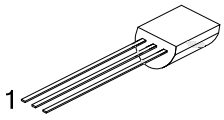
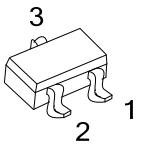
UK1398

Power MOSFET

N-CHANNEL MOSFET FOR HIGH SPEED SWITCHING



TO-92



SOT-23
(EIAJ SC-59)

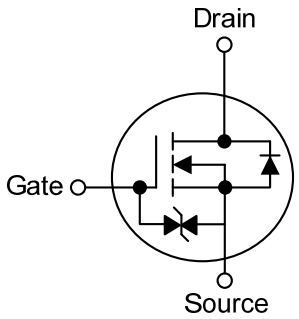
■ DESCRIPTION

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

* $R_{DS(ON)}$<40Ω @ V_{GS}=2.5V, I_D=10mA
* $R_{DS(ON)}$<20Ω @ V_{GS}=4.0V, I_D=10mA
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



■ ORDERING INFORMATION

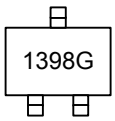
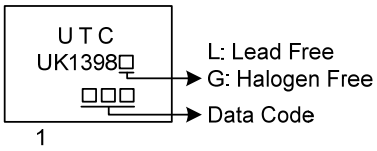
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	UK1398G-AE3-R	SOT-23	S	G	D	Tape Reel
UK1398L-T92-B	UK1398G-T92-B	TO-92	S	D	G	Tape Box
UK1398L-T92-K	UK1398G-T92-K	TO-92	S	D	G	Bulk

UK1398G-AE3-R

(1)Packing Type
(2)Package Type
(3)Green Package

(1) B: Tape Box, K: Bulk, R: Tape Reel
(2) AE3: SOT-23, T92: TO-92
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-23	TO-92
	

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°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	I_D	±100	mA
	Pulse(Note 2)		±200	mA
Power Dissipation	SOT-23	P_D	200	mW
	TO-92		625	
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

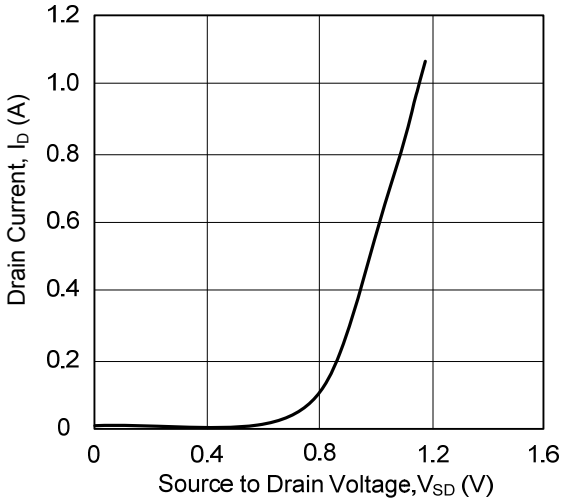
Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Pulse width≤10ms, Duty cycle≤50%

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

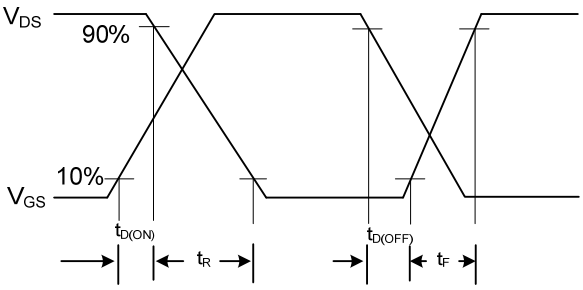
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	50			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=50V, V_{GS}=0V			10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±7.0V, V_{DS}=0 V			±5.0	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS} , I_D=250μA	1.0		3.0	V
	$V_{GS(OFF)}$	V_{DS}=3.0V, I_D=1.0μA	0.6	1.2	1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=2.5V, I_D=10mA		22	40	Ω
		V_{GS}=4.0V, I_D=10mA		14	20	Ω
Forward Transconductance	g_{FS}	V_{DS}=3.0V, I_D=10mA	20	38		mS
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=3.0V, V_{GS}=0V, f=1MHz		8		pF
Output Capacitance	C_{OSS}			7		pF
Reverse Transfer Capacitance	C_{RSS}			3		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=3.0V, I_D=20mA, $V_{GS(ON)}$=3.0V, R_G=10Ω, R_L=150Ω		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=1A, V_{GS}=0V			1.3	V

■ TYPICAL CHARACTERISTICS

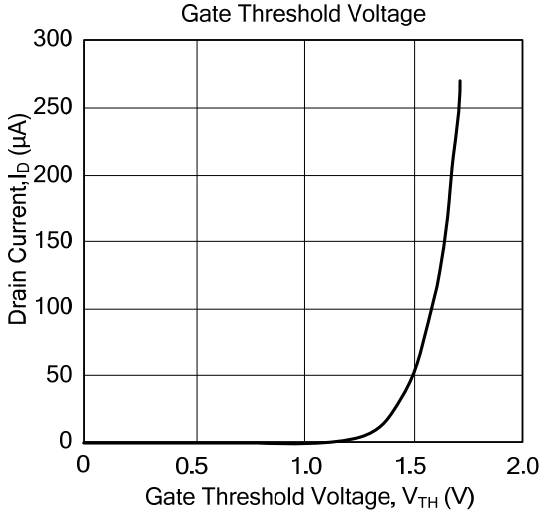
Drain Current vs. Source to Drain Voltage



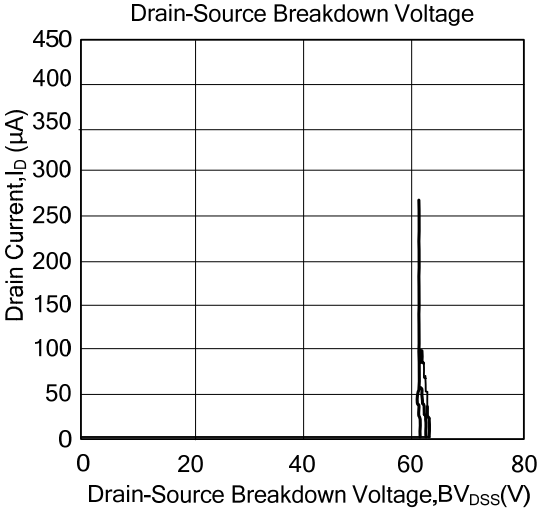
Switching Time Waveforms



Drain Current vs.
Gate Threshold Voltage



Drain Current vs.
Drain-Source Breakdown Voltage



Drain-Source On-State
Resistance Characteristics