



UK3018

Power MOSFET

2.5V DRIVE SILICON N-CHANNEL MOSFET

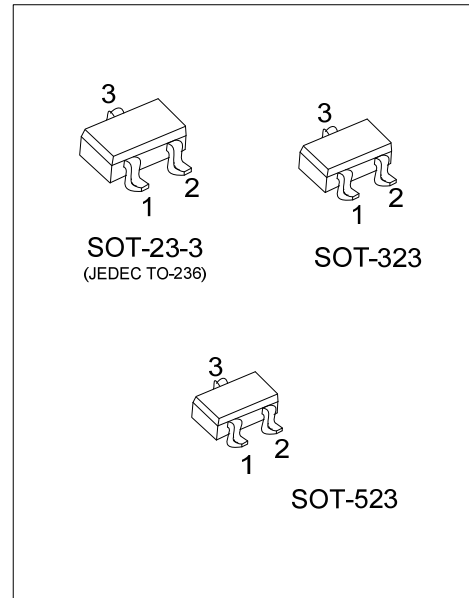
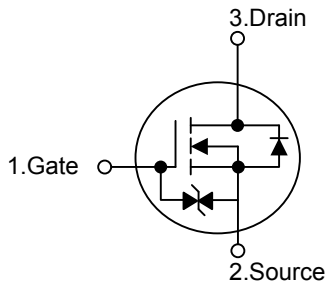
DESCRIPTION

The UTC **UK3018** is a Silicon N-channel MOSFET, designed to minimize on-state resistance while it provides rugged, reliable and fast switching performance. The product is particularly suited for low voltage and low current applications such as small servo motor controllers, power MOSFET gate drivers, and other switching applications.

FEATURES

- * Min $V_{DSS} = 30V$
- * $R_{DS(ON)} \leq 8.0 \Omega @ V_{GS}=4.0V, I_D=10mA$
 $R_{DS(ON)} \leq 13 \Omega @ V_{GS}=2.5V, I_D=1.0mA$
- * Pulsed $I_D=400mA$
- * Low voltage drive (2.5V)

SYMBOL



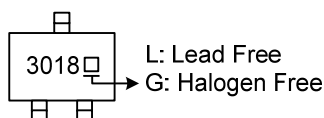
ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|---------------|----------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| UK3018L-AE2-R | UK3018G-AE2-R | SOT-23-3 | G | S | D | Tape Reel |
| UK3018L-AL3-R | UK3018G-AL3-R | SOT-323 | G | S | D | Tape Reel |
| UK3018L-AN3-R | UK3018G-AN3-R | SOT-523 | G | S | D | Tape Reel |

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

| | |
|--|-------------------------------------------------------------------------------------------------------------------------------------|
| | <p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3, AL3: SOT-323, AN3: SOT-523</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--|-------------------------------------------------------------------------------------------------------------------------------------|

MARKING



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|----------------------------|-----------------|------------------|------------|------|
| Drain-Source Voltage | | V _{DSS} | 30 | V |
| Gate-Source Voltage | | V _{GSS} | +20 | V |
| | | | -12 | V |
| Drain Current | Continuous | I _D | 100 | mA |
| | Pulsed (Note 2) | I _{DP} | 400 | mA |
| Power Dissipation (Note 3) | SOT-23-3 | P _D | 200 | mW |
| | SOT-323 | | | |
| | SOT-523 | | | |
| Junction Temperature | | T _J | +150 | °C |
| Storage Temperature | | T _{STG} | -55 ~ +150 | °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. Pw≤10μs, Duty cycle≤1%.

3. With each pin mounted on the recommended lands.

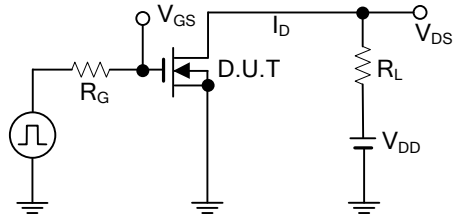
■ THERMAL DATA

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---------------------|----------|-----------------|---------|------|
| Junction to Ambient | SOT-23-3 | θ _{JA} | 625 | °C/W |
| | SOT-323 | | | |
| | SOT-523 | | | |

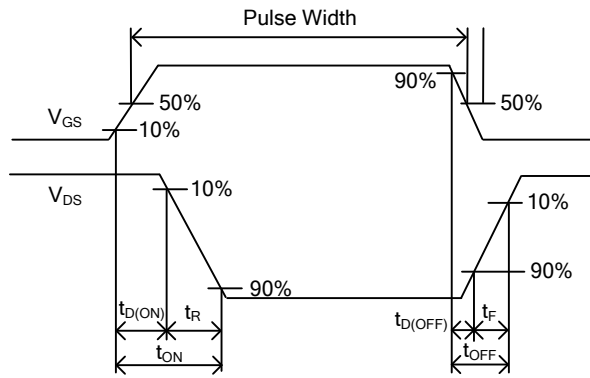
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _D =10μA | 30 | | | V |
| Drain-Source Leakage Current | I _{DSS} | V _{DS} =30V, V _{GS} =0V | | | 1 | μA |
| Gate-Source Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =+20V | | | 1 | μA |
| | | V _{DS} =0V, V _{GS} =-12V | | | -1 | μA |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | V _{GS(TH)} | V _{DS} =3V, I _D =100μA | 0.8 | | 1.5 | V |
| Static drain-source on-state resistance | R _{DS(ON)} | V _{GS} =4V, I _D =10mA | | 5 | 8 | Ω |
| | | V _{GS} =2.5V, I _D =1mA | | 7 | 13 | Ω |
| DYNAMIC PARAMETERS | | | | | | |
| Input capacitance | C _{ISS} | V _{DS} = 5V, V _{GS} = 0V, f = 1MHz | | 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} = 5V, V _{DD} ≈5V I _D = 10mA, R _L = 500Ω, R _G = 10Ω | | 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

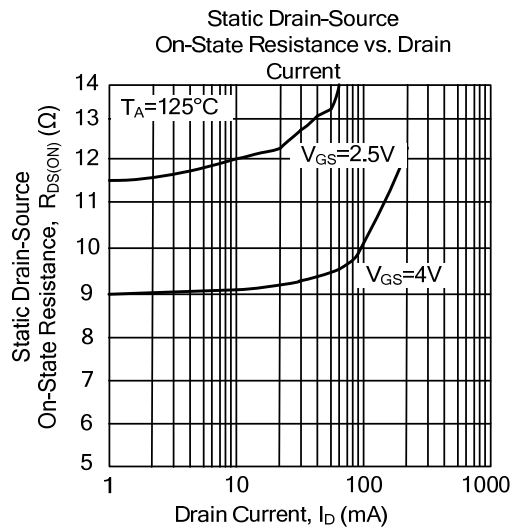
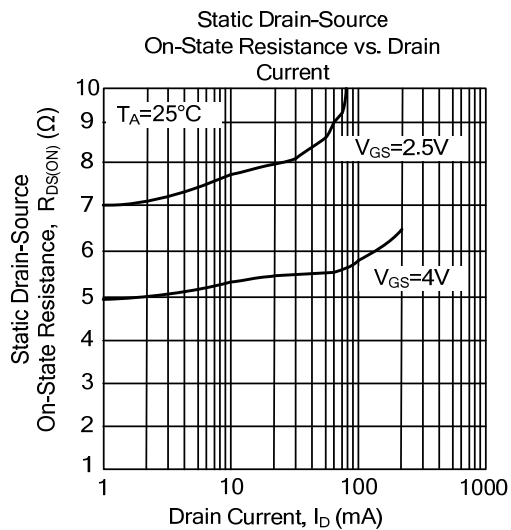
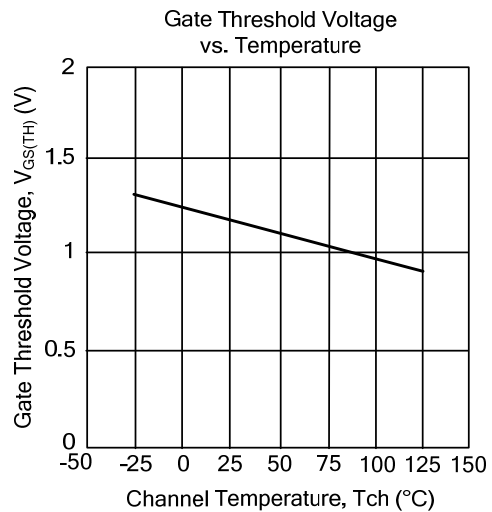
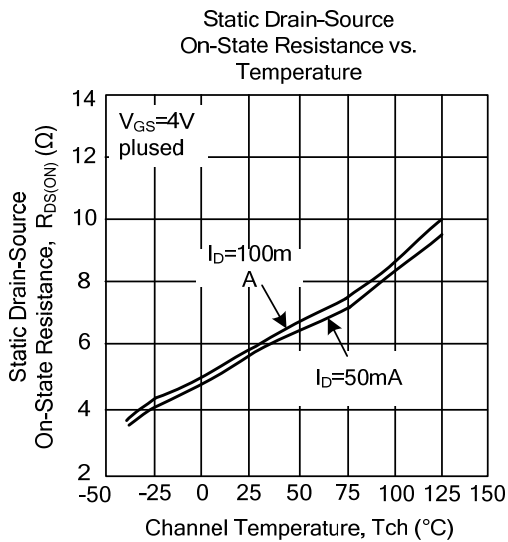
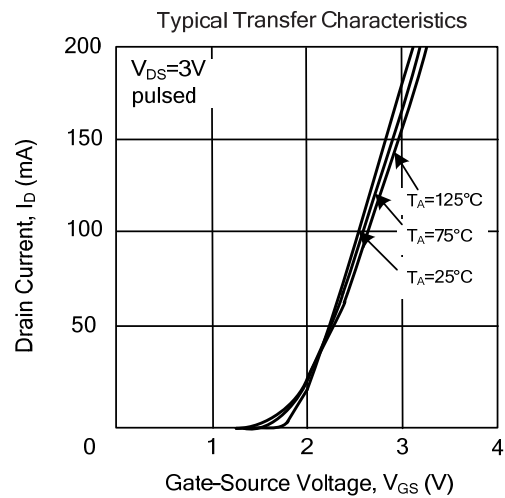
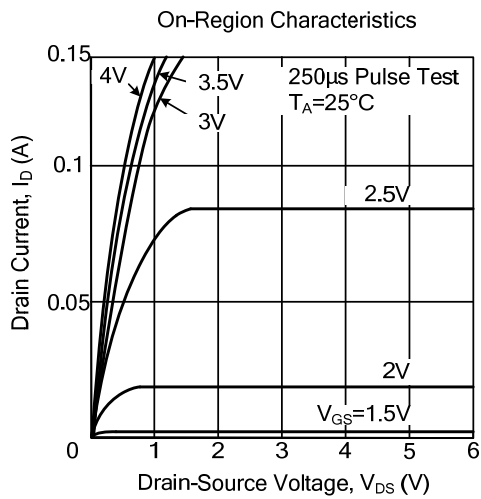


Switching Time Measurement Circuit

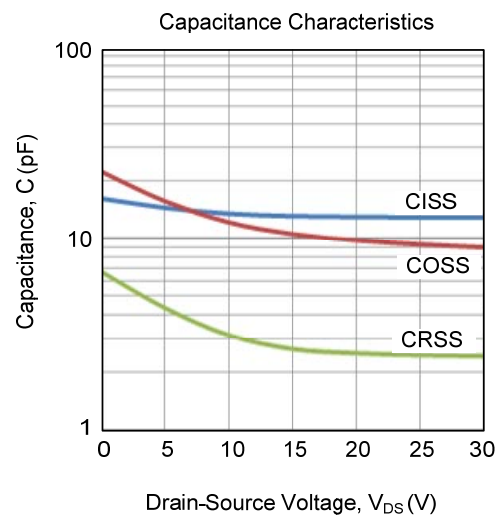
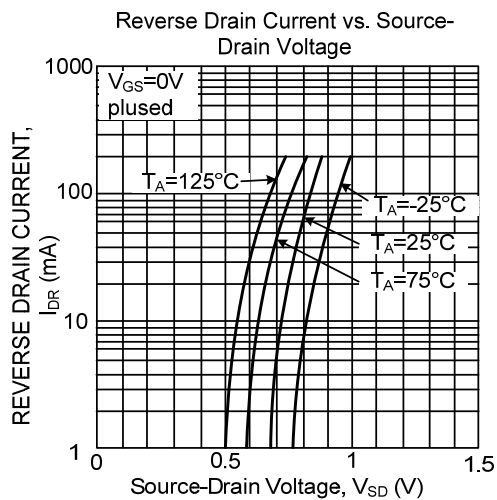
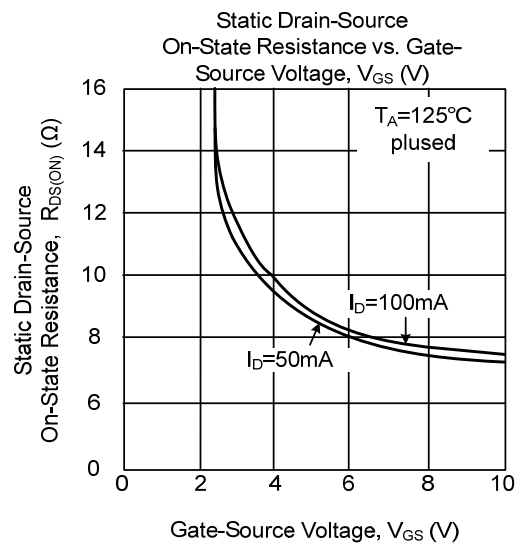
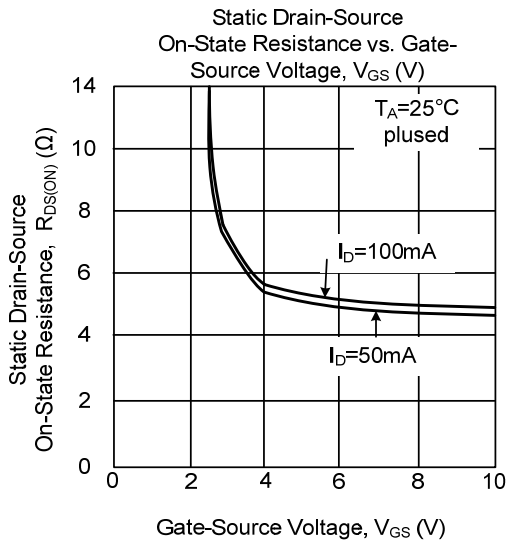
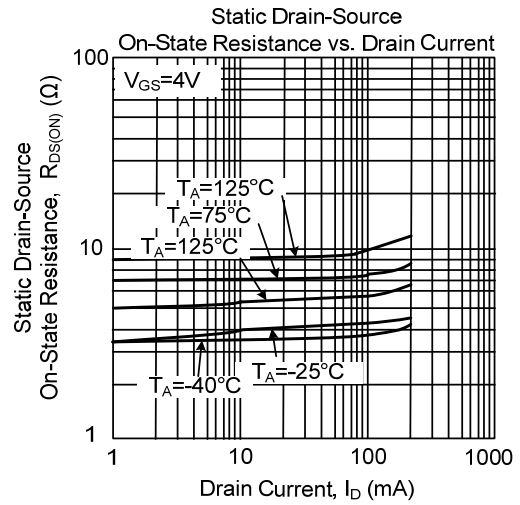
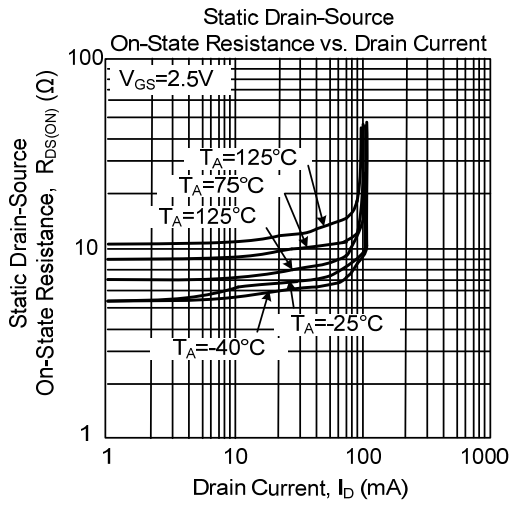


Switching Time Waveforms

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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