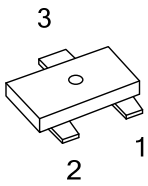
K4059 Preliminary ***N-CHANNEL JFET***

# FIELD EFFECT TRANSISTOR
# SILICON N CHANNEL
# JUNCTION TYPE




SOT-723

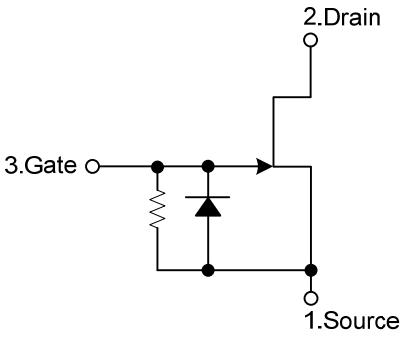
## ■ DESCRIPTION

The UTC **K4059** is an N-channel JFET, it uses UTC's advanced technology to provide customers with low input capacitance and low forward transfer admittance.

## ■ FEATURES

* Low forward transfer admittance
* Low input capacitance

## ■ EQUIVALENT CIRCUIT




## ■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| K4059L-x-AQ3-R | K4059G-x-AQ3-R | SOT-723 | S | D | G | Tape Reel |

K4059L-x-AQ3-R

(1)Packing Type
(2)Packing Type
(3)Rank
(4)Lead Free

(1) R: Tape Reel
(2) AQ3: SOT-723
(3) x: refer to CLASSIFICATION OF $I_{DSS}$
(4) L: Lead Free, G: Halogen Free

## ■ ABSOLUTE MAXIMUM RATINGS ($T_A$=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Gate-Drain Voltage | $V_{GDO}$ | -20 | V |
| Gate-Current | $I_G$ | 10 | mA |
| Drain Power Dissipation ($T_A$=25°C) | $P_D$ | 100 | mW |
| Junction Temperature | $T_J$ | 125 | °C |
| Storage Temperature Range | $T_{STG}$ | -55~125 | °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°C)

| PARAMETER | SYMBOL | TEST CONDITIONS | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| Drain Current | $I_{DSS}$ | $V_{GS}$=0, $V_{DS}$=2V | K4059-A | 140 | | 240 | μA |
| | | | K4059-B | 210 | | 350 | μA |
| | | | K4059-C | 320 | | 500 | μA |
| Drain Current | $I_D$ | $V_{DD}$=2V, $R_L$=2.2kΩ, $C_g$=5pF | K4059-A | 125 | | 260 | μA |
| | | | K4059-B | 190 | | 370 | μA |
| | | | K4059-C | 290 | | 500 | μA |
| Gate-Drain Voltage | $V_{(BR)GDO}$ | $I_G$=-10μA | | -20 | | | V |
| Gate-Source Cut-Off Voltage | $V_{GS\ (OFF)}$ | $V_{DS}$=2V, $I_D$=1μA | | -0.1 | | -1.0 | V |
| Forward Transfer Admittance | $\|Y_{fs}\|$ | $V_{DS}$=2V, $V_{GS}$=0V | | 1.35 | 1.85 | | mS |
| Input Capacitance | $C_{ISS}$ | $V_{DS}$=2V, $V_{GS}$=0, f=1MHz | | | 4.0 | | pF |
| Voltage Gain | $G_V$ | $V_{DD}$=2V,$R_L$=2.2kΩ, $C_g$=5pF, f=1kHz, $V_{IN}$=100mV | K4059-A | -1.2 | +0.9 | | dB |
| | | | K4059-B | -0.2 | +1.4 | | dB |
| | | | K4059-C | +0.5 | +1.8 | | dB |
| Delta Voltage Gain | $\Delta G_{V(f)}$ | $V_{DD}$=2V, $R_L$=2.2kΩ, $C_g$=5pF, f=1kHz~100Hz, $V_{IN}$=100mV | | | 0 | -1 | dB |
| Delta Voltage Gain | $\Delta G_{V(V)}$ | $V_{DD}$=2V~1.5V,$R_L$=2.2kΩ, $C_g$=5pF, f=1kHz, $V_{IN}$=100mV | K4059-A | | -0.6 | -1.1 | dB |
| | | | K4059-B | | -0.8 | -1.7 | dB |
| | | | K4059-C | | -1.4 | -3.2 | dB |
| Noise Voltage | $V_N$ | $V_{DD}$=2V, $R_L$=1kΩ, $C_g$=10pF, $G_V$=80dB, A-Curve Filter | K4059-A | | 33 | 75 | mV |
| | | | K4059-B | | 38 | 80 | mV |
| | | | K4059-C | | 42 | 90 | mV |
| Total Harmonic Distortion | THD | $V_{DD}$=2V, $R_L$=2.2kΩ, $C_g$=5pF, f=1kHz, $V_{IN}$ =50mV | K4059-A | | 1.3 | | % |
| | | | K4059-B | | 0.6 | | % |
| | | | K4059-C | | 0.1 | | % |
| Time Output Stability | $t_{OS}$ | $V_{DD}$=2V, $R_L$=2.2kΩ, $C_g$=5pF | | | 100 | 200 | ms |

## ■ CLASSIFICATION OF $I_{DSS}$

| RANK | A | B | C |
|---|---|---|---|
| RANGE | 140-240 | 210-350 | 320-500 |

## ■ TEST CIRCUIT