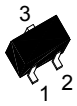
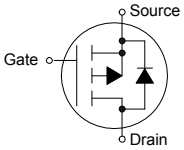
H2305N

P-Channel Enhancement-Mode MOSFET (-20V, -4.5A)

H2305N Pin Assignment & Symbol



3-Lead Plastic **SOT-23**
Package Code: N
Pin 1: Gate 2: Source 3: Drain



Features

- $R_{DS(on)}$<58mΩ@V_{GS}=-4.5V, I_D=-4.2A
- $R_{DS(on)}$<71mΩ@V_{GS}=-2.5V, I_D=-2A
- Simple Drive Requirement
- Small Package Outline
- ISurface Mount Device

Description

The Advanced Power MOSFETS from APEC provide the designer with the best combination of fast switching low on-resistance and cost-effectiveness.

The SOT-23 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage, applications such as DC/DC converters.

Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±8	V
ID@TA=25℃	Continuous Drain Current)	-4.5	A
ID@TA=70℃	Continuous Drain Current	-3.5	A
I_{DM}	Drain Current (Pulsed) *1	-10	A
P_D	Total Power Dissipation @T_A=25°C	1.38	W
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_j,	Operating Junction Temperature Range	-55 to +150	°C

*1: Repetitive Rating: Pulse width limited by the maximum junction temperation.
*2: 1-in^2 2oz Cu PCB board

Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• **Static**						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-20	-	-	V
ΔBVDSS/ΔTj	Breakdown Voltage Temperature Coefficient	Reference to 25℃, ID=-1mA		-0.1		V/℃
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V, I_D=-2.8A	-		58	mΩ
		V_{GS}=-2.5V, I_D=-2A			71	
		V_{GS}=-1.8V, I_D=-1A	-		108	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-0. 45			V
I_{DSS}	Zero Gate Voltage Drain Current (Tj=25oC)	V_{DS}=-20V, V_{GS}=0V	-		-1	uA
	Zero Gate Voltage Drain Current (Tj=55oC)	V_{DS}=-16V, V_{GS}=0V	-		-10	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±8V, V_{DS}=0V	-	-	±100	nA
g_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-2.8A	-	9.0	-	S
• **Drain-Source Diode Characteristics**						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=-1.2A	-	-	-1.2	V

Note: Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%

Characteristics Curve

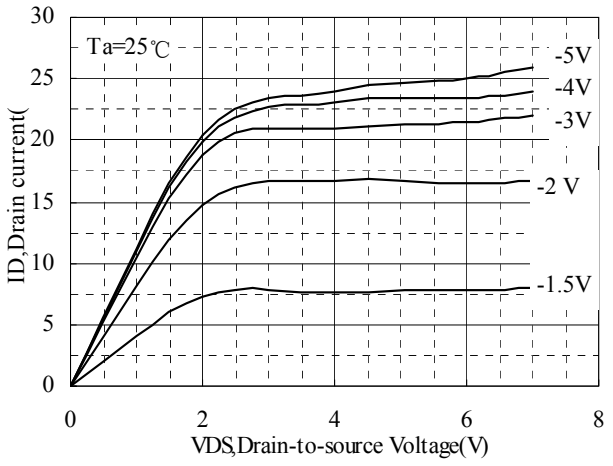


Fig 1.Typical Output

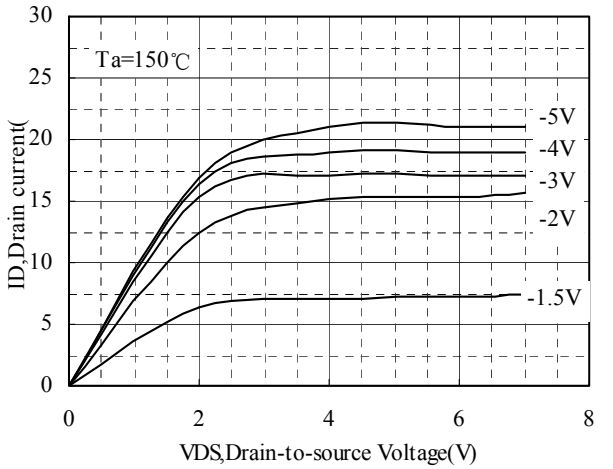


Fig 2.Typical Output

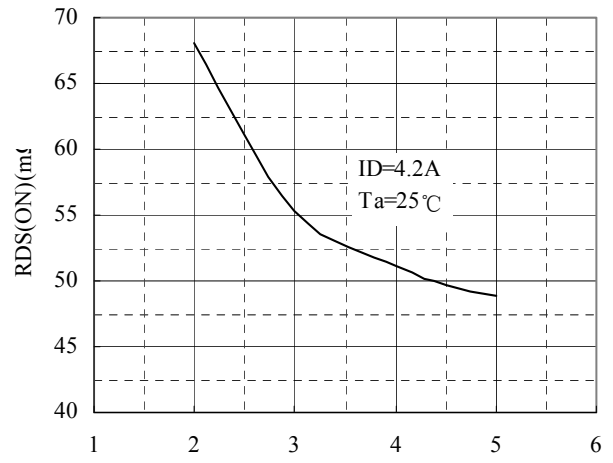


Fig 3.On-Resistance v.s.Gate

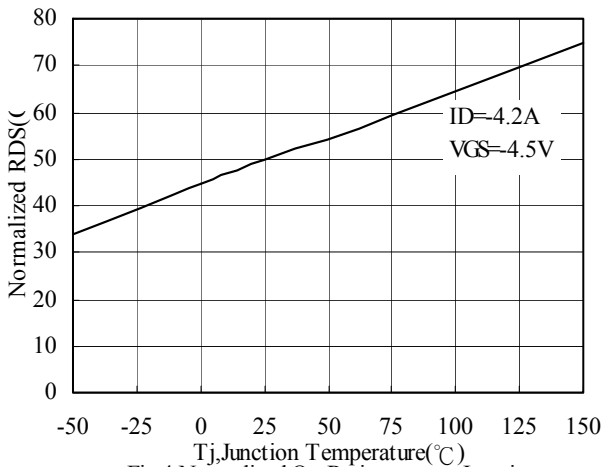


Fig 4.Normalized On-Resistance v.s.Junction

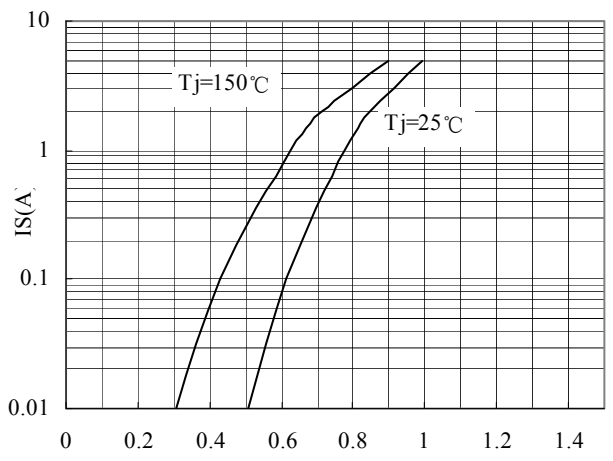


Fig 5.Forward Characteristic of Reverse

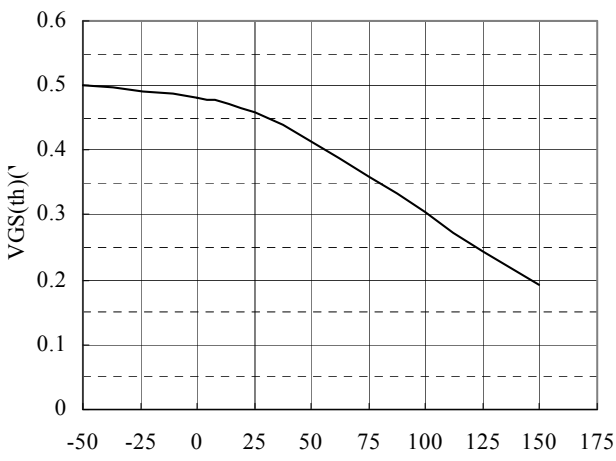
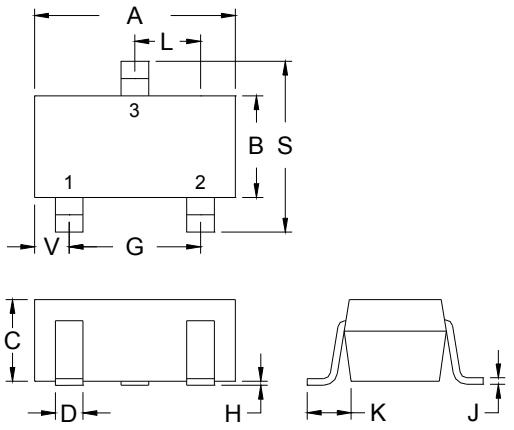


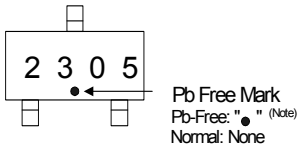
Fig 6.Gate Threshold Voltage

SOT-23 Dimension

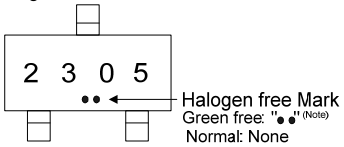


3-Lead SOT-23 Plastic
Surface Mounted Package
HSMC Package Code: N

Marking:



Note: Pb-free product can distinguish by the green label or the extra description on the right side of the label.



Pin Style: 1.Gate 2.Source 3.Drain

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	2.80	3.04
B	1.20	1.60
C	0.89	1.30
D	0.30	0.50
G	1.70	2.30
H	0.013	0.10
J	0.085	0.177
K	0.32	0.67
L	0.85	1.15
S	2.10	2.75
V	0.25	0.65

*: Typical, Unit: mm

Head Office And Factory:

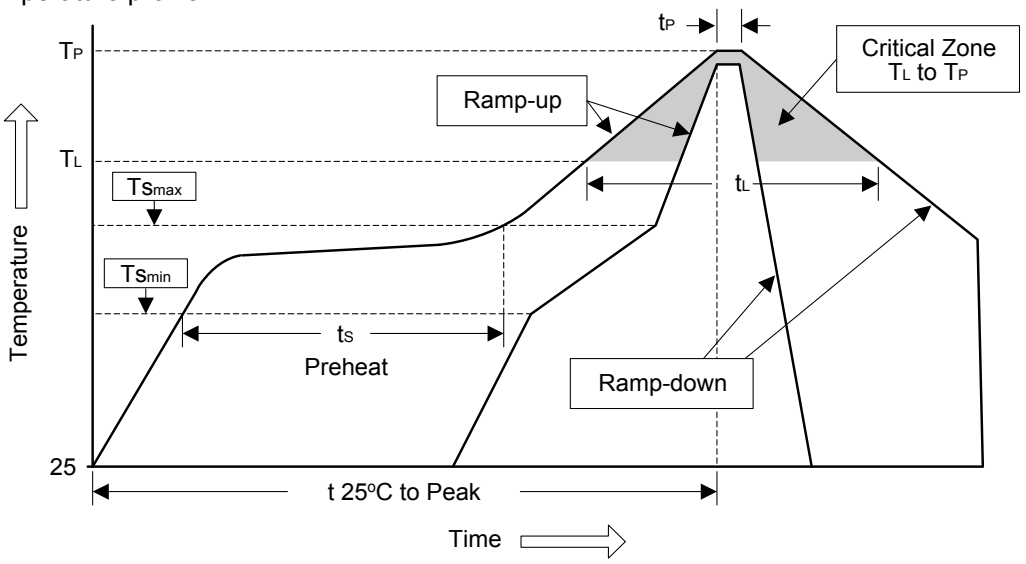
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F.,No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
  Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454

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 (Ts_{min}) - Temperature Max (Ts_{max}) - Time (min to max) (ts)	 100°C 150°C 60~120 sec	 150°C 200°C 60~180 sec
Tsmax to T_L - Ramp-up Rate	 <3°C/sec	 <3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	 183°C 60~150 sec	 217°C 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	10sec ±1sec
Pb-Free devices.	260°C ±5°C	10sec ±1sec