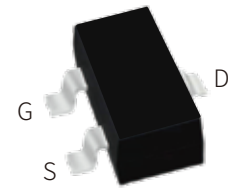


FEATURES

| Trench Power MOSFET technology

| Low $R_{DS(ON)}$

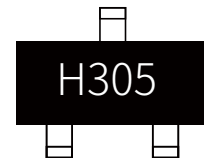
| Low Gate Charge



SOT-23-3L

APPLICATION

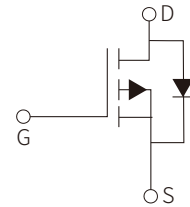
| Primarily the display screen drive applications, Load Switch.



Marking

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



Schematic Symbol

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Drain Current-Continuous	$I_D(T_c=25^{\circ}\text{C})$	-4.3	A
Pulsed Drain Voltage	I_{DM}	-18	A
Gate-Source Voltage	V_{GS}	± 12	V
Total Power Dissipation	P_D	1.3	W
Junction-to-Ambient $t \leq 10$	$R_{\theta JA}$	90	$^{\circ}\text{C/W}$
Junction-to-Ambient Steady-State	$R_{\theta JA}$	125	$^{\circ}\text{C/W}$
Junction-to-Lead Steady-State	$R_{\theta JL}$	80	$^{\circ}\text{C/W}$
Operating and Storage Junction Temperature	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	-23		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			1	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.75	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-4.3A$		33	40	m Ω
		$V_{GS}=-2.5V, I_D=-3.0A$		45	60	
		$V_{GS}=-1.8V, I_D=-2.0A$		63	85	
Gate Resistance	R_g			22		Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1A$			-1.2	V
Input Capacitance	C_{iss}	$V_{DS}=-5V, V_{GS}=0V, f=1.0MHz$		450		pF
Output Capacitance	C_{oss}			220		
Reverse Transfer Capacitance	C_{rss}			90		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-4.5V, R_L=2.22\Omega$ $V_{DS}=-10V, R_{GEN}=3\Omega$		12		ns
Turn-On Rise Time	t_r			11.3		
Turn-Off Delay Time	$t_{d(off)}$			80		
Turn-Off Fall Time	t_f			32		
Total Gate Charge	$Q_{g(4.5V)}$	$V_{GS}=-4.5V, V_{DS}=-10V, I_D=-4.3A$		8.8		nC
Gate Source Charge	Q_{gs}			1.2		
Gate Drain Charge	Q_{gd}			2.5		

PARAMETER CHARACTERISTIC CURVE

Figure 1 On-Region Characteristics

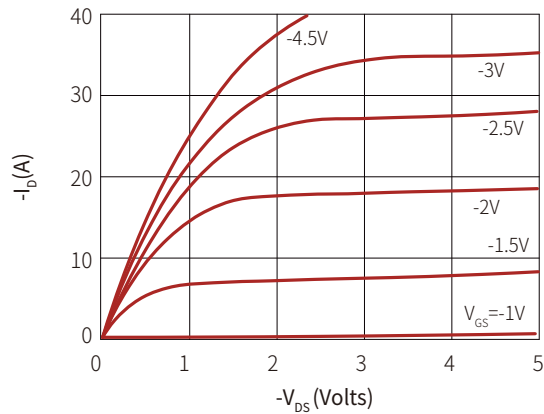


Figure 2 Transfer Characteristics

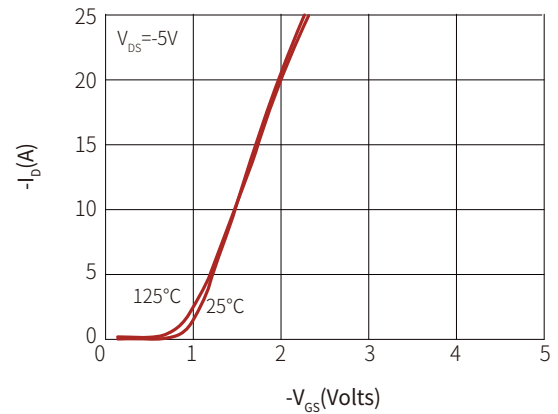


Figure 3 On-Resistance vs. Drain Current and Gate Voltage

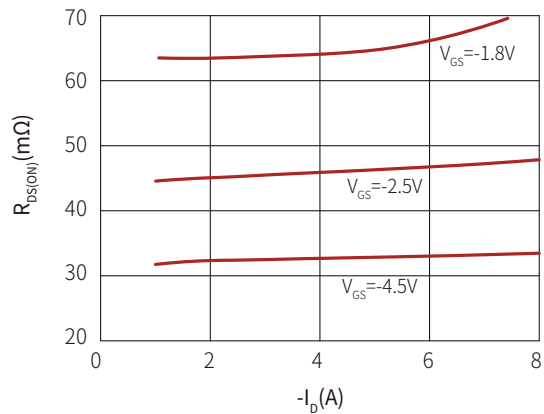


Figure 4 On-Resistance vs. Junction Temperature

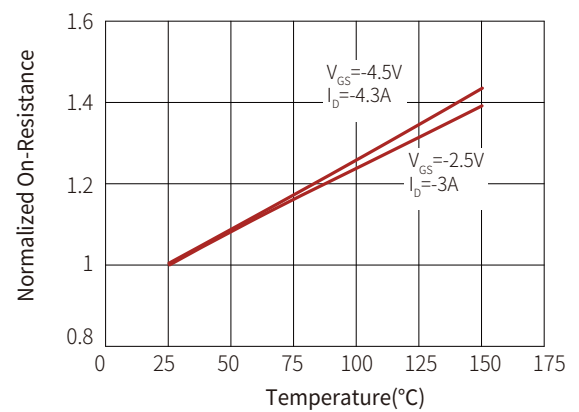


Figure 5 On-Resistance vs. Gate-Source Voltage

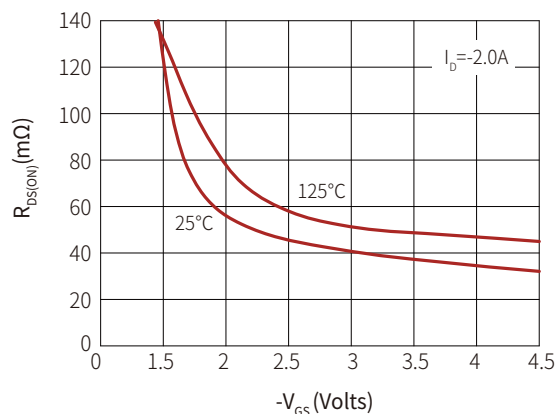
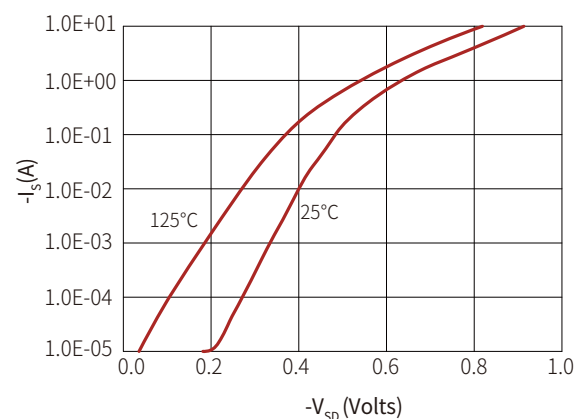
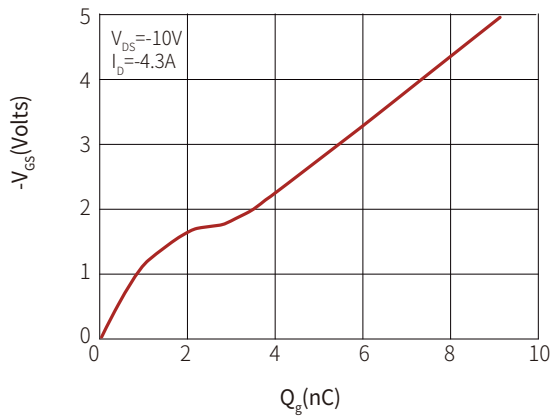
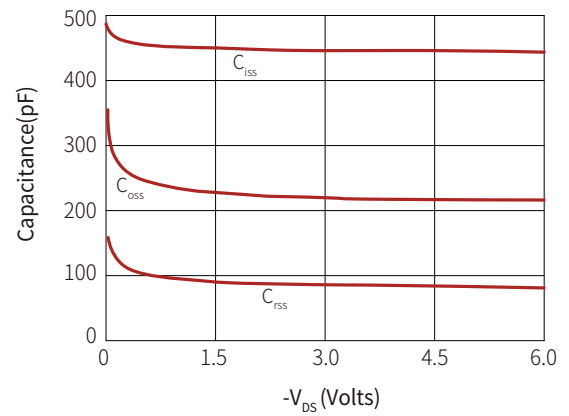
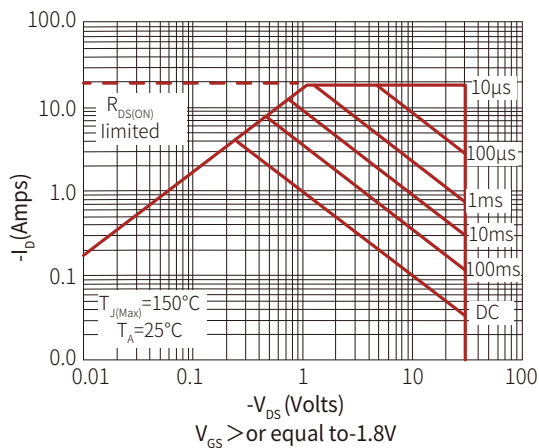
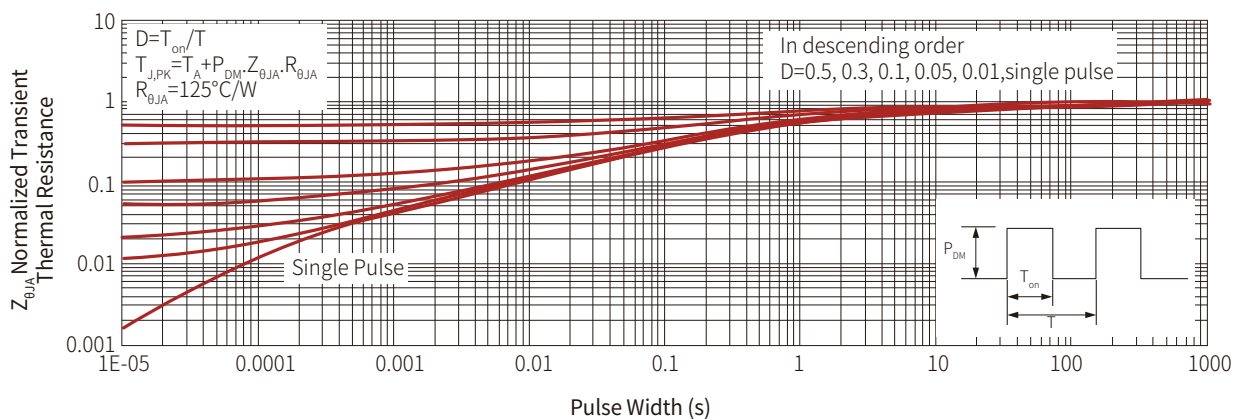


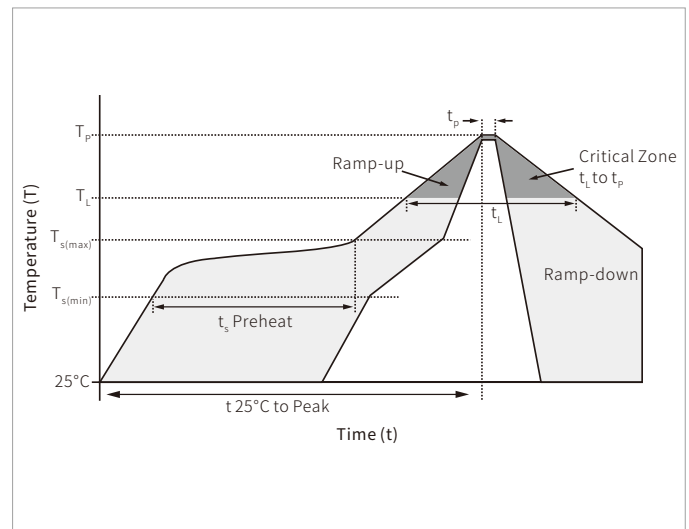
Figure 6 Body-Diode Characteristics



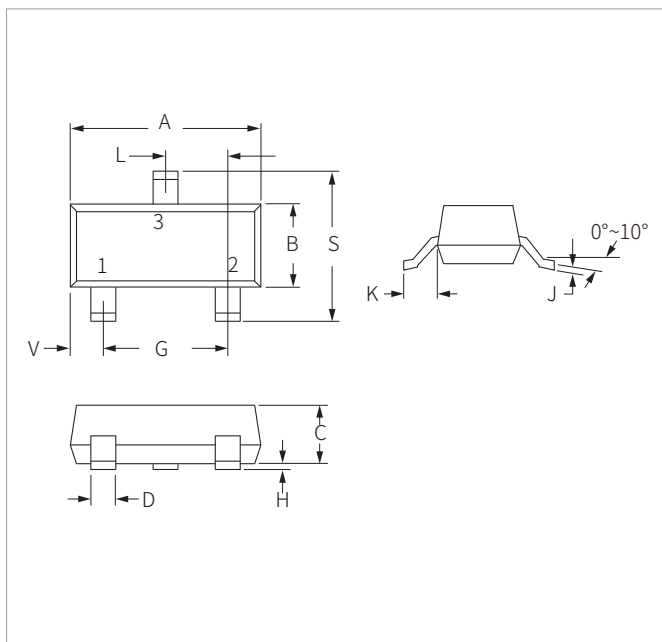
**Figure 7 Gate-Charge Characteristics****Figure 8 Capacitance Characteristics****Figure 9 Maximum Forward Biased Safe Operating Area****Figure 10 Normalized Maximum Transient Thermal Impedance**

SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_l)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

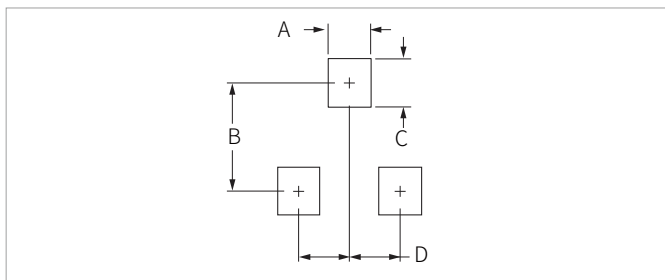


SOT-23-3L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.15	0.110	0.124
B	1.50	1.70	0.060	0.070
C	1.00	1.30	0.039	0.051
D	0.37	0.50	0.015	0.020
G	1.78	2.10	0.070	0.083
H	0.01	0.15	0.001	0.006
J	0.08	0.18	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.60	3.00	0.102	0.118
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.70	1.00	0.028	0.039
B	2.30	2.50	0.090	0.098
C	0.70	1.00	0.028	0.039
D	0.80	1.10	0.032	0.043

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM2305MC	SOT-23-3L	3000PCS	7"

Headquarters

No.3387 Shendu Road
Pujiang I&E Park
Minhang Shanghai China
201000

Hotline

400-021-5756

Web

<https://www.semiware.com>

Sales Center

Tel: 86-21-3463-7458
Email: sales18@semiware.com

Customer Service

Tel: 86-21-5484-1001
Email: sales17@semiware.com

Technical Support

Tel: 86-21-3463-7654
Email: fae01@semiware.com

Complaint & Suggestions

Tel: 86-21-3463-7172
Ext: 8868
Email: cs03@semiware.com

By QR Code

Website



Wechat

To find your local partner within Semiware's global website: www.semiware.com

© 2022 Semiware Semiconductor Inc.

The content of this document has been carefully checked and understood. However, neither Semiware nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Semiware does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Chinese law and resulting disputes shall be settled by the courts at the place of business of Semiware. Latest publications and a complete disclaimer can be downloaded from the Semiware website. All trademarks recognized.