

5HP01SS

MOSFET, Silicon, P-Channel Ultrahigh-Speed Switching Applications

Features

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

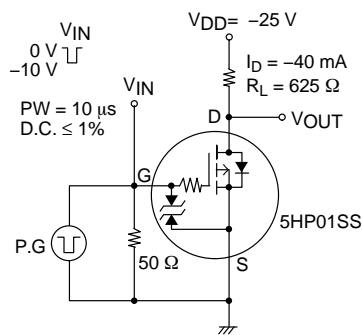


Figure 1. Switching Time Test Circuit

NOTE: Since the 5HP01SS is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

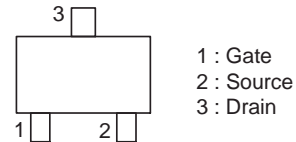


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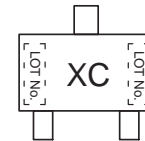
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SOT-623 / SSFP
CASE 631AC



MARKING DIAGRAM



XC = Specific Device Code

ORDERING INFORMATION

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

5HP01SS

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		-0.07	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10 \mu s$, duty cycle $\leq 1\%$	-0.28	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		-2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10 \text{ V}$, $I_D = -40 \text{ mA}$	50	70		mS
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -40 \text{ mA}$, $V_{GS} = -10 \text{ V}$		17	22	Ω
	$R_{DS(on)2}$	$I_D = -20 \text{ mA}$, $V_{GS} = -4 \text{ V}$		23	32	Ω
Input Capacitance	C_{iss}	$V_{DS} = -10 \text{ V}$, $f = 1 \text{ MHz}$		6.2		pF
Output Capacitance	C_{oss}	$V_{DS} = -10 \text{ V}$, $f = 1 \text{ MHz}$		4.0		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = -10 \text{ V}$, $f = 1 \text{ MHz}$		1.3		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		13		ns
Rise Time	t_r	See specified Test Circuit		10		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		100		ns
Fall Time	t_f	See specified Test Circuit		150		ns
Total Gate Charge	Q_g	$V_{DS} = -10 \text{ V}$, $V_{GS} = -10 \text{ V}$, $I_D = -70 \text{ mA}$		1.32		nC
Gate Source Charge	Q_{gs}	$V_{DS} = -10 \text{ V}$, $V_{GS} = -10 \text{ V}$, $I_D = -70 \text{ mA}$		0.17		nC
Gate Drain Charge	Q_{gd}	$V_{DS} = -10 \text{ V}$, $V_{GS} = -10 \text{ V}$, $I_D = -70 \text{ mA}$		0.34		nC
Diode Forward Voltage	V_{SD}	$I_S = -70 \text{ mA}$, $V_{GS} = 0$		-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

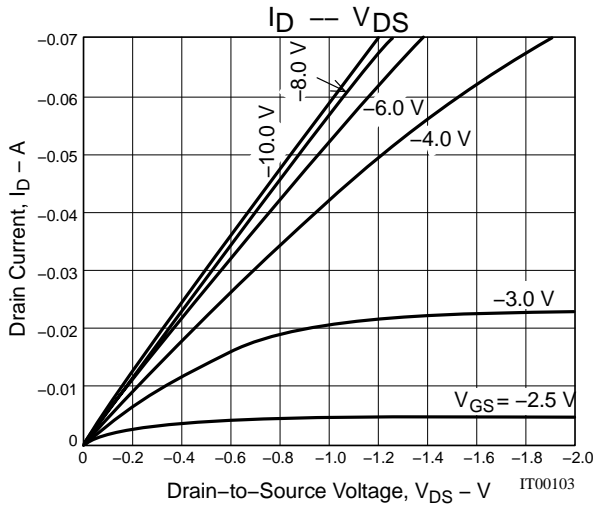


Figure 2.

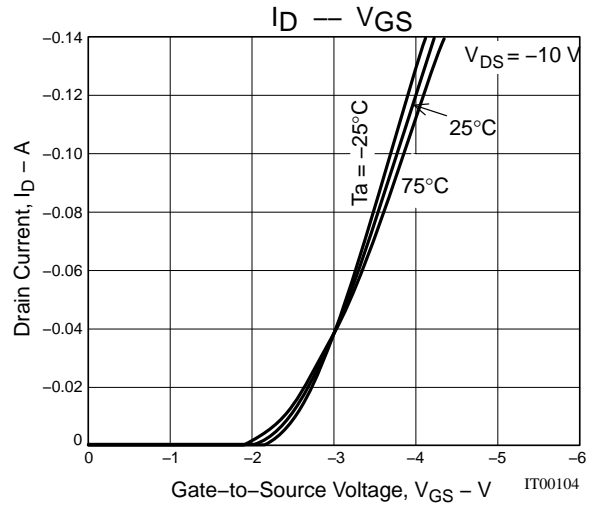


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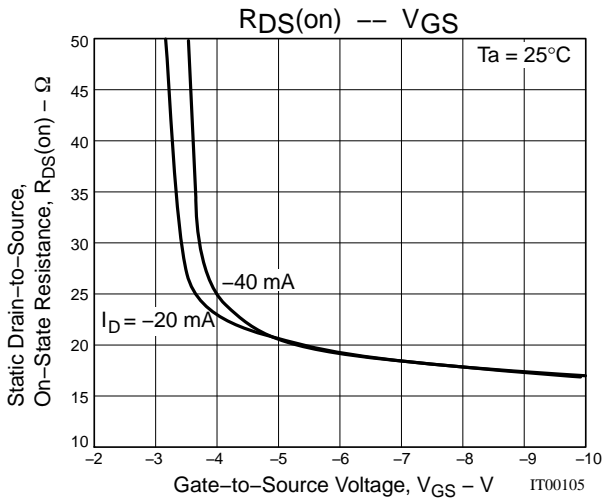


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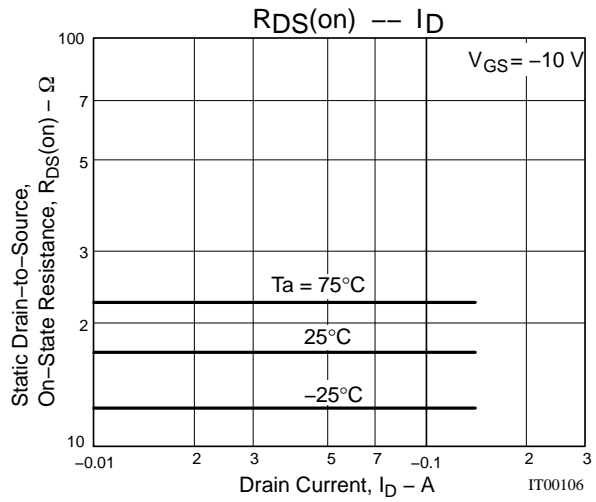


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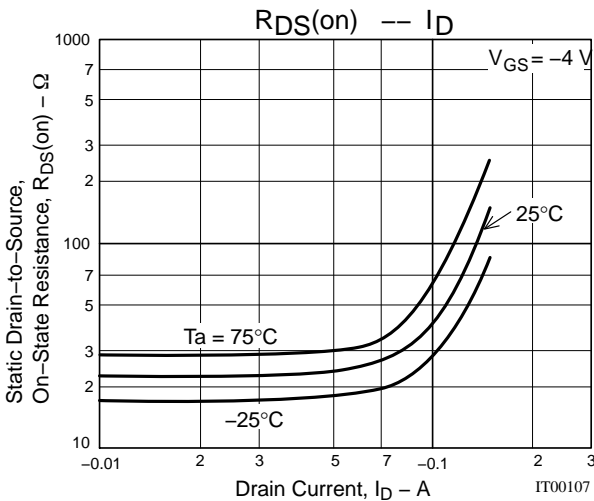


Figure 6.

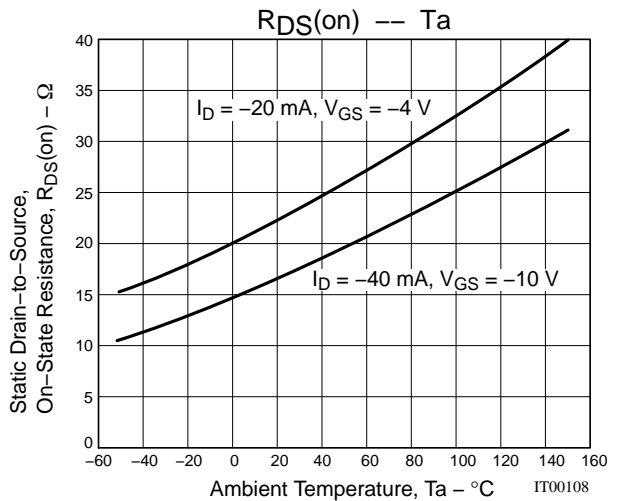


Figure 7.

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TYPICAL CHARACTERISTICS

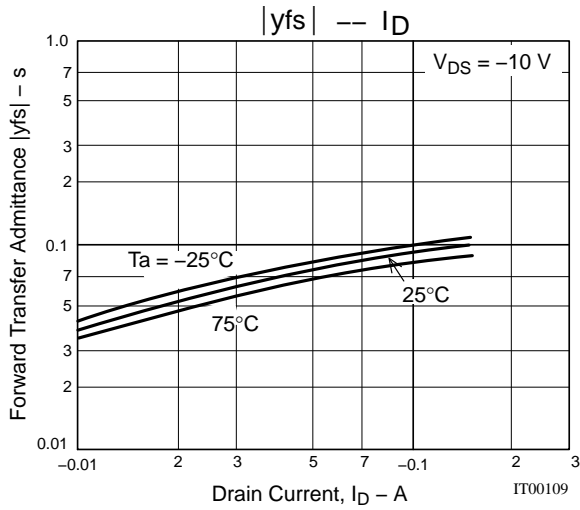


Figure 8.

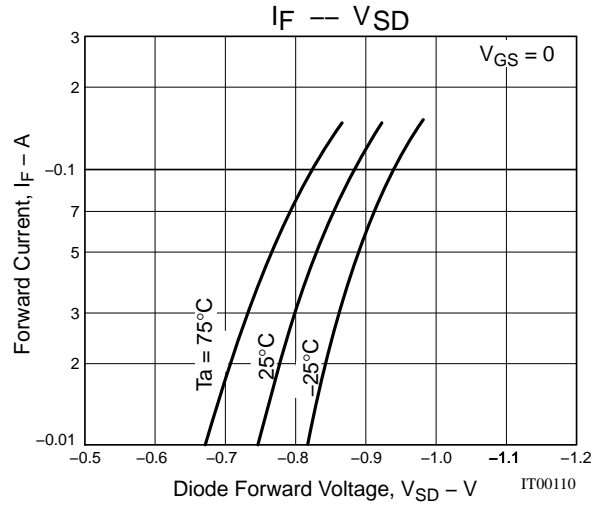


Figure 9.

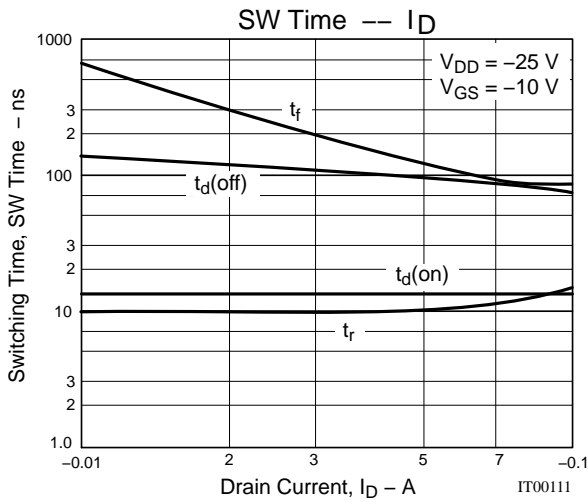


Figure 10.

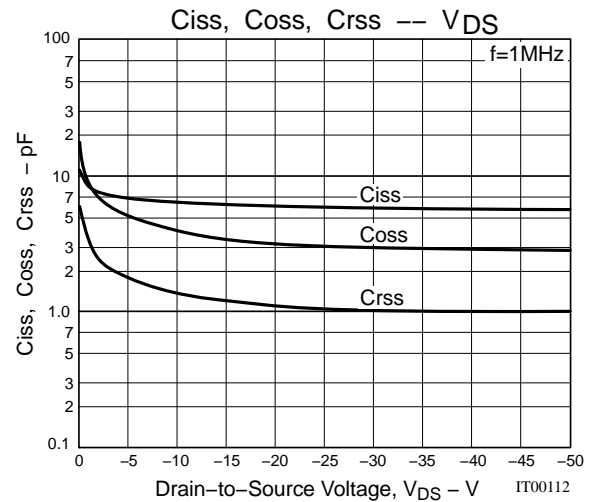


Figure 11.

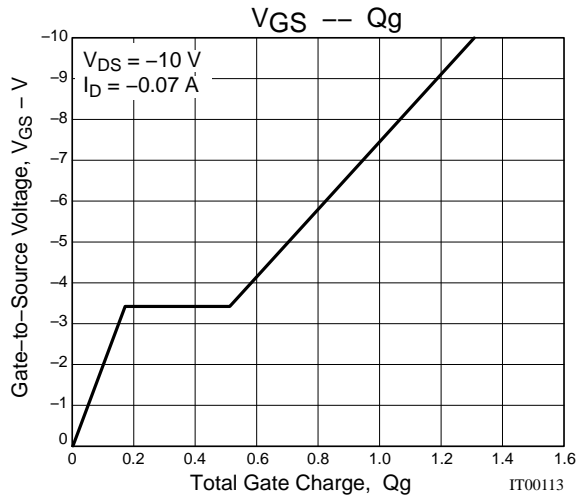


Figure 12.

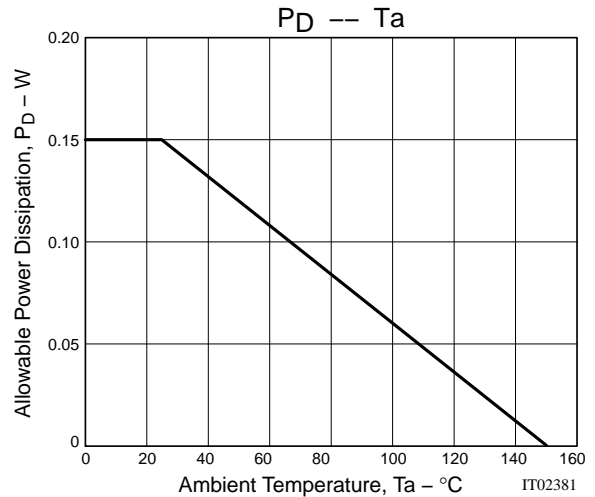
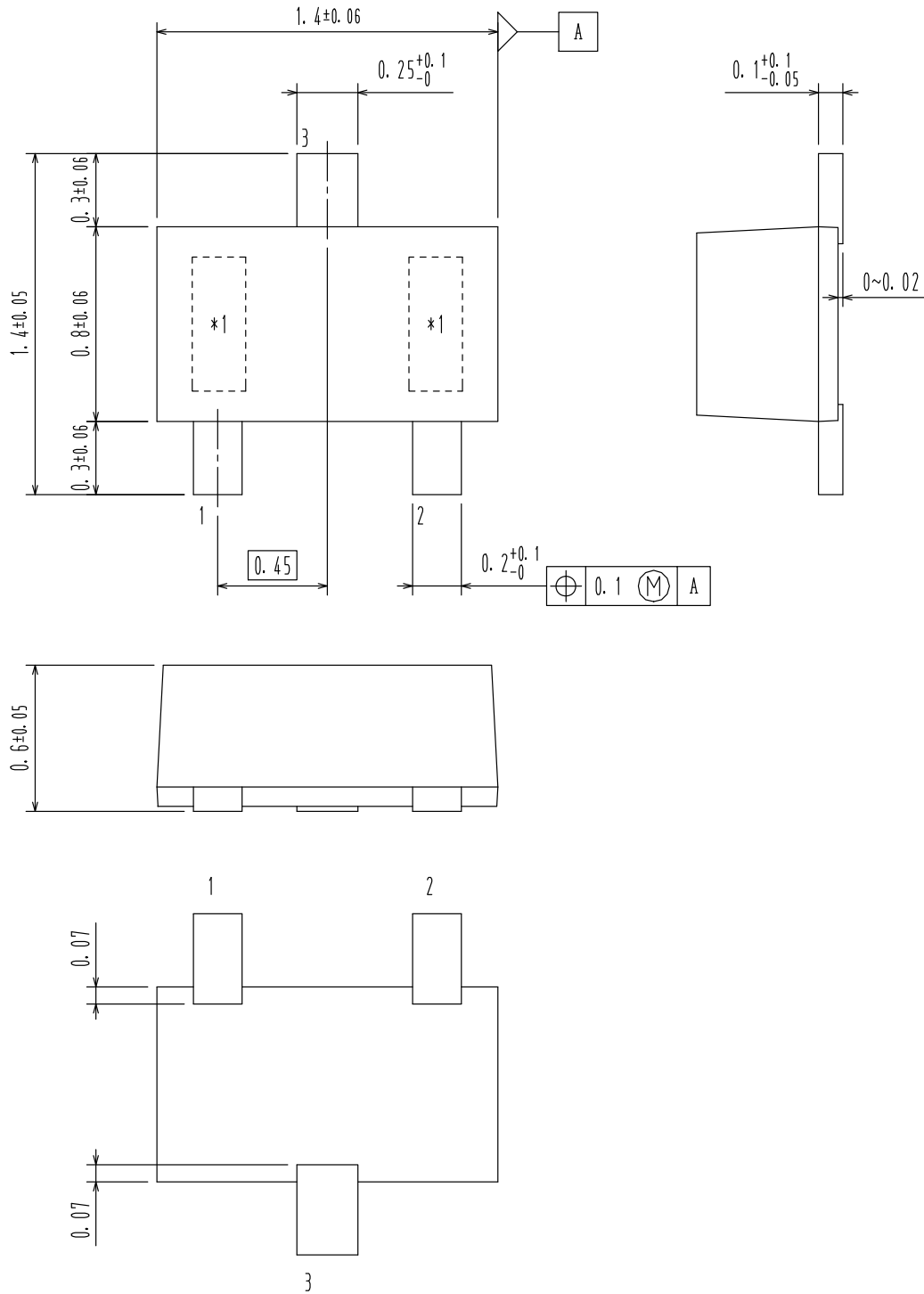


Figure 13.

5HP01SS

PACKAGE DIMENSIONS

SOT-623 / SSFP
CASE 631AC
ISSUE O




5HP01SS

ORDERING INFORMATION

Device	Marking	Package	Shipping†
5HP01SS-TL-E / 5HP01SS-TL-H	XC	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

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