



UK1398

Power MOSFET

N-CHANNEL MOSFET FOR HIGH SPEED SWITCHING

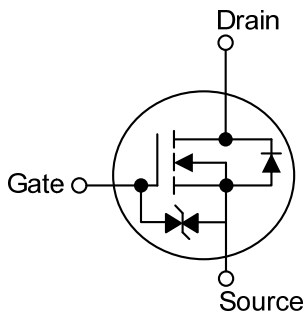
DESCRIPTION

The UTC **UK1398** 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

- * $R_{DS(ON)} \leq 20 \Omega @ V_{GS}=4.0V, I_D=10mA$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL

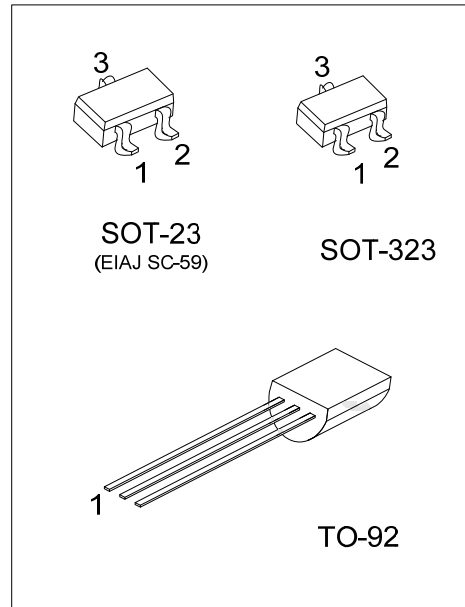


ORDERING INFORMATION

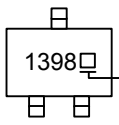
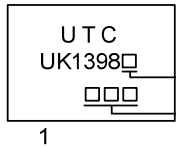
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UK1398L-AE3-R	UK1398G-AE3-R	SOT-23	G	S	D	Tape Reel
UK1398L-AL3-R	UK1398G-AL3-R	SOT-323	G	S	D	Tape Reel
UK1398L-T92-B	UK1398G-T92-B	TO-92	S	D	G	Tape Box
UK1398L-T92-K	UK1398G-T92-K	TO-92	S	D	G	Bulk

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

<p>UK1398G-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AE3: SOT-23, AL3: SOT-323, T92: TO-92 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

SOT-23 / SOT-323	TO-92
 <p>1398</p> <p>L: Lead Free G: Halogen Free</p>	 <p>UTC UK1398</p> <p>L: Lead Free G: Halogen Free Date Code</p> <p>1</p>

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	50	V
Gate-Source Voltage	V_{GSS}	± 7.0	V
Continuous Drain Current	DC	100	mA
	Pulse(Note 2)	200	mA
Power Dissipation(Note 3)	SOT-23	250	mW
	SOT-323	150	mW
	TO-92	625	mW
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. Pulse width $\leq 10\text{ms}$, Duty cycle $\leq 50\%$.

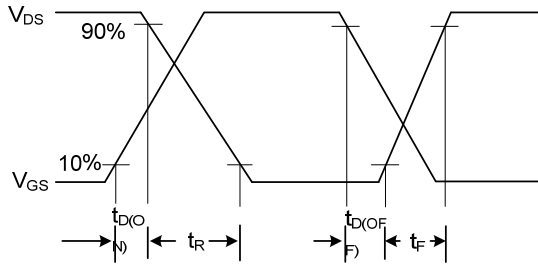
3. Mounted on FR4 board.

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

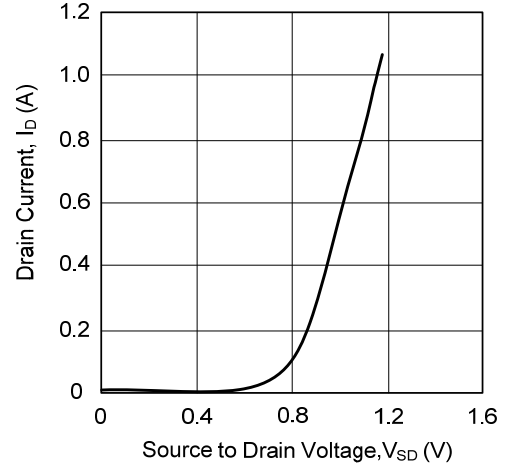
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	50			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=50\text{V}$, $V_{GS}=0\text{V}$			10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 7.0\text{V}$, $V_{DS}=0\text{V}$			± 5.0	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
	$V_{GS(OFF)}$	$V_{DS}=3.0\text{V}$, $I_D=1.0\mu\text{A}$	0.6	1.2	1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.0\text{V}$, $I_D=10\text{mA}$			20	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=5.0\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		11		pF
Output Capacitance	C_{OSS}			11		pF
Reverse Transfer Capacitance	C_{RSS}			4		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=3.0\text{V}$, $I_D=20\text{mA}$, $V_{GS(ON)}=3.0\text{V}$, $R_G=10\Omega$, $R_L=150\Omega$		15		ns
Turn-ON Rise Time	t_R			100		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			30		ns
Turn-OFF Fall-Time	t_F			35		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V_{SD}	$I_S=1\text{A}$, $V_{GS}=0\text{V}$			1.3	V

■ TYPICAL CHARACTERISTICS

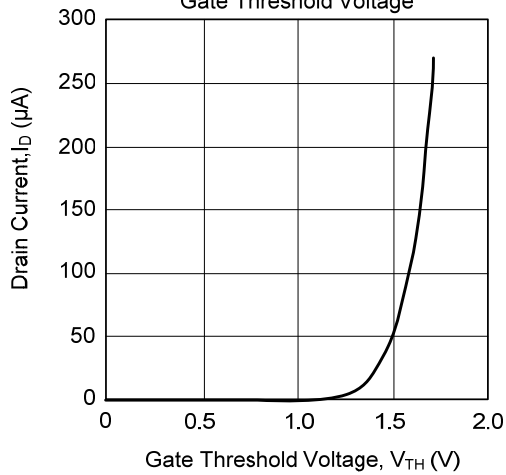
Switching Time Waveforms



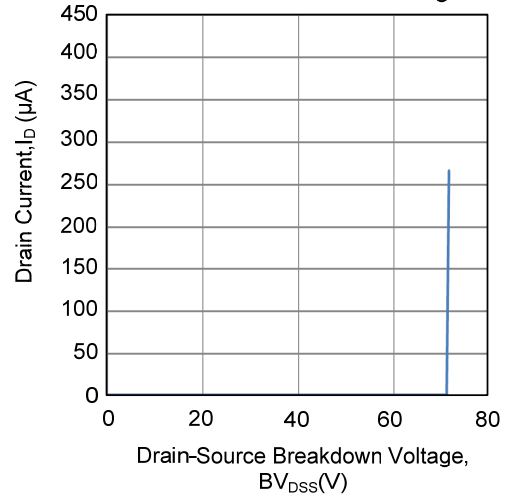
Drain Current vs. Source to Drain Voltage



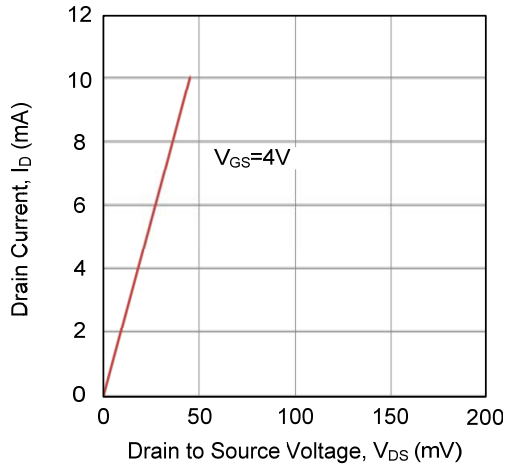
Drain Current vs. Gate Threshold Voltage



Drain Current vs. Drain-Source Breakdown Voltage



Drain-Source On-State Resistance Characteristics



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