

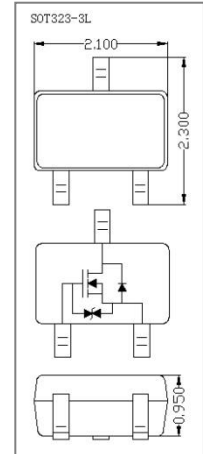
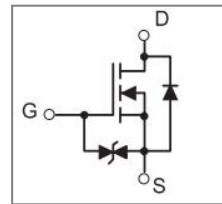
DATA SHEET

2N7002KH

- ◇Epoxy Meets UL 94 V-0 Flammability Rating
- ◇High Density Cell Design for Low $R_{DS(ON)}$
- ◇Voltage Controlled Small Signal Switch
- ◇Rugged and Reliable
- ◇ESD Protected

Device Marking Code	
2N7002KH	C2H

Equivalent Circuit



MAXIMUM RATINGS ($T_a = 25\text{ }^\circ\text{C}$)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	250	mA
P_D	Total Power Dissipation	350	mW
T_J	Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^\circ\text{C}/\text{W}$

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

STATIC CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60			V
$V_{GS(th)}$	Gate-Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	2.49	3.0	V
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			± 0.5	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=300mA$		2.0	5.0	Ω
		$V_{GS}=5V, I_D=50mA$		3.6	7.5	
V_{SD}	Diode Forward Voltage ^(Note1)	$I_S=300mA, V_{GS}=0V$		0.92	1.5	V

DYNAMIC

Qg	Total Gate Charge	V _{DS} =10V, I _D =300mA V _{GS} =4.5V	1.3	nC
Qgs	Gate-Source Charge		0.6	
Qgd	Gate-Drain Charge		0.2	
Ciss	Input Capacitance	V _{DS} =25V V _{GS} =0V f=1.0MHz	22	pF
Coss	Output Capacitance		12	
Crss	Reverse Transfer Capacitance		1.7	
td(on)	Turn-On Delay Time	V _{DD} =10V, I _D =300mA V _{GS} =10V R _G =10 Ω	2.9	nS
tr	Turn-On Rise Time		1.8	
td(off)	Turn-Off Delay Time		5.6	
tf	Turn-Off Fall Time		1.9	

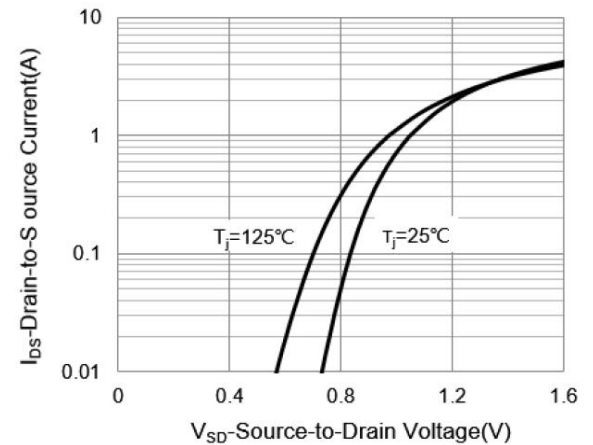
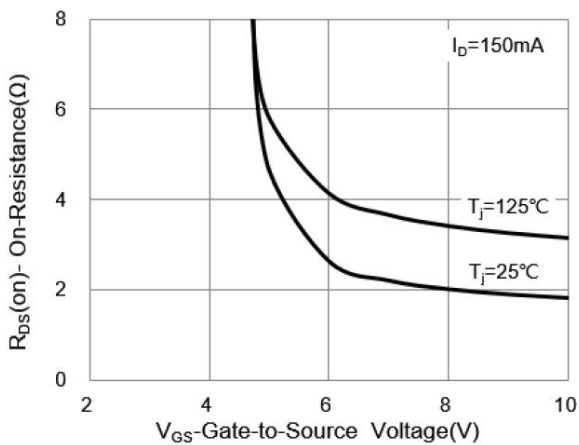
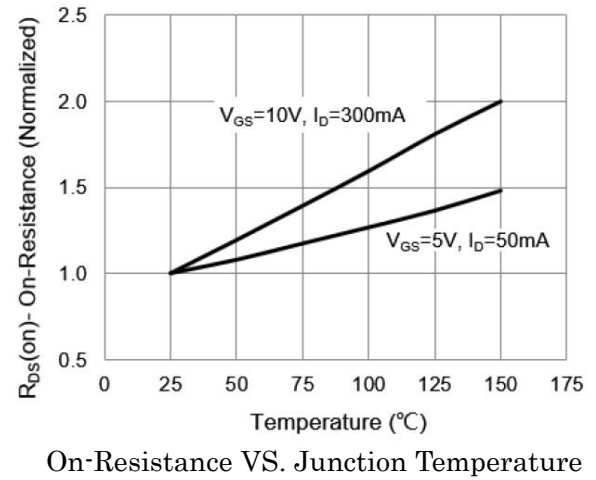
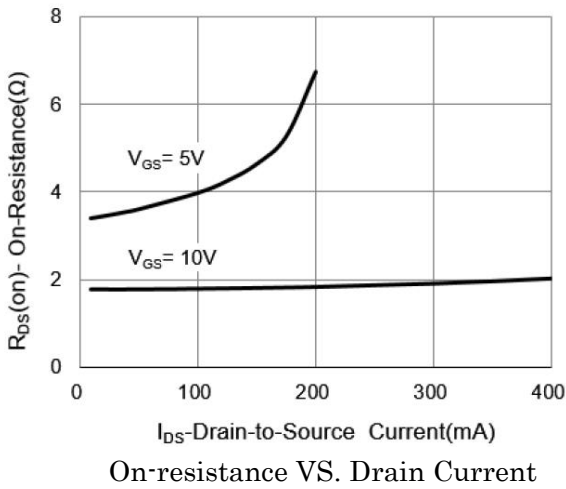
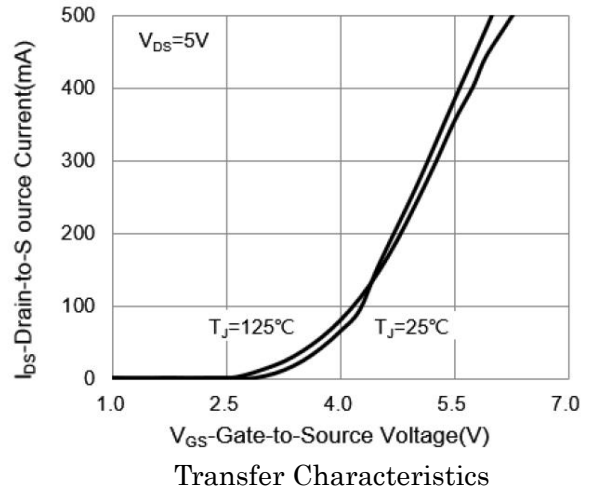
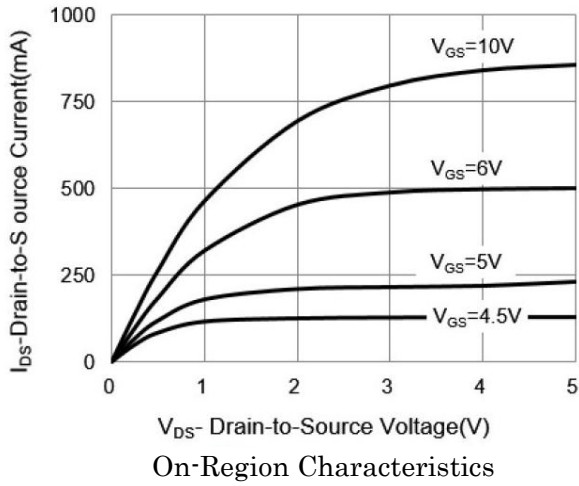
DRAIN-SOURCE DIODE

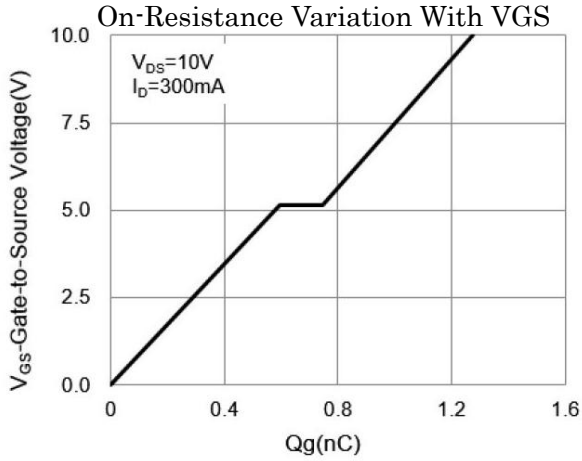
I _S	Continuous Diode Forward Current				300	mA
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Note:

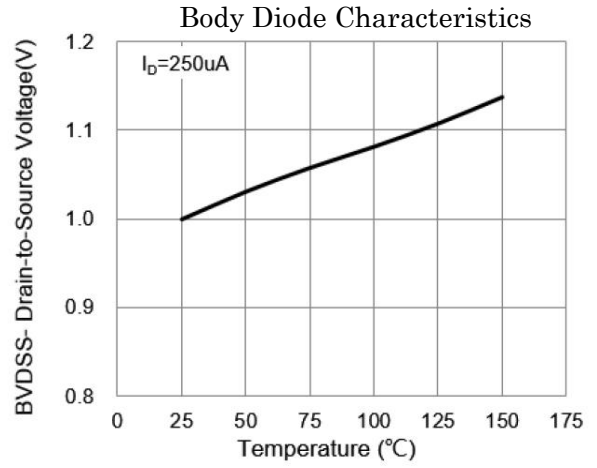
1. Pulse Test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%.
2. Guaranteed by Design, Not Subject to Production Testing.

TYPICAL CHARACTERISTICS

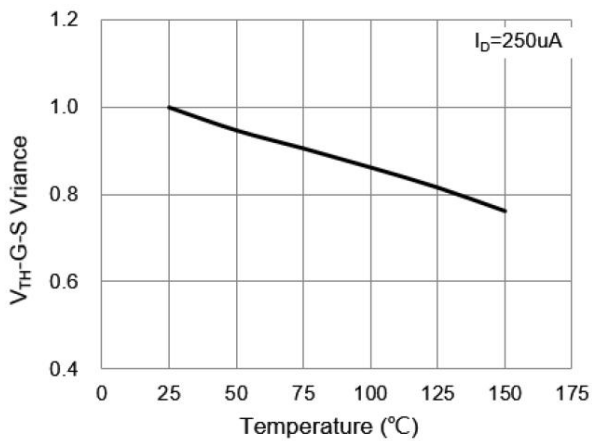




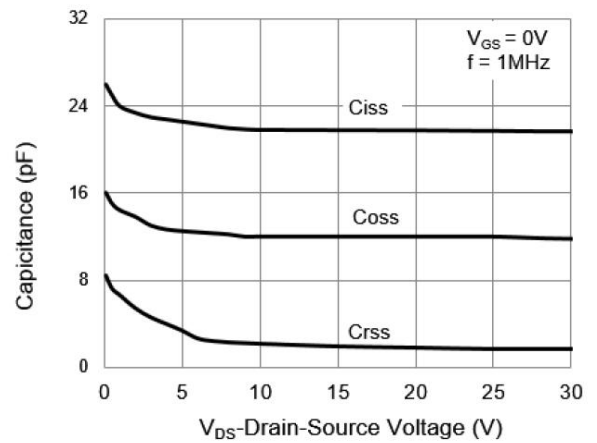
Gate-Charge Characteristics



Breakdown Voltage Variation VS. Temperature



Threshold Voltage Variation With Temperature.



Capacitance VS. Drain-Source Voltage.

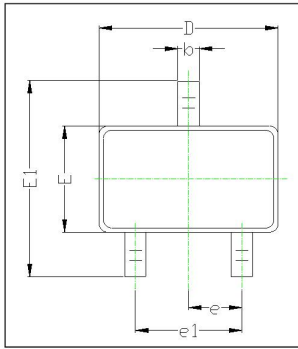
ORDERING INFORMATION

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
2N7002KH	SOT323	Tape & Reel 3000pcs /7" Reel	8mm	4mm	Conductive	

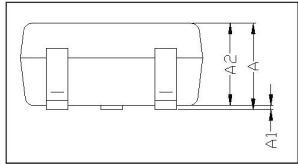
PACKAGE DIMENSIONS

Package outline : SOT323

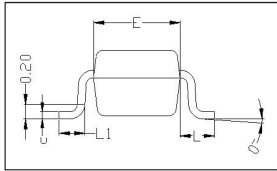
TOP VIEW



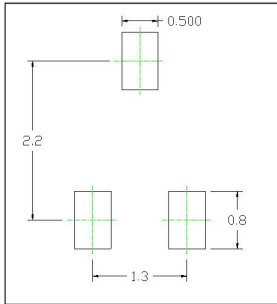
FRONT VIEW



SIDE VIEW



SOLDERING PATTERN



SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.900	1.000
A1	0.00	0.100
A2	0.900	1.000
b	0.200	0.400
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP.	
e1	1.200	1.400
L	0.525 REF.	
L1	0.260	0.460
θ	0°	8°

Notice:

- Lead plating: Pb free solder
- Lead thickness includes solder plating
- Lead frame: CAC-5
- Other Tolerance: ±0.05
- Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions
- Unit: mm

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