

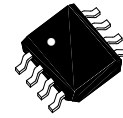


H4422S

N-Channel Enhancement-Mode MOSFET (30V, 11A)

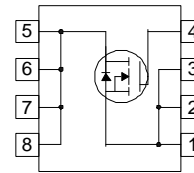
Features

- $R_{DS(on)}=13.5m\Omega@V_{GS}=10V, I_D=11A$
- $R_{DS(on)}=24m\Omega@V_{GS}=4.5V, I_D=5A$
- Advanced trench process technology
- High Density Cell Design for Ultra Low On-Resistance



8-Lead Plastic **SO-8**
Package Code: S

H4422S Symbol & Pin Assignment



Pin 1 / 2 / 3: Source
Pin 4: Gate
Pin 5 / 6 / 7 / 8: Drain

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current (Continuous)	11	A
I_{DM}	Drain Current (Pulsed) ^{*1}	50	A
P_D	Total Power Dissipation @ $T_A=25^\circ\text{C}$	2.5	W
T_j, T_{stg}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (PCB mounted) ^{*2}	50	$^\circ\text{C/W}$

*1: Maximum DC current limited by the package

*2: 1-in² 2oz Cu PCB board



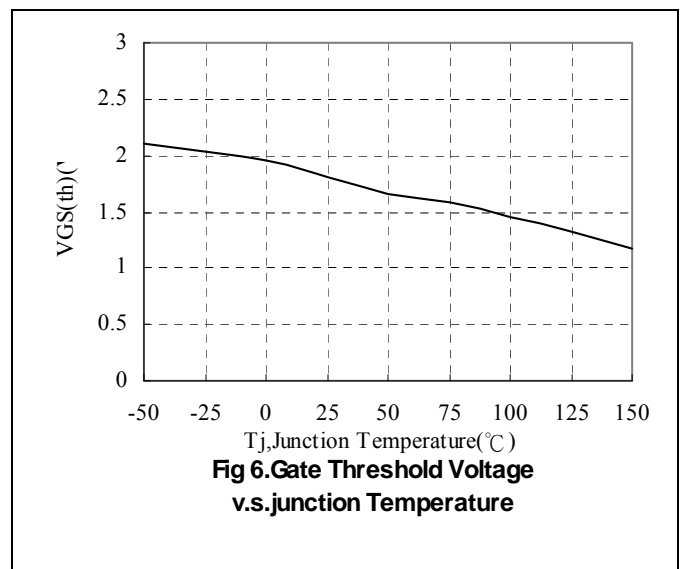
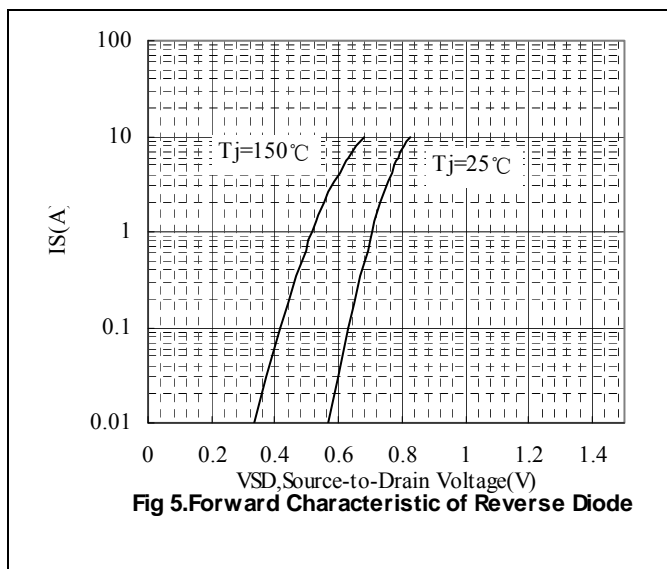
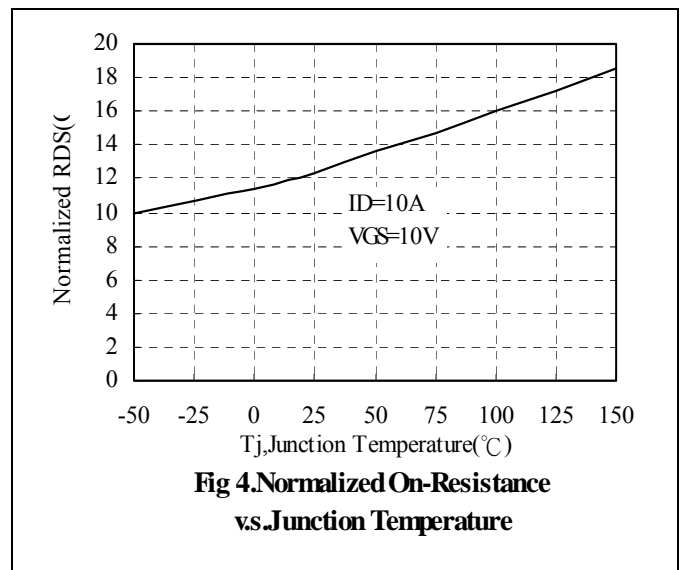
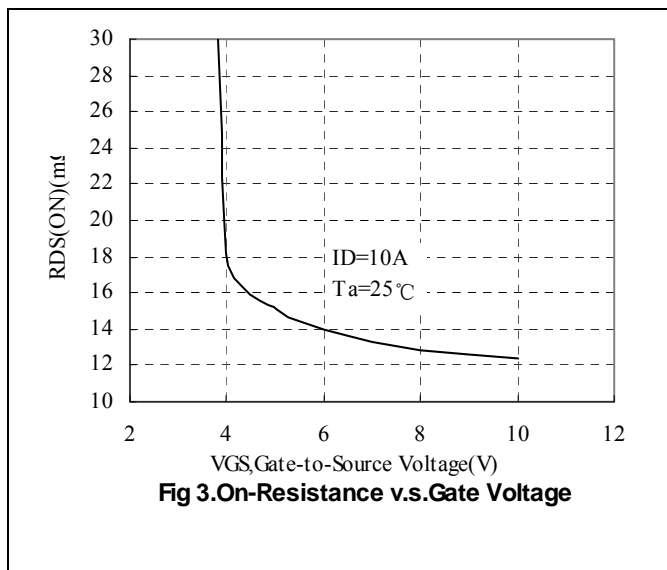
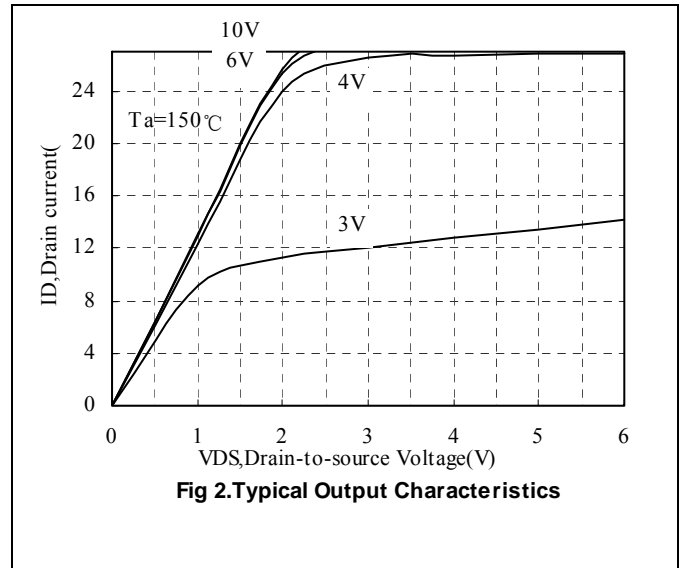
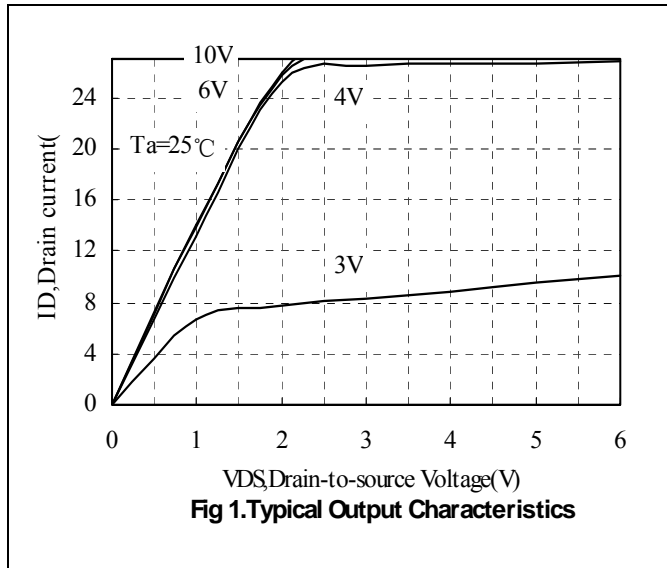
Electrical Characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Static						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=11A$			13.50	m Ω
		$V_{GS}=4.5V, I_D=5.0A$			24	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	3	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=10A$		20	-	S
• Drain-Source Diode Characteristics						
I_S	Maximum Diode Forward Current		-	-	2.6	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=2.1A$	-	-	1.2	V

Note: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$



Characteristics Curve





SO-8 Dimension

8-Lead SO-8 Plastic
 Surface Mounted Package
 HSMC Package Code: S

H9435S Marking:

Pb Free Mark
 Pb-Free: "●" (Note)
 Normal: None

Pin Style: 1,2,3: Source 4: Gate 5,6,7,8: Drain

Note: Green label is used for pb-free packing

Material:

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	4.85	5.10
B	3.85	3.95
C	5.80	6.20
D	1.22	1.32
E	0.37	0.47
F	3.74	3.88
G	1.45	1.65
H	4.80	5.10
I	0.05	0.20
J	0.30	0.70
K	0.19	0.25
L	0.37	0.52
M	0.23	0.28
N	0.08	0.13
O	0.00	0.15

*: Typical, Unit: mm

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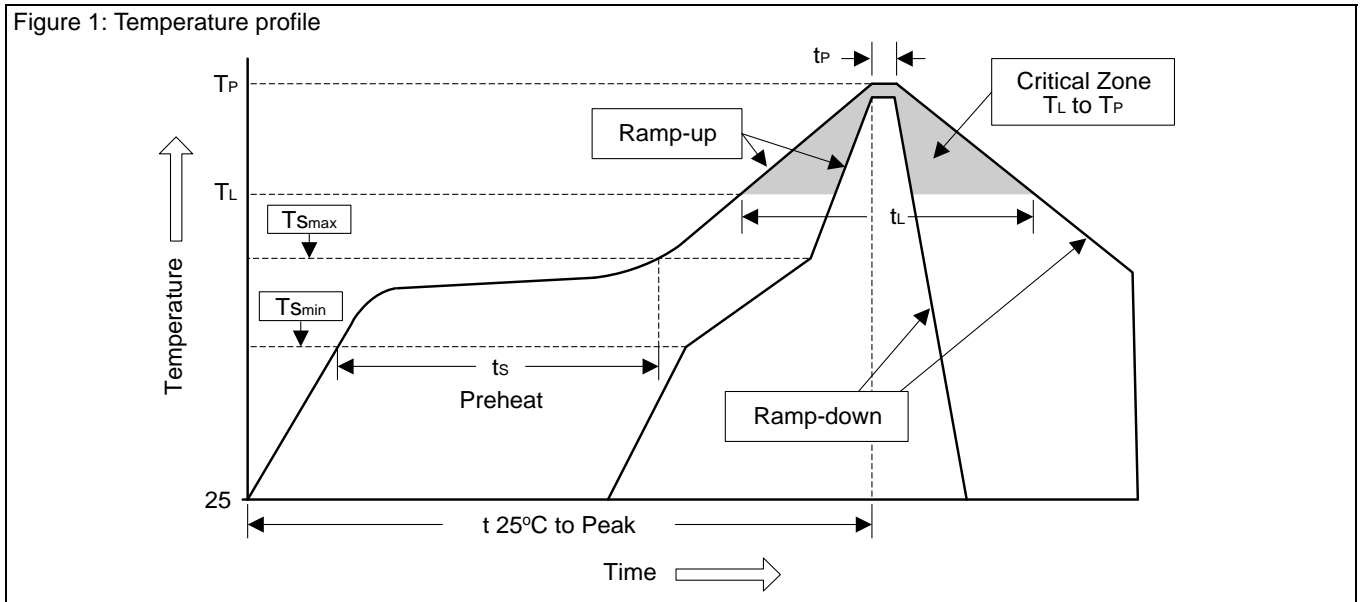
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Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat		
- Temperature Min (T_{Smin})	100°C	150°C
- Temperature Max (T_{Smax})	150°C	200°C
- Time (min to max) (t_s)	60~120 sec	60~180 sec
T_{Smax} to T_L		
- Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60~150 sec	60~150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10~30 sec	20~40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec