



UT3414

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

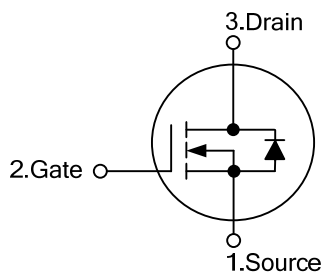
DESCRIPTION

The **UT3414** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 1.8V. This device is suitable for use as a load switch or in PWM applications.

FEATURES

- * $R_{DS(ON)} < 50m\Omega$ @ $V_{GS}=4.5V$, $I_D=4.2A$
- * $R_{DS(ON)} < 63m\Omega$ @ $V_{GS}=2.5V$, $I_D=3.7A$
- * $R_{DS(ON)} < 87m\Omega$ @ $V_{GS}=1.8V$, $I_D=3.2A$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL



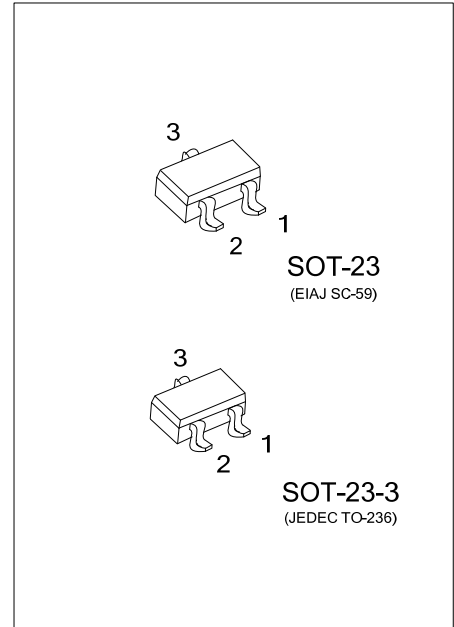
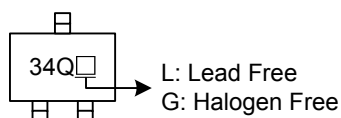
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3414L-AE2-R	UT3414G-AE2-R	SOT-23-3	S	G	D	Tape Reel
UT3414L-AE3-R	UT3414G-AE3-R	SOT-23	S	G	D	Tape Reel

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

<p>UT3414G-AE2-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) AE2: SOT-23-3, AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	4.2	A
Pulsed Drain Current	I_{DM}	15	A
Power Dissipation	P_D	1.4	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.

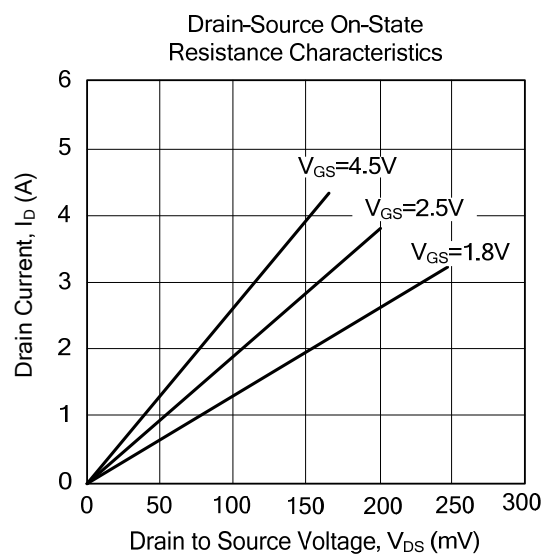
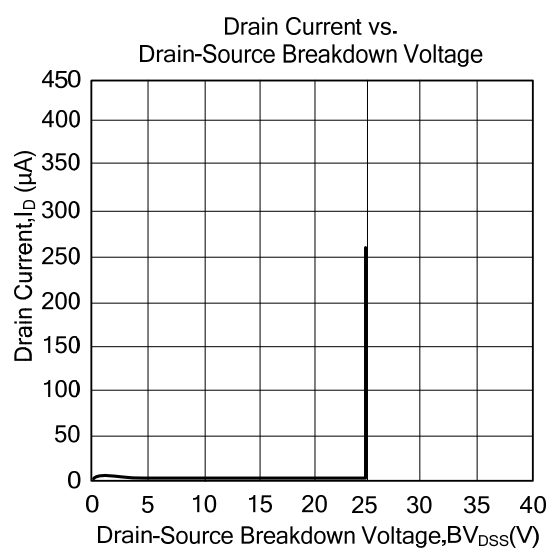
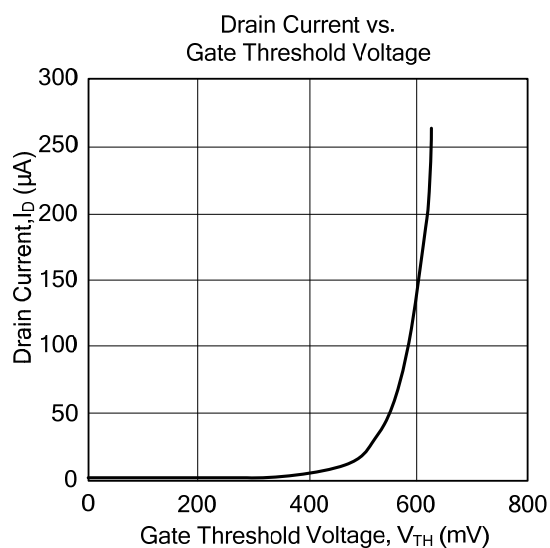
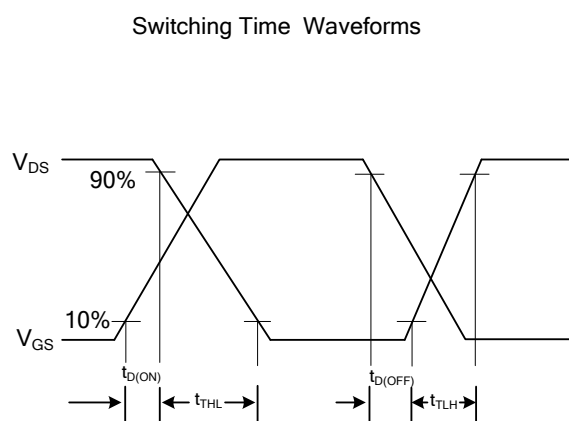
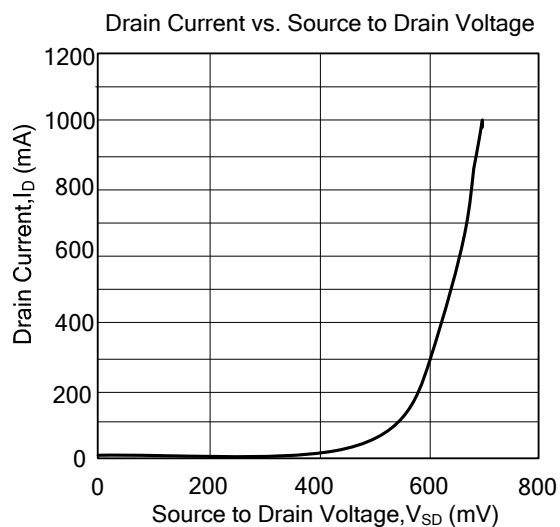
■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ_{JA}		100	125	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =16V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.4	0.6	1	V
On State Drain Current	I _{D(ON)}	V _{DS} =5V, V _{GS} =4.5V	15			A
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =4.2A		41	50	mΩ
		V _{GS} =2.5V, I _D =3.7A		52	63	
		V _{GS} =1.8V, I _D =3.2A		67	87	
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =10V, V _{GS} =0V, f=1.0MHz		436		pF
Output Capacitance	C _{OSS}			66		pF
Reverse Transfer Capacitance	C _{RSS}			44		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =10V, I _D =4.2A, V _{GS} =4.5V		6.2		nC
Gate Source Charge	Q _{GS}			1.6		nC
Gate Drain Charge	Q _{GD}			0.5		nC
Turn ON Delay Time	t _{D(ON)}	V _{DS} =10V, V _{GS} =5V, R _L =2.7Ω R _G =6Ω		5.5		ns
Turn ON Rise Time	t _R			6.3		ns
Turn OFF Delay Time	t _{D(OFF)}			40		ns
Turn OFF Fall-Time	t _F			12.7		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				2	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1.0A		0.76	1	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =4.0A, dI/dt=100A/μs		12.3		ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =4.0A, dI/dt=100A/μs		3.5		nC

■ TYPICAL CHARACTERISTICS



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