



## UK2158

Preliminary

Power MOSFET

### ±0.1A, 50V N-CHANNEL MOSFET FOR HIGH-SPEED SWITCHING

#### DESCRIPTION

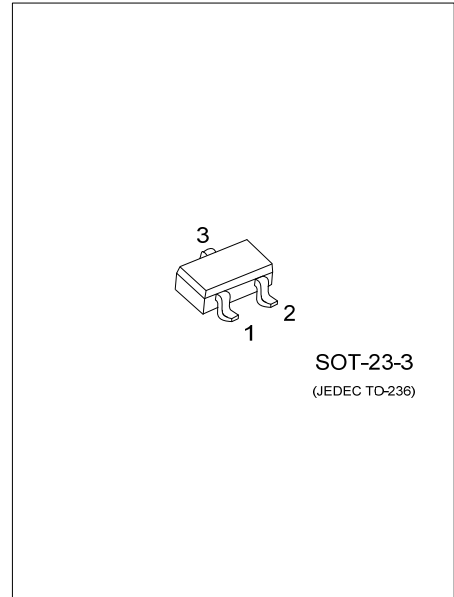
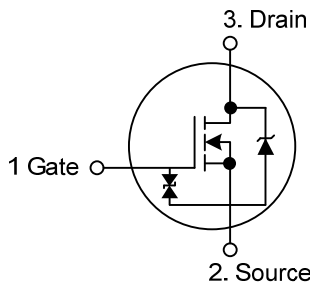
The UTC **UK2158** is an N-channel vertical type MOSFET, it uses UTC's advanced technology to provide customers with high switching speed and low gate cut-off voltage.

The UTC **UK2158** is suitable for use in low-voltage portable systems such as camcorders and headphone stereo sets.

#### FEATURES

- \*  $R_{DS(ON)} \leq 50\Omega$  @  $V_{GS}=1.5V, I_D=1.0mA$
- $R_{DS(ON)} \leq 20\Omega$  @  $V_{GS}=2.5V, I_D=10mA$
- $R_{DS(ON)} \leq 15\Omega$  @  $V_{GS}=4.0V, I_D=10mA$
- \* High switching speed
- \* Low gate cut-off voltage

#### SYMBOL



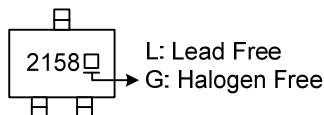
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UK2158L-AE2-R	UK2158G-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

UK2158G-AE2-R 	(1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) AE3: SOT-2 (3) G: Halogen Free and Lead Free, L: Lead Free
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#### MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage ( $V_{GS}=0$ )	$V_{DSS}$	50	V
Gate-Source Voltage ( $V_{GS}=0$ )	$V_{GSS}$	$\pm 7.0$	V
Drain Current	DC	$I_{D(DC)}$	$\pm 0.1$
	Pulse ( $PW \leq 10\text{ms}$ , Duty Cycle $\leq 50\%$ )	$I_{D(PULSE)}$	$\pm 0.2$
Power Dissipation	$P_D$	200	mW
Channel Temperature	$T_{CH}$	+150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Note: 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.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=50\text{V}$ , $V_{GS}=0\text{V}$			1.0	$\mu\text{A}$
Gate-Source Leakage Current	Forward	$V_{GS}=+7.0\text{V}$ , $V_{DS}=0\text{V}$			+3.0	$\mu\text{A}$
	Reverse	$V_{GS}=-7.0\text{V}$ , $V_{DS}=0\text{V}$			-3.0	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Cut-off Voltage	$V_{GS(OFF)}$	$V_{DS}=3\text{V}$ , $I_D=1.0\mu\text{A}$	0.5	0.7	1.1	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=1.5\text{V}$ , $I_D=1.0\text{mA}$		32	50	$\Omega$
		$V_{GS}=2.5\text{V}$ , $I_D=10\text{mA}$		16	20	$\Omega$
		$V_{GS}=4.0\text{V}$ , $I_D=10\text{mA}$		12	15	$\Omega$
Forward Transfer Admittance	$ y_{FS} $	$V_{DS}=3\text{V}$ , $I_D=10\text{mA}$	20			mS
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=3\text{V}$ , $f=1.0\text{MHz}$		6		pF
Output Capacitance	$C_{OSS}$			8		pF
Reverse Transfer Capacitance	$C_{RSS}$			1		pF
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=3\text{V}$ , $V_{GS(ON)}=3\text{V}$ , $I_D=20\text{mA}$ , $R_G=10\Omega$ , $R_L=150\Omega$		9		ns
Rise Time	$t_R$			48		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			21		ns
Fall-Time	$t_F$			31		ns

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