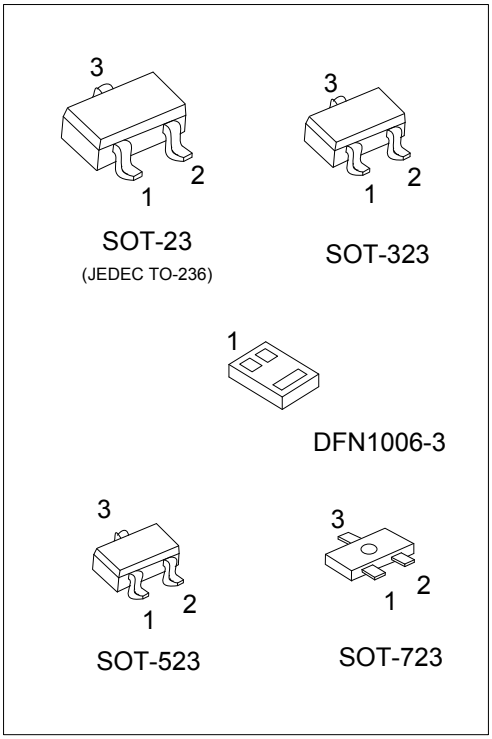
UT3N01Z

Power MOSFET

N-CHANNEL SILICON MOSFET GENERAL-PURPOSE SWITCHING DEVICE APPLICATIONS



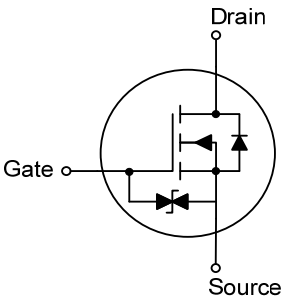
■ DESCRIPTION

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}=4.0V, I_D=80mA
  $R_{DS(ON)} \leq 3.0\ \Omega$ @ V_{GS}=2.5V, I_D=40mA
* Fast switching capability
* Enhanced ESD capability

■ SYMBOL



■ ORDERING INFORMATION

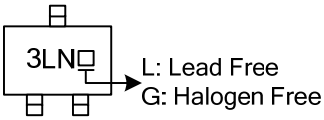
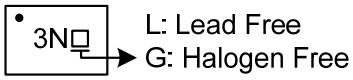
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3N01ZL-AE2-R	UT3N01ZG-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT3N01ZL-AL3-R	UT3N01ZG-AL3-R	SOT-323	G	S	D	Tape Reel
UT3N01ZL-AN3-R	UT3N01ZG-AN3-R	SOT-523	G	S	D	Tape Reel
UT3N01ZL-AQ3-R	UT3N01ZG-AQ3-R	SOT-723	G	S	D	Tape Reel
UT3N01ZL-K03-1006-R	UT3N01ZG-K03-1006-R	DFN1006-3	G	S	D	Tape Reel

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

UT3N01ZG-AE2-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523
AQ3: SOT-723, K03-1006: DFN1006-3
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-23-3 / SOT-323 / SOT-523 / SOT-723	DFN1006-3
	

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

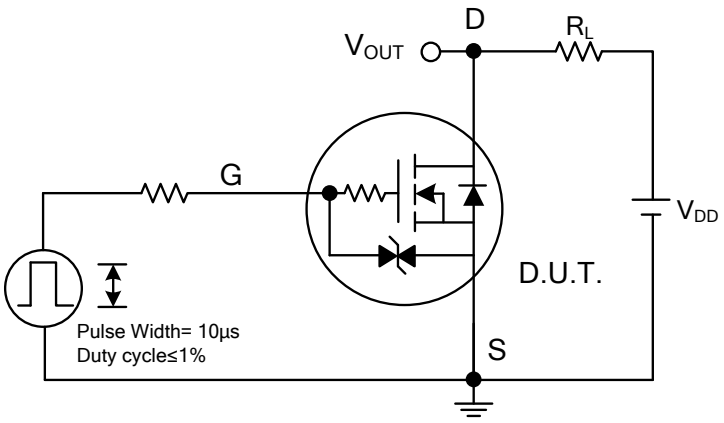
PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±10	V
Drain Current	DC	I_D	0.15	A
	Pulse(Note 2)		0.6	A
Power Dissipation	SOT-23-3	P_D	330	mW
	SOT-323		200	mW
	SOT-523		150	mW
	SOT-723		100	mW
	DFN1006-3		360	mW
Operating Temperature		T_{OPR}	-40 ~ +85	°C
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.
3. Pulse width ≤ 10μs, Duty cycle ≤ 1%.
4. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

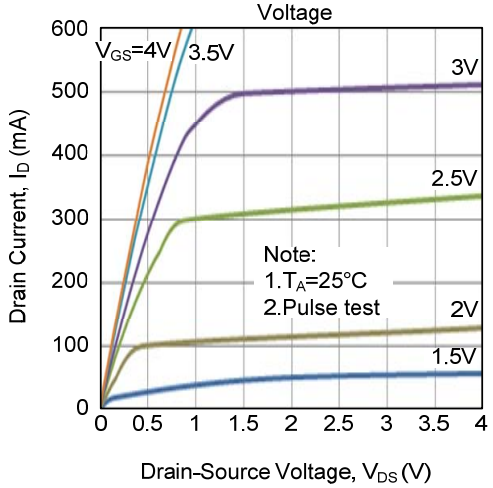
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=1mA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
ON CHARACTERISTICS						
Cutoff Threshold Voltage	$V_{GS(TH)}$	V_{DS}=10V, I_D=100μA	0.4		1.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=80mA		1.1	1.8	Ω
		V_{GS}=4.0V, I_D=80mA		1.4	2.0	Ω
		V_{GS}=2.5V, I_D=40mA		2.1	3.0	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=10V, V_{GS}=0 V, f=1.0MHz		23		pF
Output Capacitance	C_{OSS}			11		pF
Reverse Transfer Capacitance	C_{RSS}			5.4		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=24V, V_{GS}=4.5V, I_D=150mA		4		nC
Gate Source Charge	Q_{GS}			1		nC
Gate Drain Charge	Q_{GD}			0.4		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DS}=15V, I_D=150mA, R_G=3.3Ω		1.2		ns
Turn-ON Rise Time	t_R			16		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			10		ns
Turn-OFF Fall-Time	t_F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=150mA, V_{GS}=0V		0.87	1.2	V

■ SWITCHING TIME TEST CIRCUIT

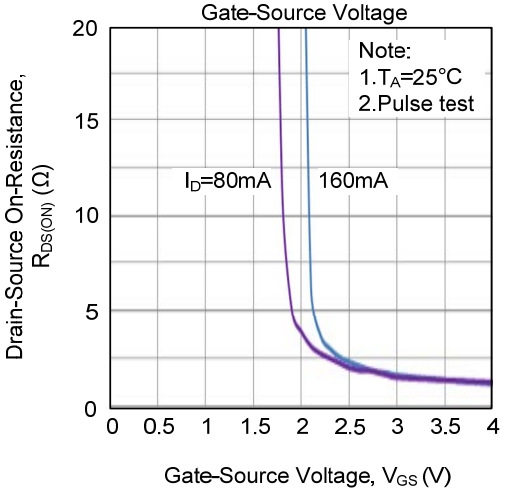


■ TYPICAL CHARACTERISTICS

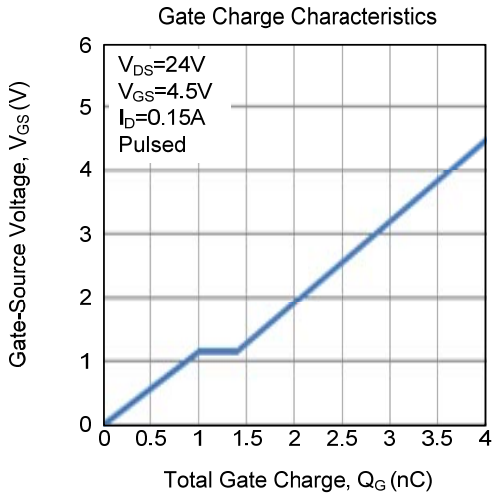
Drain Current vs. Drain-Source Voltage



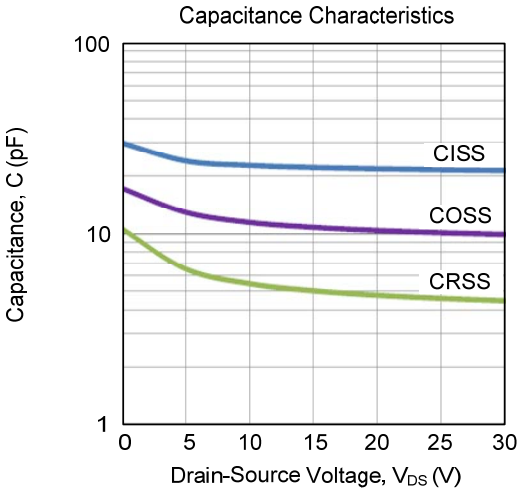
Drain-Source On-Resistance vs. Gate-Source Voltage



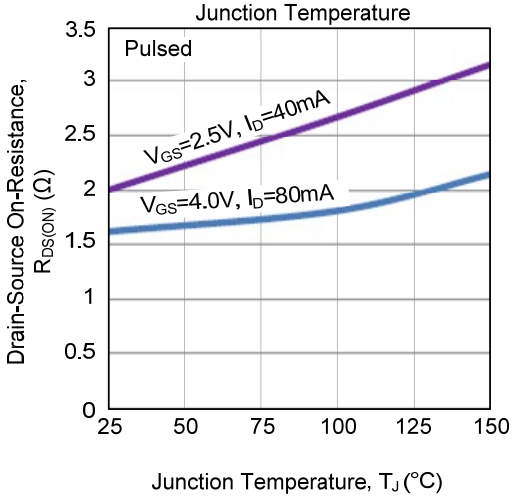
Gate Charge Characteristics



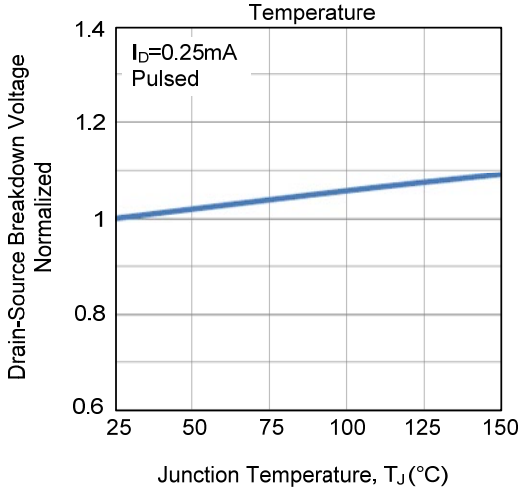
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

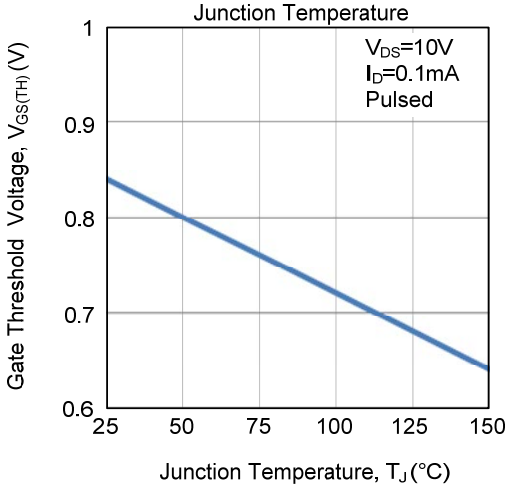


Breakdown Voltage vs. Junction Temperature

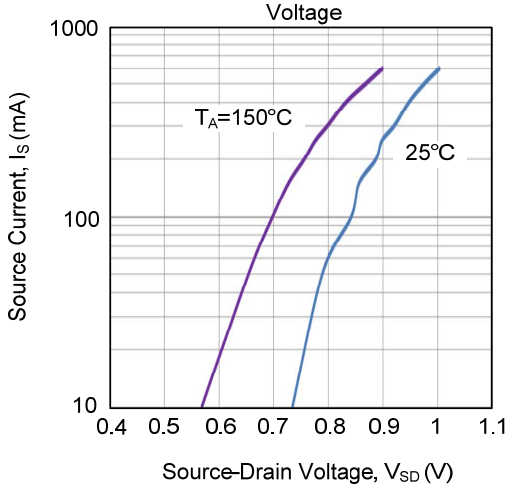


■ TYPICAL CHARACTERISTICS (Cont.)

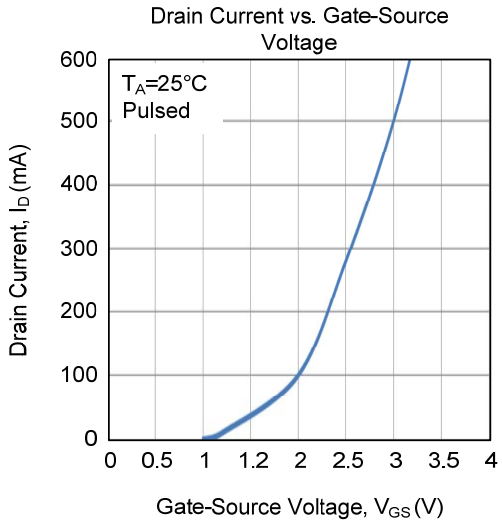
Gate Threshold Voltage vs. Junction Temperature



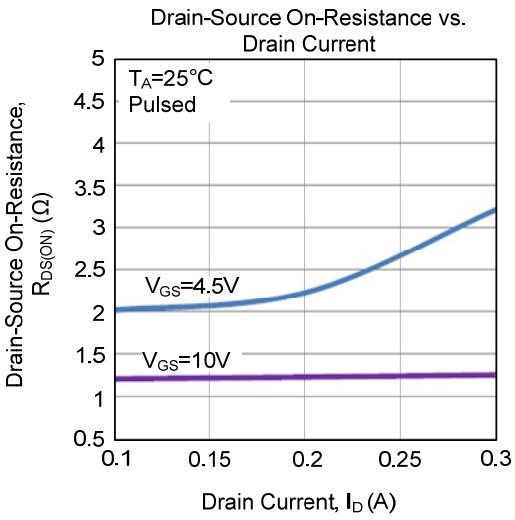
Source Current vs. Source-Drain Voltage



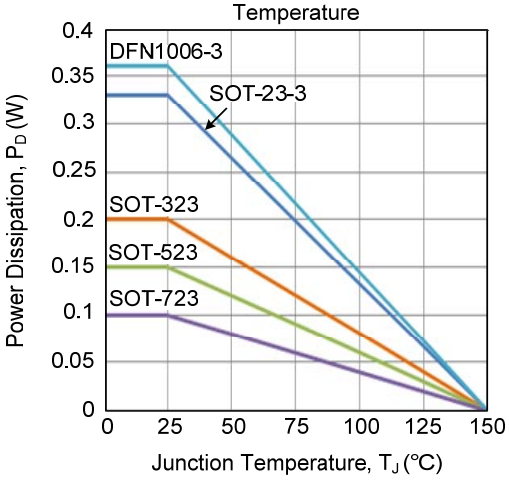
Drain Current vs. Gate-Source Voltage



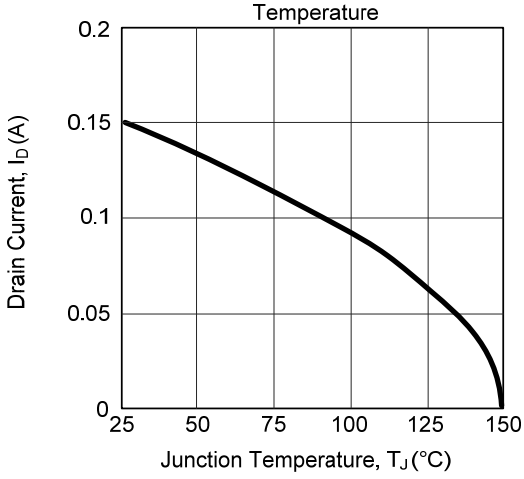
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature

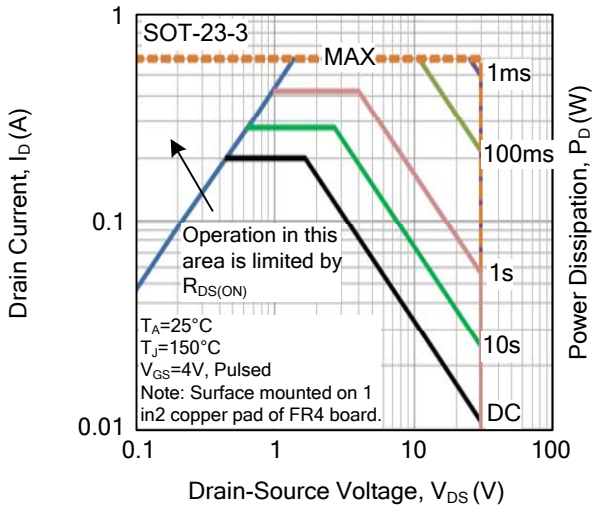


Drain Current vs. Junction Temperature

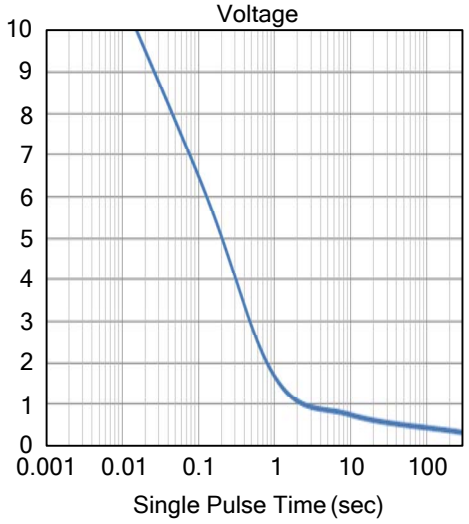


■ TYPICAL CHARACTERISTICS (Cont.)

Safe Operating Area



Drain Current vs. Source to Drain Voltage



Normalized Effective Transient Thermal Resistance vs. Time