

5HN01SS

MOSFET, Silicon, N-Channel

Ultrahigh-Speed Switching Applications

Features

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

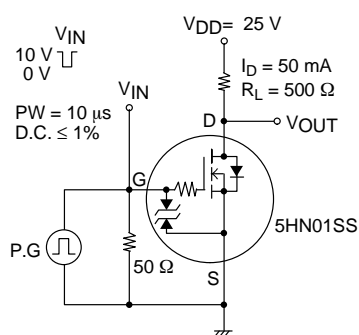


Figure 1. Switching Time Test Circuit

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

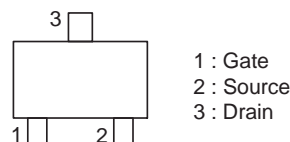


ON Semiconductor®

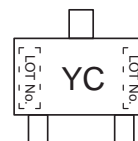
www.onsemi.com



SOT-623 / SSFP
CASE 631AC



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.

5HN01SS

SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		50	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		0.1	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10 \mu s$, duty cycle $\leq 1\%$	0.4	A
Allowable Power Dissipation	P_D		0.15	W
Channel Temperature	T_{ch}		150	°C
Storage Temperature	T_{stg}		-55 to +150	°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 Ta = 25°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	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10 \text{ V}$, $I_D = -100 \mu A$	1		2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10 \text{ V}$, $I_D = 50 \text{ mA}$	85	120		mS
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = 50 \text{ mA}$, $V_{GS} = 10 \text{ V}$		5.8	7.5	Ω
	$R_{DS(on)2}$	$I_D = 30 \text{ mA}$, $V_{GS} = 4 \text{ V}$		7.5	10.5	Ω
Input Capacitance	C_{iss}	$V_{DS} = 10 \text{ V}$, $f = 1 \text{ MHz}$		6.2		pF
Output Capacitance	C_{oss}	$V_{DS} = 10 \text{ V}$, $f = 1 \text{ MHz}$		4.4		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 10 \text{ V}$, $f = 1 \text{ MHz}$		1.5		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		10		ns
Rise Time	t_r	See specified Test Circuit		11		ns
Turn-OFF Delay Time	$t_{d(off)}$	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		nC
Gate Source Charge	Q_{gs}	$V_{DS} = 10 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 100 \text{ mA}$		0.21		nC
Gate Drain Charge	Q_{gd}	$V_{DS} = 10 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 100 \text{ mA}$		0.34		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

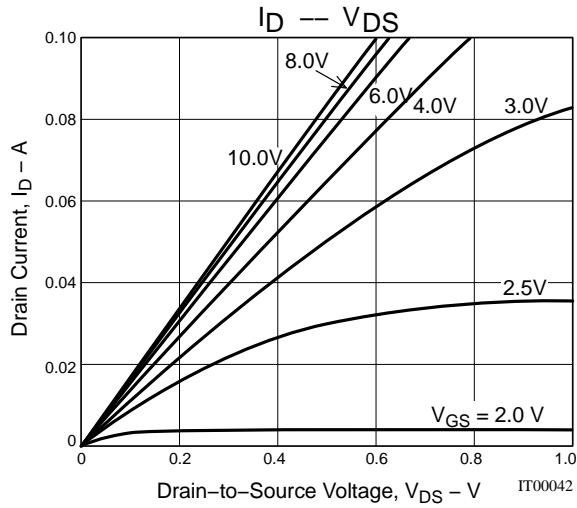


Figure 2.

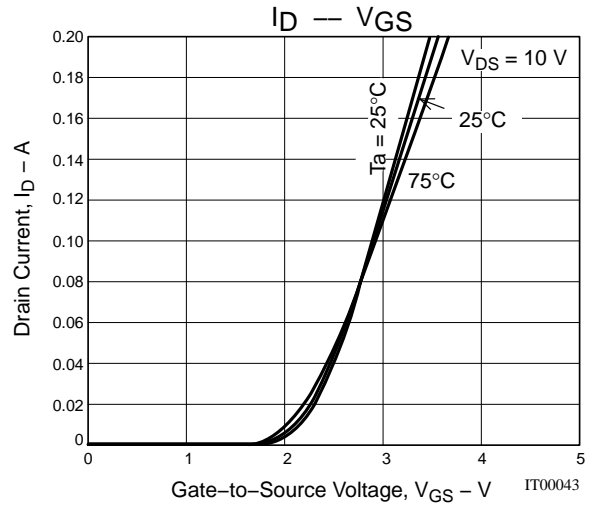


Figure 3.

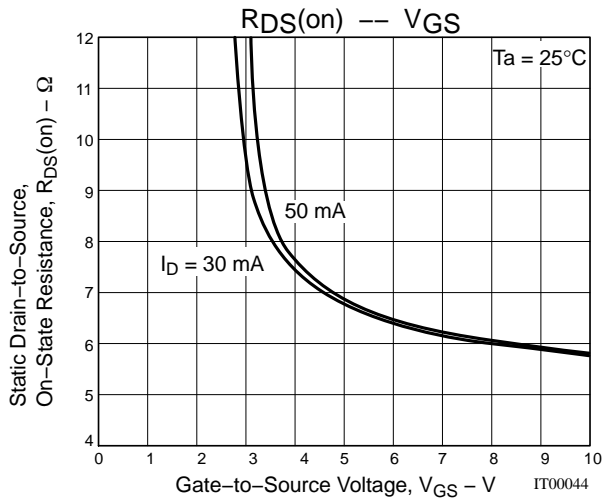


Figure 4.

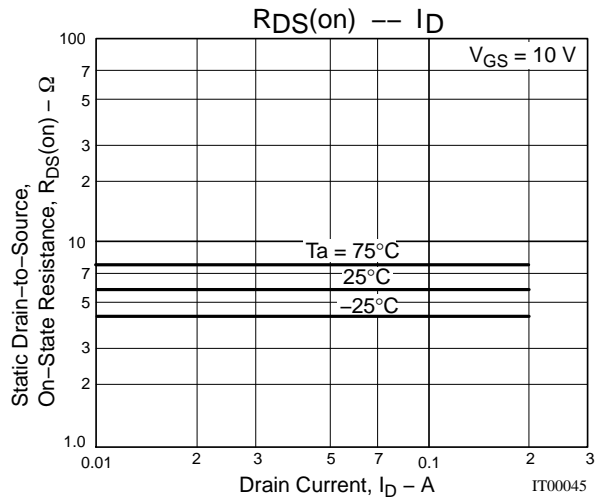


Figure 5.

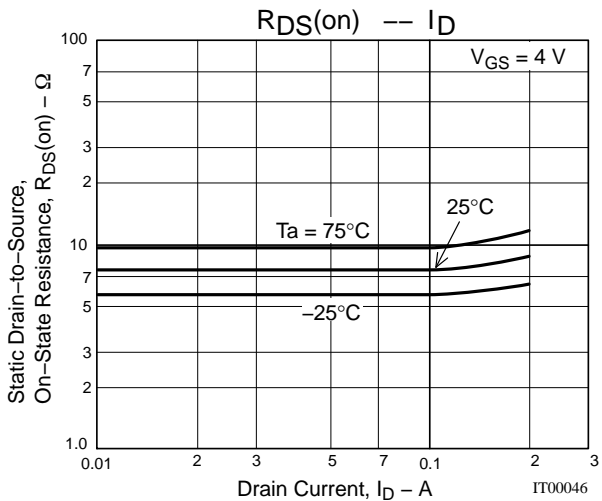


Figure 6.

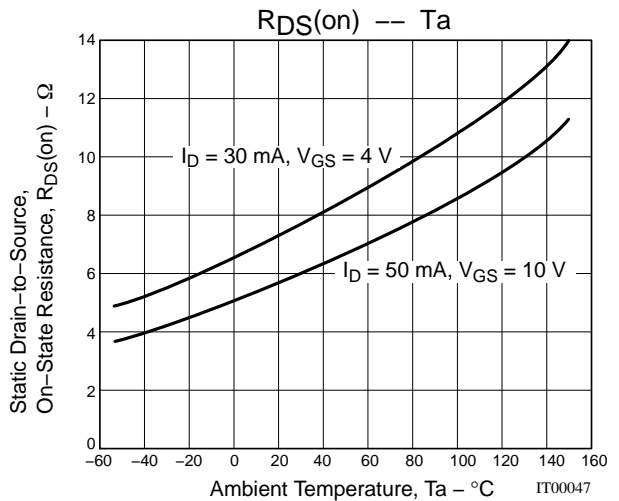


Figure 7.

TYPICAL CHARACTERISTICS

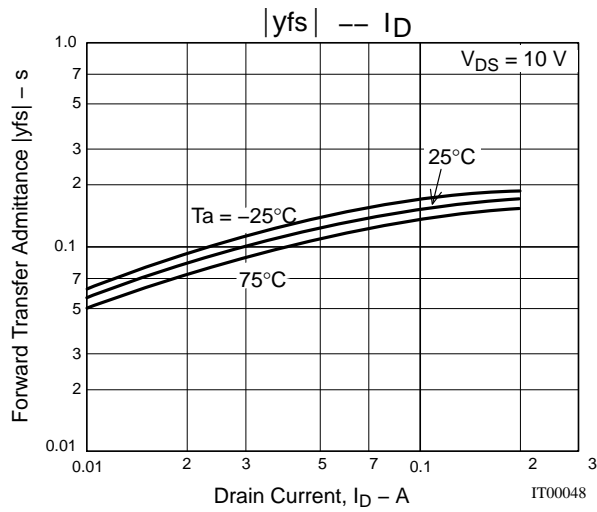


Figure 8.

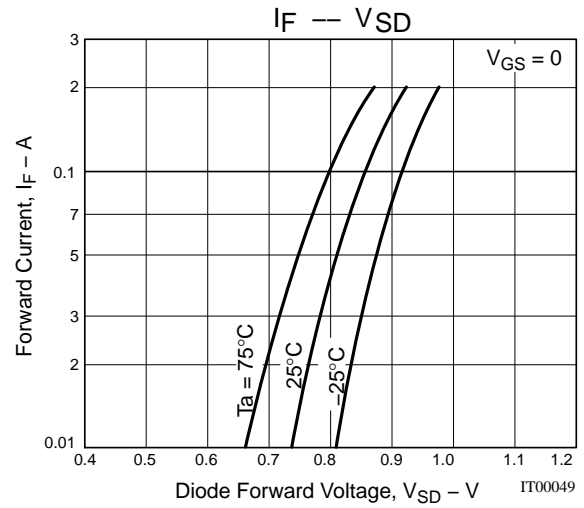


Figure 9.

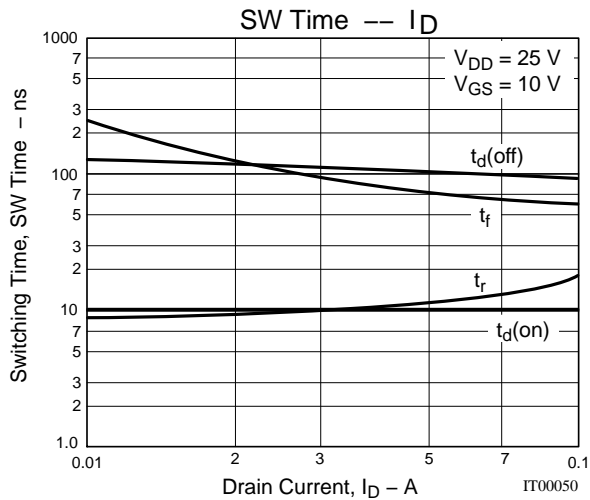


Figure 10.

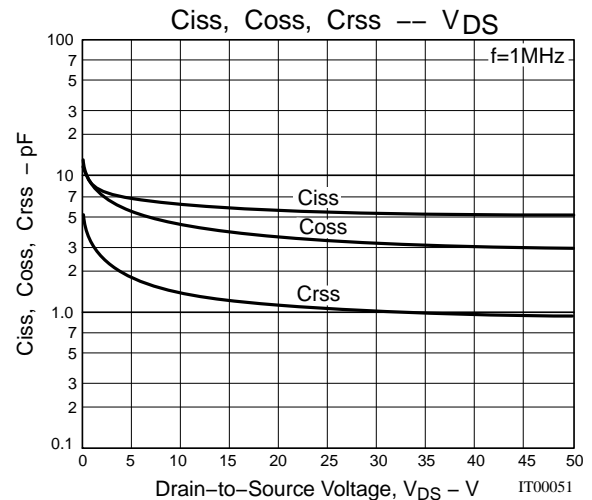


Figure 11.

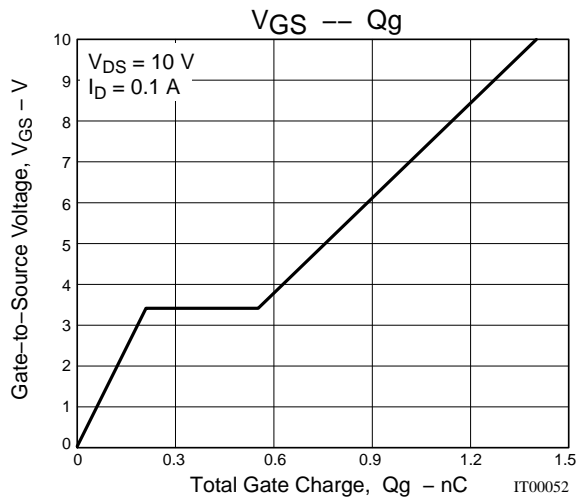


Figure 12.

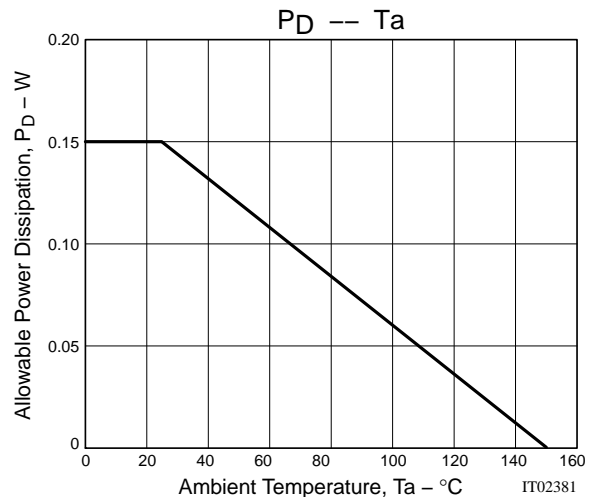
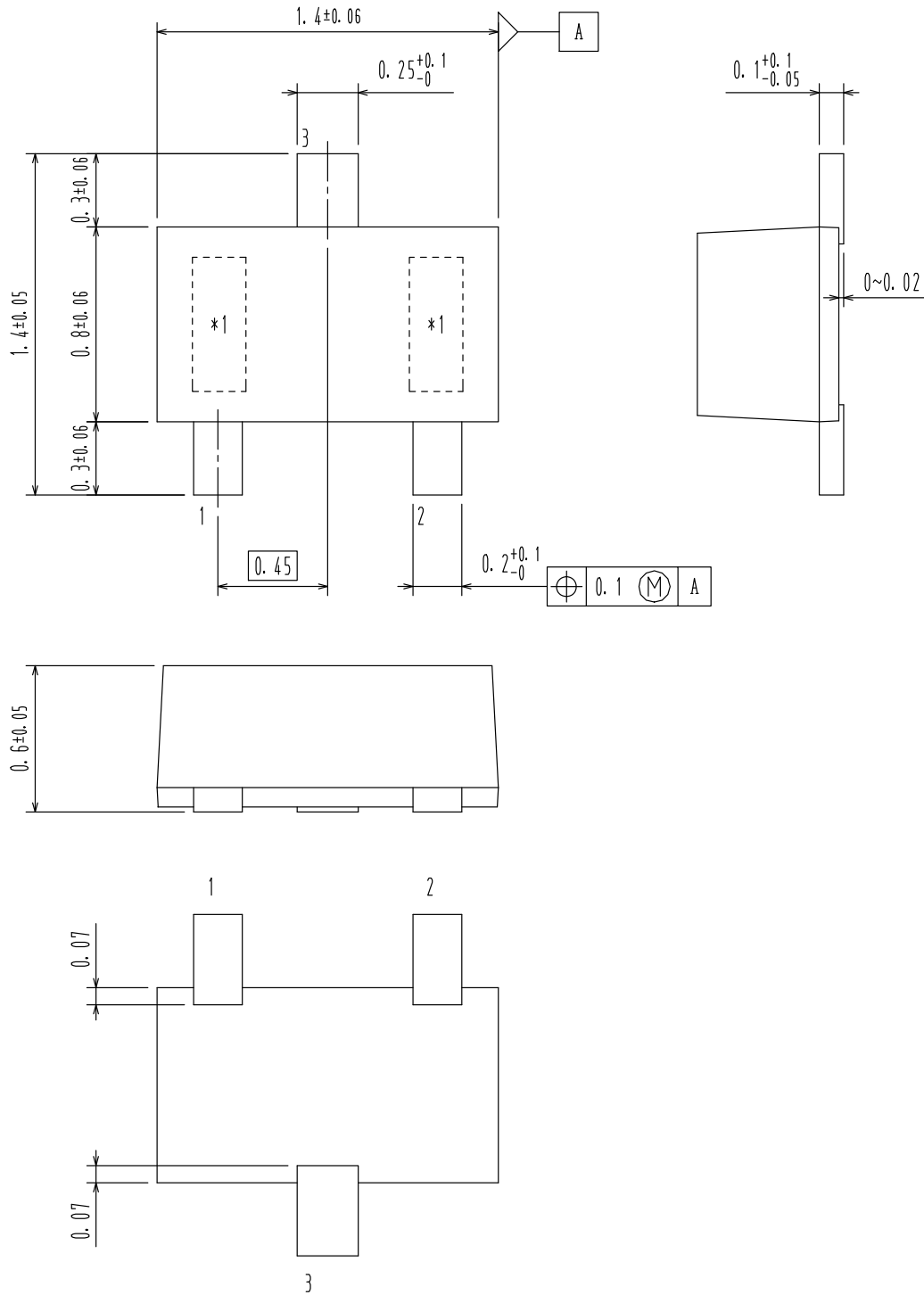


Figure 13.

5HN01SS

PACKAGE DIMENSIONS

SOT-623 / SSFP
CASE 631AC
ISSUE O




5HN01SS

ORDERING INFORMATION

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

†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

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marketing.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative