



UK3019

Power MOSFET

2.5V DRIVE SILICON N-CHANNEL MOSFET

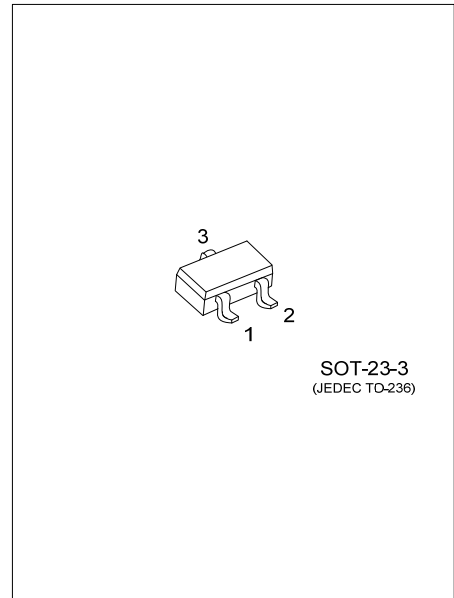
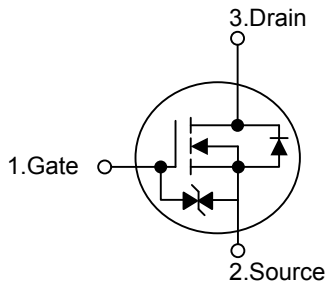
DESCRIPTION

The UTC **UK3019** is a silicon N-channel MOSFET which has been designed to minimize on-state resistance while it provides rugged, reliable and fast switching performance. The product is particularly suited for low voltage, low current applications such as small servo motor controller, power MOSFET gate drivers, and other switching applications.

FEATURES

- * Min $V_{DSS} = 30V$
- * $R_{DS(ON)} \leq 8.0\Omega @ I_D=10mA, V_{GS}=4.0V$
- * $R_{DS(ON)} \leq 13\Omega @ I_D=1mA, V_{GS}=2.5V$
- * Pulsed $I_D=400mA$
- * Low Voltage Drive (2.5V)

SYMBOL



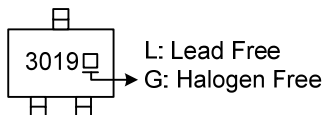
ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|---------------|----------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| UK3019L-AE2-R | UK3019G-AE2-R | SOT-23-3 | G | S | D | Tape Reel |

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

| | |
|--|---|
| <p>UK3019G-AE2-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p> | <p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--|---|

MARKING



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

| PARAMETER | SYMBOL | RATINGS | UNIT |
|----------------------------|-----------------|------------|--------------------|
| Drain-Source Voltage | V_{DSS} | 30 | V |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Drain Current | Continuous | I_D | 100 |
| | Pulsed (Note 2) | I_{DP} | 400 |
| Power Dissipation (Note 3) | P_D | 200 | 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. $P_w \leq 10\mu\text{s}$, Duty cycle $\leq 50\%$

3. With each pin mounted on the recommended lands.

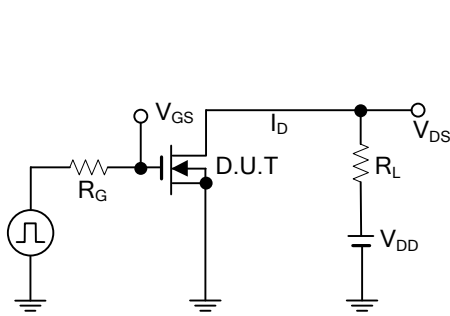
■ THERMAL CHARACTERISTICS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------|---------------|---------|-----------------------------|
| Junction to Ambient | θ_{JA} | 625 | $^{\circ}\text{C}/\text{W}$ |

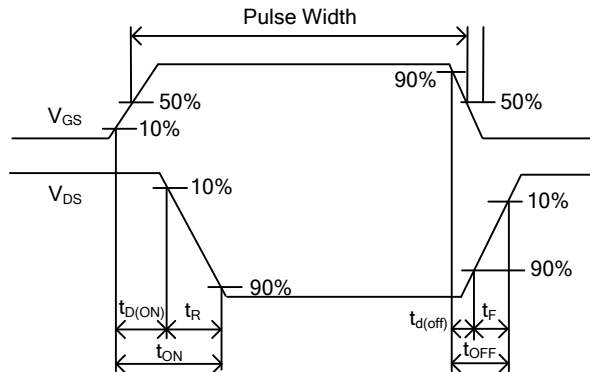
■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|--------------|--|-----|-----|---------|---------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0\text{V}$, $I_D=10\mu\text{A}$ | 30 | | | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$ | | | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$ | | | ± 1 | μA |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}=3\text{V}$, $I_D=100\mu\text{A}$ | 0.8 | | 1.5 | V |
| Static drain-source on-state resistance | $R_{DS(ON)}$ | $I_D=10\text{mA}$, $V_{GS}=4.0\text{V}$ | | 5.0 | 8.0 | Ω |
| | | $I_D=1\text{mA}$, $V_{GS}=2.5\text{V}$ | | 7.0 | 13 | Ω |
| DYNAMIC PARAMETERS | | | | | | |
| Input Capacitance | C_{ISS} | $V_{DS}=5\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$ | | 13 | | pF |
| Output Capacitance | C_{OSS} | | | 9 | | pF |
| Reverse Transfer Capacitance | C_{RSS} | | | 4 | | pF |
| SWITCHING PARAMETERS | | | | | | |
| Turn-ON Delay Time | $t_{D(ON)}$ | $V_{GS}=5\text{V}$, $V_{DD}\approx 5\text{V}$ $I_D=10\text{mA}$, $R_L=500\Omega$, $R_G=10\Omega$ | | 15 | | ns |
| Turn-ON Rise Time | t_R | | | 35 | | ns |
| Turn-OFF Delay Time | $t_{D(OFF)}$ | | | 80 | | ns |
| Turn-OFF Fall-Time | t_F | | | 80 | | ns |

■ TEST CIRCUITS AND WAVEFORMS



Switching Time Measurement Circuit



Switching Time Waveforms

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