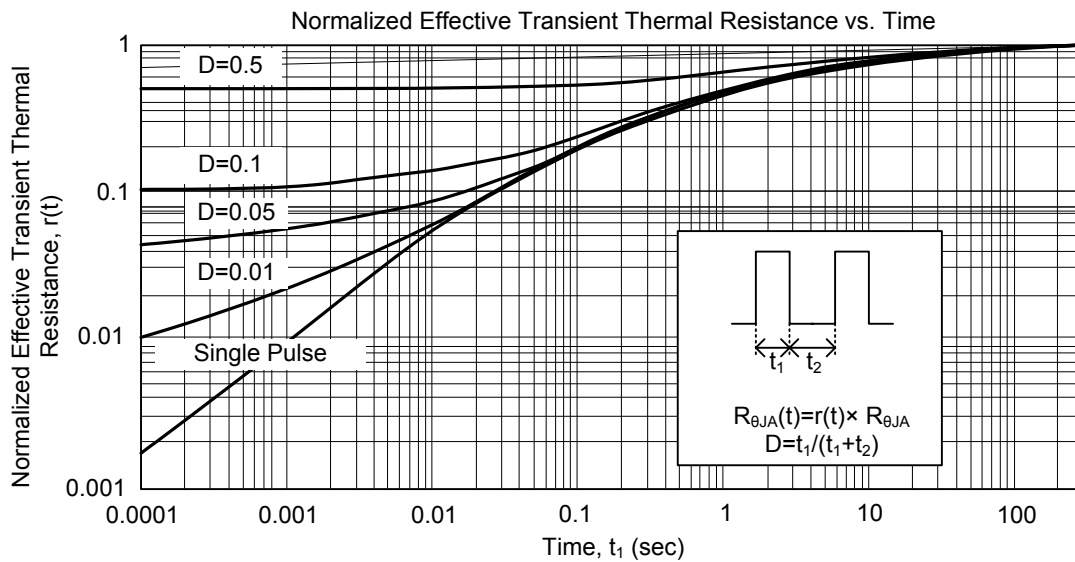
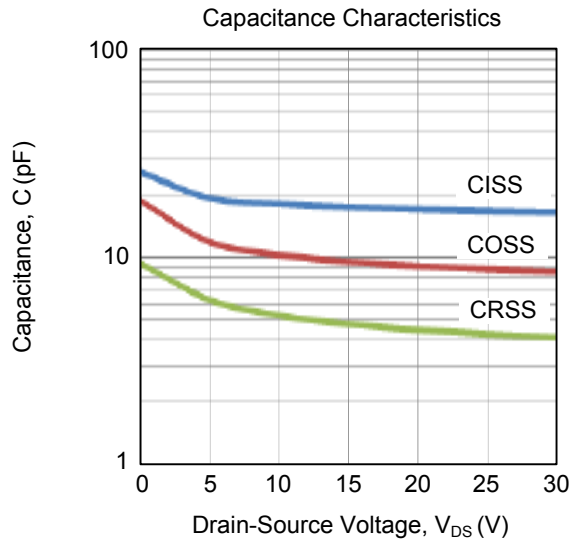
SWITCHING TIME TEST CIRCUIT



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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