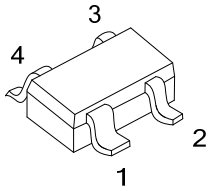
# MOSFET N-CHANNEL ENHANCEMENT SWITCHING TRANSISTOR




SOT-143

## ■ DESCRIPTION

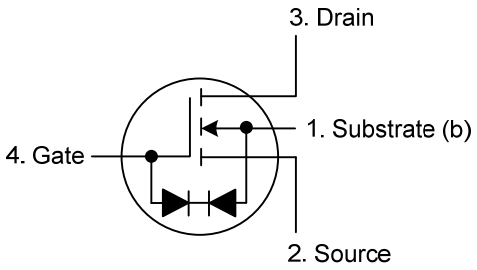
The UTC **UBSS83** is a MOSFET N-channel enhancement switching transistor, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, etc.

The UTC **UBSS83** is suitable for analog and/or digital switch and switch driver.

## ■ FEATURES

* Low ON resistance
* Low capacitances

## ■ SYMBOL




## ■ ORDERING INFORMATION

| Ordering Number | Package | Pin Assignment | | | | Packing |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | |
| UBSS83G-AD4-R | SOT-143 | B | S | D | G | Tape Reel |

Note: Pin Assignment: G: Gate D: Drain S: Source B: Substrate (b)

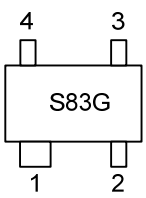
UBSS83G-AD4-R

(1)Packing Type — (1) R: Tape Reel

(2)Package Type — (2) AD4: SOT-143

(3)Green Package — (3) G: Halogen Free and Lead Free

## ■ MARKING



## ■ ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | 10 | V |
| Source-Drain Voltage | $V_{SD}$ | 10 | V |
| Drain-Substrate Voltage | $V_{DB}$ | 15 | V |
| Source-Substrate Voltage | $V_{SB}$ | 15 | V |
| Drain Current (DC) | $I_D$ | 50 | mA |
| Power Dissipation ($T_A$=25°C) | $P_{TOT}$ | 230 | mW |
| Junction Temperature | $T_J$ | 125 | °C |
| Storage Temperature Range | $T_{STG}$ | -65~+150 | °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.

## ■ THERMAL RESISTANCE

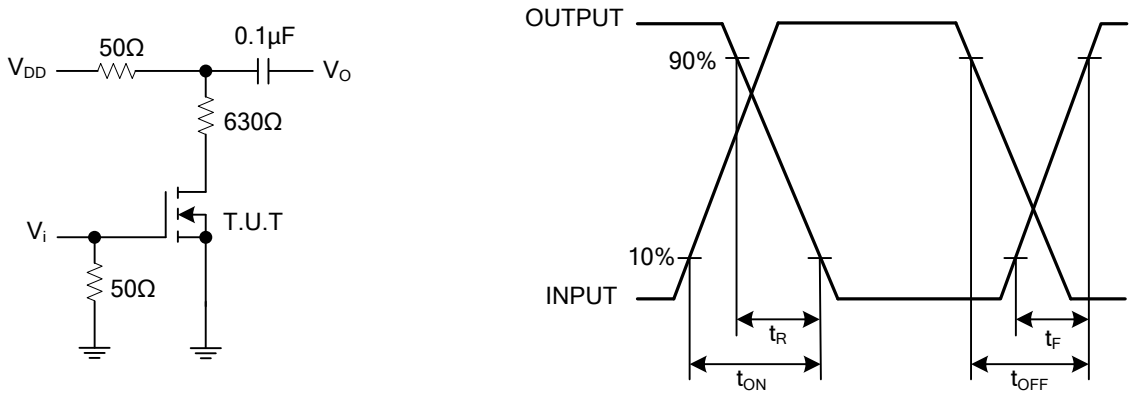
| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Junction to Ambient in Free Air | $\theta_{JA}$ | 430 | K/W |

Note: Device mounted on a ceramic substrate of 8mm×10mm×0.7mm.

## ■ ELECTRICAL CHARACTERISTICS ($T_{AMB}$=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSX}$ | $I_D$=10nA, $V_{GS}$=$V_{BS}$=-5V | 10 | | | V |
| Source-Drain Breakdown Voltage | $BV_{SDX}$ | $V_{GD}$=$V_{BD}$=-5V, $I_D$=10nA | 10 | | | V |
| Drain-Substrate Breakdown Voltage | $BV_{DBO}$ | $V_{GB}$=0, $I_D$=10nA, Open Source | 15 | | | V |
| Source-Substrate Breakdown Voltage | $BV_{SBO}$ | $V_{GB}$=0, $I_D$=10nA, Open Drain | 15 | | | V |
| Drain-Source Leakage Current | $I_{DSoff}$ | $V_{GS}$=$V_{BS}$=-2V, $V_{DS}$=6.6V | | | 10 | nA |
| Source-Drain Leakage Current | $I_{SDoff}$ | $V_{GD}$=$V_{BD}$=-2V, $V_{SD}$=6.6V | | | 10 | nA |
| Gate-Source Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}$=$V_{GS}$, $V_{SB}$=0, $I_D$=1μA | 0.1 | | 2.0 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$=5V, $I_D$=0.1mA, $V_{SB}$=0 | | | 70 | Ω |
| | | $V_{GS}$=10V, $I_D$=0.1mA, $V_{SB}$=0 | | | 45 | Ω |
| | | $V_{GS}$=3.2V, $I_D$=0.1mA, $V_{SB}$=6.8V | | 80 | 120 | Ω |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=10V, $V_{SB}$=0, $I_D$=20mA, f=1kHz | 10 | 15 | | mS |
| Gate-Substrate Zener Voltages | $V_{Z(1)}$ | $V_{DB}$=$V_{SB}$=0, -$I_G$=10μA | 12.5 | | | V |
| | $V_{Z(2)}$ | $V_{DB}$=$V_{SB}$=0, +$I_G$=10μA | 12.5 | | | V |
| Input Capacitance | $C_{ISS}$ | $V_{GS}$=$V_{BS}$=-15V, $V_{DS}$=10V, f=1MHz | | 1.5 | | pF |
| Output Capacitance | $C_{OSS}$ | | | 1.0 | | pF |
| Feed-Back Capacitance | $C_{RSS}$ | | | 0.6 | | pF |
| Switching Times | $t_{ON}$ | $V_{DD}$=10V,$V_i$=5V | | 1.0 | | ns |
| | $t_{OFF}$ | | | 5.0 | | ns |

## ■ TEST CIRCUITS AND WAVEFORMS




Switching Times Test Circuit and Input and Output Waveforms.