

# 5HN01SS

## MOSFET, Silicon, N-Channel

### Ultrahigh-Speed Switching Applications



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#### Features

- Low ON-resistance
- Ultrahigh-speed Switching
- 4 V Drive
- These Devices are Pb-Free and are RoHS Compliant

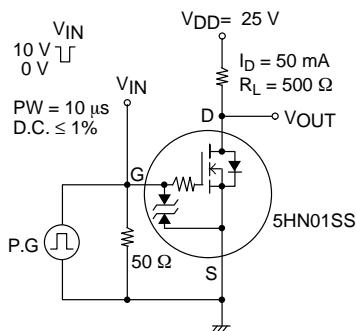
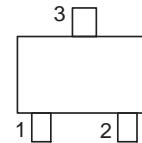


Figure 1. Switching Time Test Circuit

NOTE: Since the 5HN01SS is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

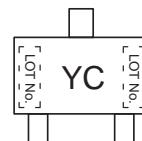


SOT-623 / SSFP  
CASE 631AC



1 : Gate  
2 : Source  
3 : Drain

#### MARKING DIAGRAM



YC = Specific Device Code

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

## SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		50	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		0.1	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10 \mu\text{s}$ , duty cycle $\leq 1\%$	0.4	A
Allowable Power Dissipation	$P_D$		0.15	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ELECTRICAL CHARACTERISTICS at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1 \text{ mA}$ , $V_{GS} = 0$	50			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 50 \text{ V}$ , $V_{GS} = 0$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(\text{off})}$	$V_{DS} = 10 \text{ V}$ , $I_D = -100 \mu\text{A}$	1		2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10 \text{ V}$ , $I_D = 50 \text{ mA}$	85	120		$\text{mS}$
Static Drain-to-Source On-State Resistance	$R_{DS(\text{on})1}$	$I_D = 50 \text{ mA}$ , $V_{GS} = 10 \text{ V}$		5.8	7.5	$\Omega$
	$R_{DS(\text{on})2}$	$I_D = 30 \text{ mA}$ , $V_{GS} = 4 \text{ V}$		7.5	10.5	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = 10 \text{ V}$ , $f = 1 \text{ MHz}$		6.2		$\text{pF}$
Output Capacitance	$C_{oss}$	$V_{DS} = 10 \text{ V}$ , $f = 1 \text{ MHz}$		4.4		$\text{pF}$
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 10 \text{ V}$ , $f = 1 \text{ MHz}$		1.5		$\text{pF}$
Turn-ON Delay Time	$t_d(\text{on})$	See specified Test Circuit		10		ns
Rise Time	$t_r$	See specified Test Circuit		11		ns
Turn-OFF Delay Time	$t_d(\text{off})$	See specified Test Circuit		105		ns
Fall Time	$t_f$	See specified Test Circuit		75		ns
Total Gate Charge	$Q_g$	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 10 \text{ V}$ , $I_D = 100 \text{ mA}$		1.40		$\text{nC}$
Gate Source Charge	$Q_{gs}$	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 10 \text{ V}$ , $I_D = 100 \text{ mA}$		0.21		$\text{nC}$
Gate Drain Charge	$Q_{gd}$	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 10 \text{ V}$ , $I_D = 100 \text{ mA}$		0.34		$\text{nC}$
Diode Forward Voltage	$V_{SD}$	$I_S = 100 \text{ mA}$ , $V_{GS} = 0$		0.85	1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## TYPICAL CHARACTERISTICS

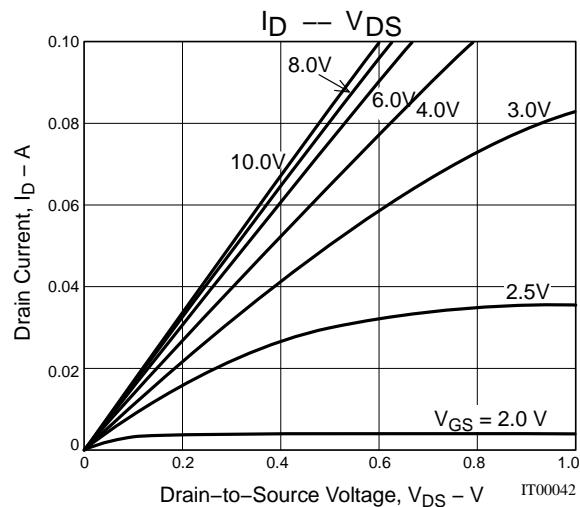


Figure 2.

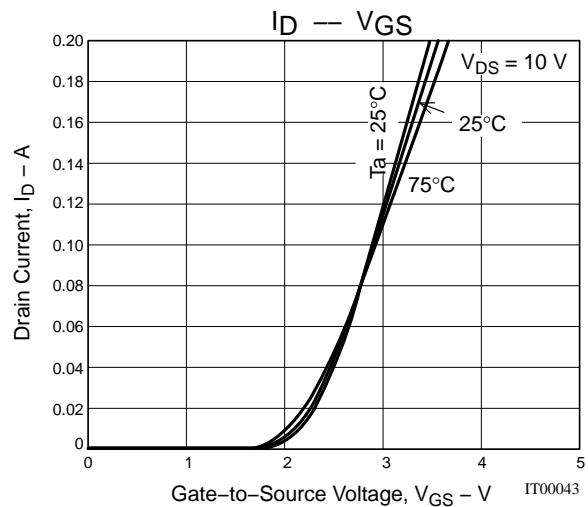


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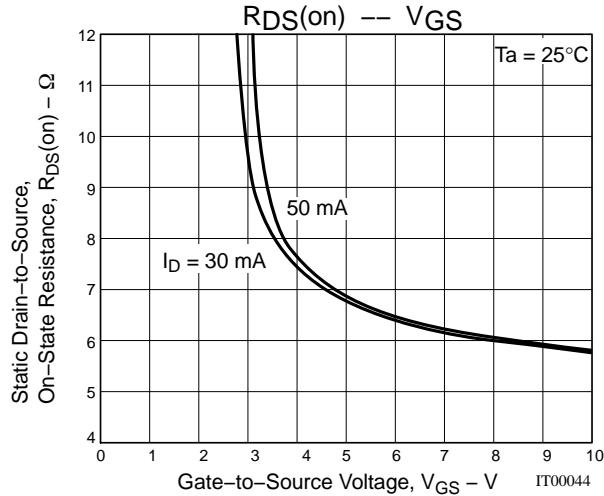


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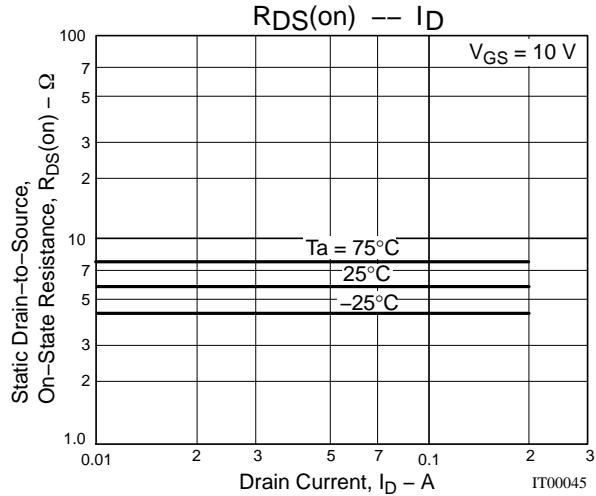


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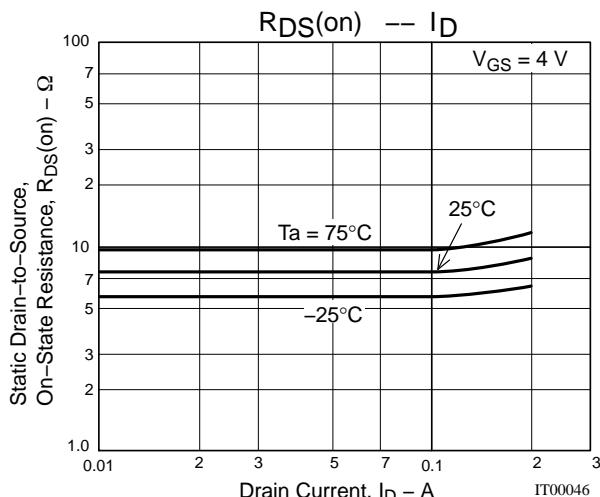


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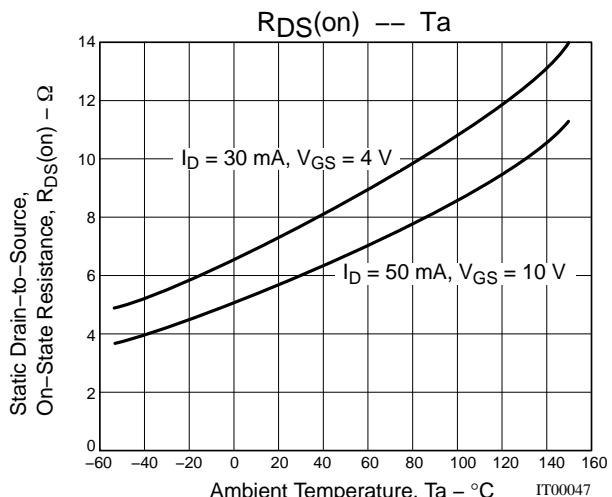


Figure 7.

## TYPICAL CHARACTERISTICS

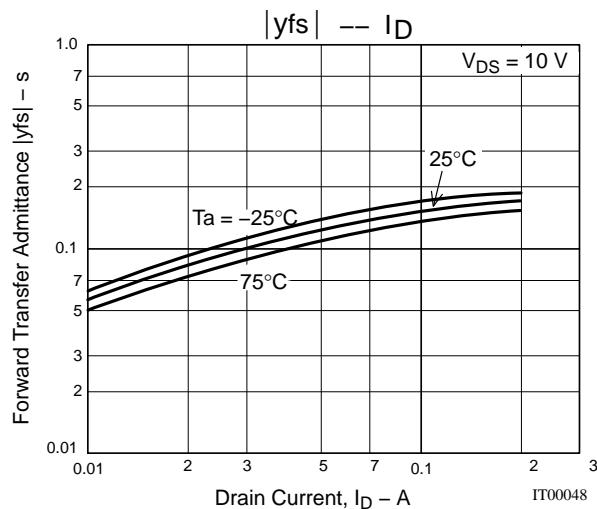


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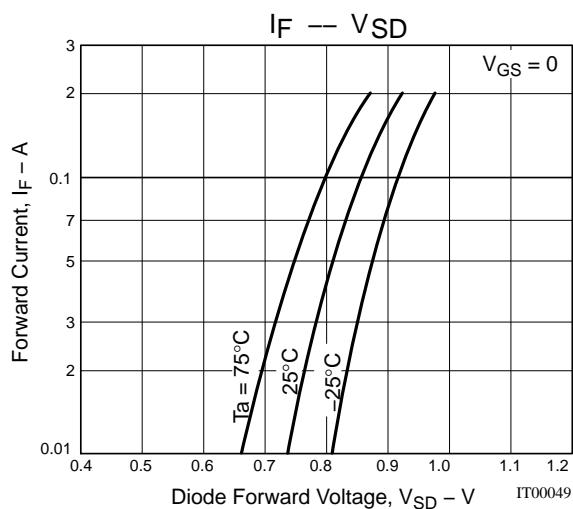


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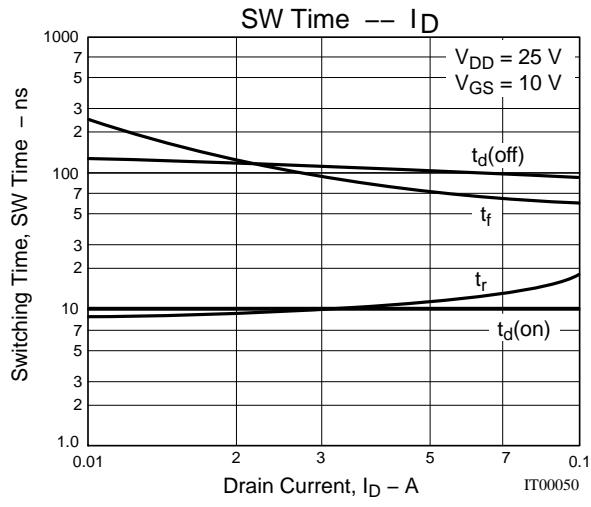


Figure 10.

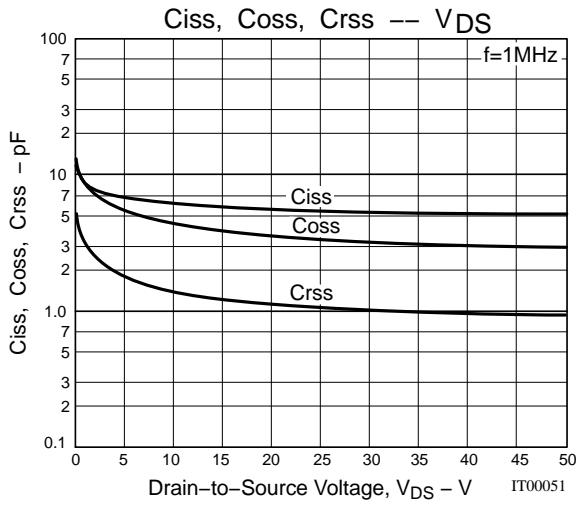


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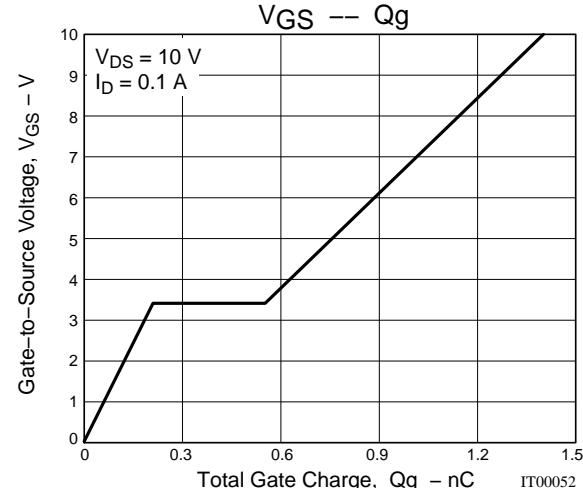


Figure 12.

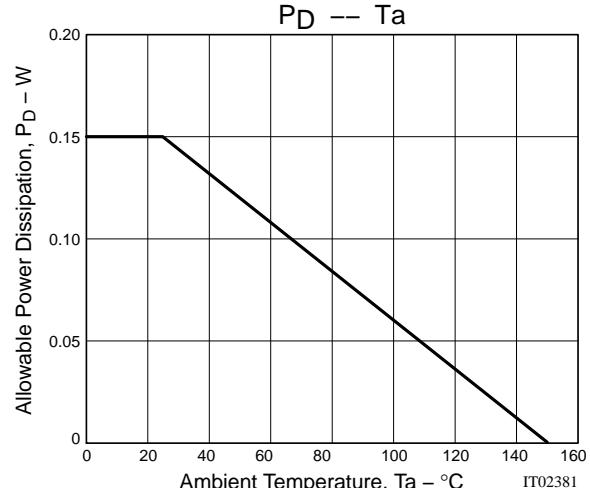
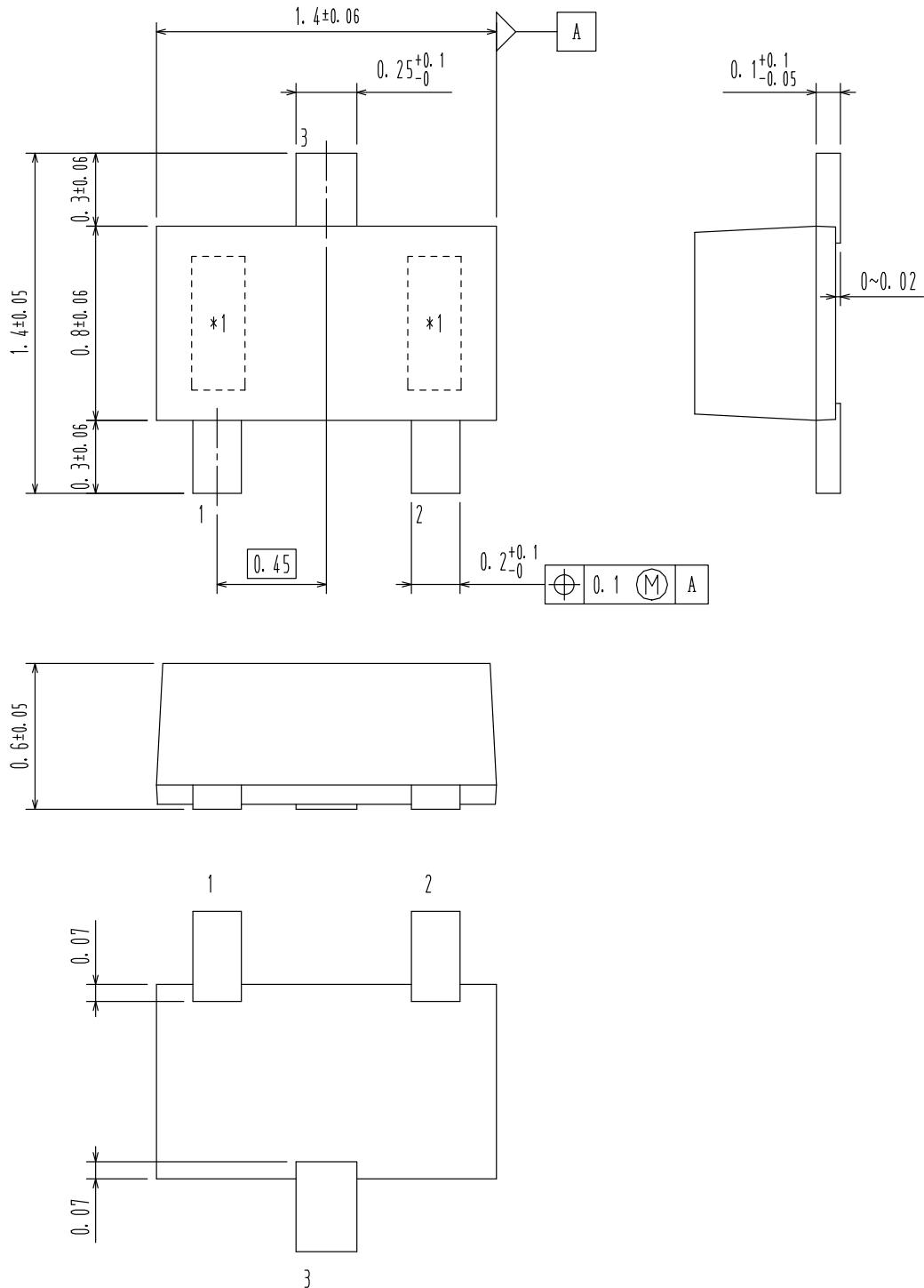


Figure 13.

# 5HN01SS

## PACKAGE DIMENSIONS

**SOT-623 / SSFP**  
CASE 631AC  
ISSUE O



## ORDERING INFORMATION

Device	Marking	Package	Shipping <sup>†</sup>
5HN01SS-TL-E / 5HN01SS-TL-H	YC	SOT-623 / SSFP (Pb-Free / Halogen Free)	8,000 / Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D

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