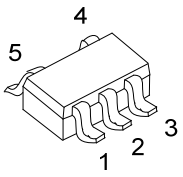
# SINGLE-CHANNEL HIGH-SPEED MOSFET DRIVER




SOT-25

## ■ DESCRIPTION

The UTC **US2829** is a single-channel high-speed MOS-FET driver. The device is fabricated by use of BICMOS outputs to achieve high switching speed. The outputs are capable of delivering peak currents up to 2A into capacitive loads.

## ■ FEATURES

* Low-cost single-channel high-speed MOSFET driver
* 2A peak output current
* 25ns max rise/fall times and 40ns max propagation delay,1nF load
* Low power dissipation: $I_{CC}$=15μA(Max) @ Ta=25°C
* Broad $V_{CC}$ operating range:4V to 14V

## ■ ORDERING INFORMATION

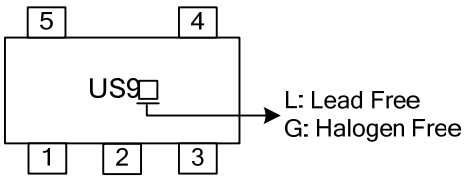
| Ordering Number | | Package | Packing |
|---|---|---|---|
| Lead Free | Halogen Free | | |
| US2829L-AF5-R | US2829G-AF5-R | SOT-25 | Tape Reel |

US2829L-AF5-R

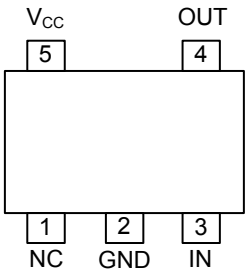
(1) Packing Type
(2) Package Type
(3) Lead Free

(1) R: Tape Reel
(2) AF5: SOT-25
(3) H: Halogen Free, L: Lead Free

## ■ MARKING



## ■ PIN CONFIGURATION




## ■ PIN DESCRIPTION

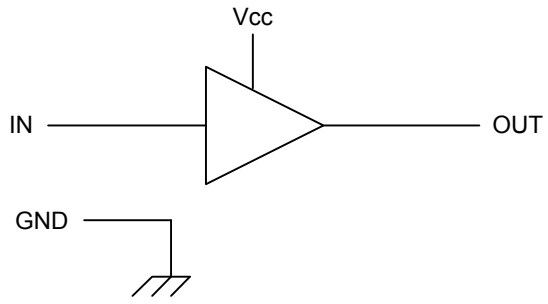
| PIN NO. | PIN NAME | DESCRIPTION |
|---|---|---|
| 1 | NC | Not connected |
| 2 | GND | Ground Connection |
| 3 | IN | Driver input |
| 4 | OUT | Driver output, OUT= IN |
| 5 | $V_{CC}$ | Driver supply voltage/regulator output voltage |

## ■ FUNCTION TABLE

| INPUT(IN) | OUTPUT(OUT) |
|---|---|
| H | H |
| L | L |

H: High Level
L: Low Level

## ■ LOGIC DIAGRAM



## ■ ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | -0.3 ~ +15 | V |
| Input Voltage | $V_{IN}$ | -0.3 ~ $V_{CC}$ +0.5 | V |
| Output Voltage | $V_{OUT}$ | -0.5 ~ $V_{CC}$ +0.5 | V |
| Continuous Output Current | $I_{OUT}$ | ±100 | mA |
| Power Dissipation | $P_D$ | 437 | mW |
| Derated Above 25°C | | 3.5 | mW/°C |
| Operating Temperature | $T_{OPR}$ | -40 ~ + 125 | °C |
| Storage Temperature | $T_{STG}$ | -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.

## ■ RECOMMENDED OPERATING CONDITIONS

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 4 | | 14 | V |
| Input Voltage | $V_{IN}$ | -0.3 | | $V_{CC}$ | V |
| Operating Temperature | $T_{OPR}$ | -40 | | 125 | °C |

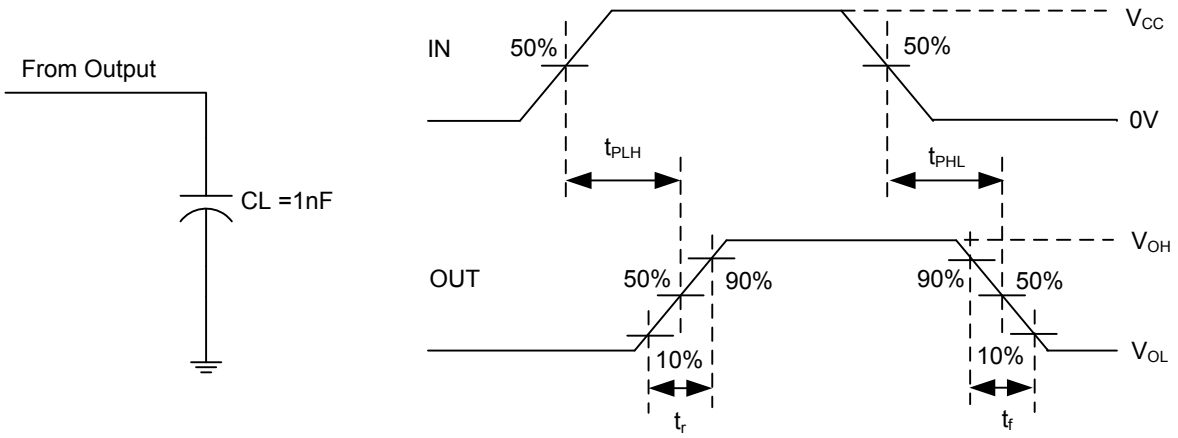
## ■ ELECTRICAL CHARACTERISTICS (Ta=25°C , unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| High-Level Output Voltage | $V_{OH}$ | $V_{CC}$=10V, $I_{OH}$=-1mA | 9.75 | 9.9 | | V |
| | | $V_{CC}$=10V, $I_{OH}$=-100mA | 8 | 9.1 | | V |
| Low-Level Output Voltage | $V_{OL}$ | $V_{CC}$=10V, $I_{OL}$=1mA | | 0.18 | 0.25 | V |
| | | $V_{CC}$=10V, $I_{OL}$=100mA | | 1 | 2 | V |
| Positive-going input threshold voltage | $V_{T+}$ | $V_{CC}$=5V | | 3.3 | 4 | V |
| | | $V_{CC}$=10V | | 6.6 | 7 | V |
| | | $V_{CC}$=14V | | 9.3 | 10 | V |
| Negative-going input threshold voltage | $V_{T-}$ | $V_{CC}$=5V | 1 | 1.7 | | V |
| | | $V_{CC}$=10V | 2 | 3.3 | | V |
| | | $V_{CC}$=14V | 2.5 | 4.6 | | V |
| Input voltage hysteresis | $V_{T+}$-$V_{T-}$ | | | 1.3 | | V |
| Input Leakage Current | $I_{I(LEAK)}$ | $V_{CC}$=10V, $V_{IN}$=0 or $V_{CC}$ | | 0.2 | | μA |
| Supply Current | $I_{CC}$ | $V_{CC}$=10V, $V_{IN}$=$V_{CC}$ or GND, $I_{OUT}$=0 | | 0.1 | 15 | μA |
| Input Capacitance | $C_{IN}$ | $V_{CC}$=10V | | 5 | 10 | pF |

## ■ SWITCHING CHARACTERISTICS (see TEST CIRCUIT AND WAVEFORMS)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Propagation delay from input (IN) to output(OUT) | $t_{PLH}$ $t_{PHL}$ | $V_{CC}$=14V, $C_L$=1nF | | | 40 | ns |
| | | $V_{CC}$=10V, $C_L$=1nF | | 24 | 45 | ns |
| | | $V_{CC}$=5V, $C_L$=1nF | | | 50 | ns |
| Output transition time | $t_r$/$t_f$ | $V_{CC}$=14V, $C_L$=1nF | | | 25 | ns |
| | | $V_{CC}$=10V, $C_L$=1nF | | 14 | 30 | ns |
| | | $V_{CC}$=5V, $C_L$=1nF | | | 35 | ns |

## ■ TEST CIRCUIT AND WAVEFORMS




TEST CIRCUIT PROPAGATION DELAY TIMES

Note: $C_L$ includes probe and jig capacitance.
All input pulses are supplied by generators having the following characteristics: $P_{RR}$≤1MHz, $Z_O$ =50Ω, $t_R$≤6ns, $t_F$ ≤6ns.