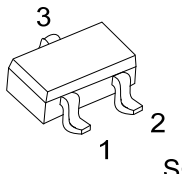
UT2321

Power MOSFET

P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



SOT-23
(EIAJ SC-59)

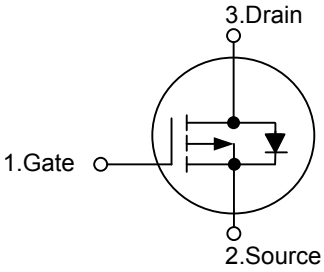
■ DESCRIPTION

The **UT2321** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

* $R_{DS(ON)} \leq 55m\Omega$ @ V_{GS}=-4.5V, I_D=-2.4A
* $R_{DS(ON)} \leq 80m\Omega$ @ V_{GS}=-2.5V, I_D=-2.0A
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



■ ORDERING INFORMATION

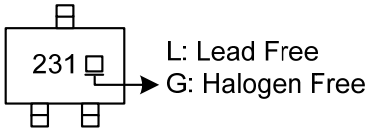
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2321L-AE3-R	UT2321G-AE3-R	SOT-23	G	S	D	Tape Reel

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

UT2321G-AE3-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AE3: SOT-23
(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}	±12	V
Continuous Drain Current (Note 2)	I_D	-3.8	A
Pulsed Drain Current (Note 2)	I_{DM}	-15.2	A
Power Dissipation (Note 3)	P_D	1.25	W
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. Pulse width limited by $T_{J(MAX)}$
3. Surface mounted on 1 in 2 copper pad of FR4 board.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	100	°C/W

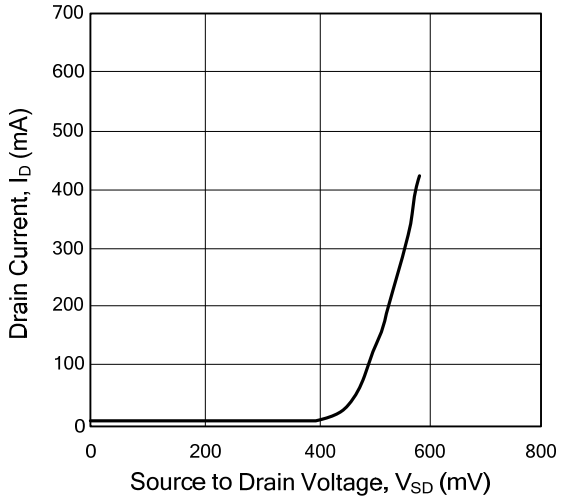
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=-250μA	-20			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=-16V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=12V, V_{DS}=0V			100	nA
	Reverse		V_{GS}=-12V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS(Note)							
Gate-Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.4		-1.0	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2.4A		45	55	mΩ
			V_{GS}=-2.5V, I_D=-2.0A		65	80	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS}=-10 V, V_{GS} =0V, f=1.0MHz		1500		pF
Output Capacitance		C_{OSS}			270		pF
Reverse Transfer Capacitance		C_{RSS}			185		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-2.4A		14.8	19	nC
Gate-Source Charge		Q_{GS}			2.8		nC
Gate-Drain Charge		Q_{GD}			4.4		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=-10V, I_D=-1A, V_{GS}=-4.5V, R_{GEN}=6 Ω		13	24	ns
Turn-ON Rise Time		t_R			8	24	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			65	256	ns
Turn-OFF Fall-Time		t_F			29	72	ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS							
Diode Forward Voltage(Note)		V_{SD}	V_{GS}=0V, I_S =-0.42A			-1.2	V
Maximum Body-Diode Continuous Current		I_S				-0.42	A

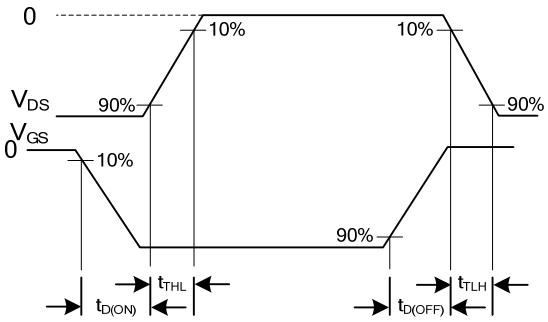
Note: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

■ TYPICAL CHARACTERISTICS

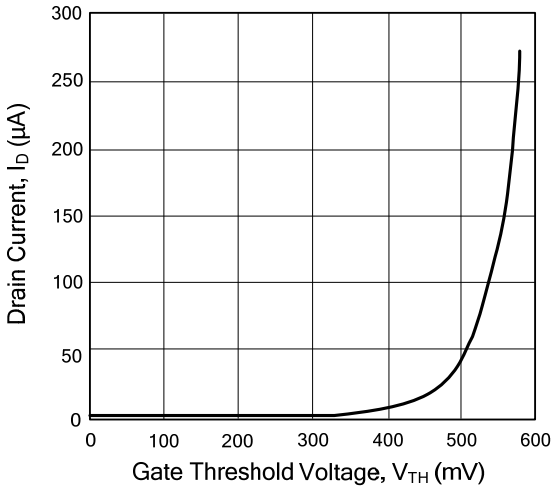
Drain Current vs. Source to Drain Voltage



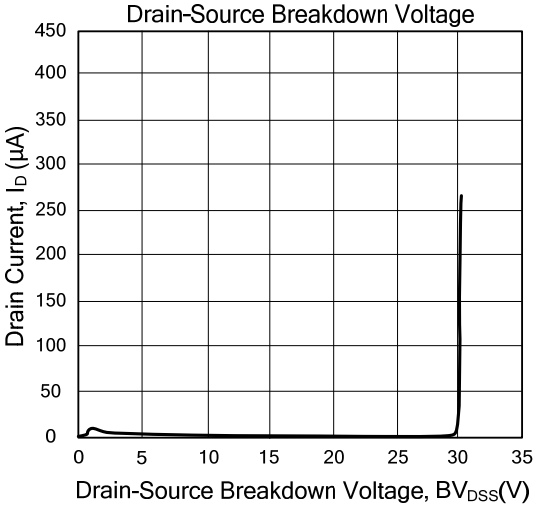
Switching Time Waveforms



Drain Current vs. Gate Threshold Voltage



Drain Current vs.
Drain-Source Breakdown Voltage



Drain-Source
On-State Resistance Characteristics