

FEATURES

$V_{DS} = -30V, I_D = -12A$

$R_{DS(ON)} < 15m\Omega @ V_{GS} = -10V$

$R_{DS(ON)} < 20m\Omega @ V_{GS} = -4.5V$

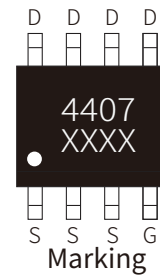
High power and current handling capability

Lead free product is acquired

Surface mount package



SOP-8



Marking

APPLICATION

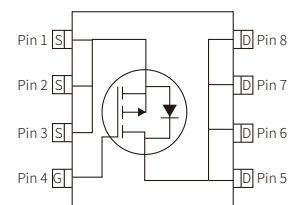
PWM applications

Load switch

APPROVALS

RoHS Compliance with 2011/65/EU

HF Compliance with IEC61249-2-21:2003



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Drain Current ($T_C = 25^\circ C$)	I_D	-12	A
Drain Current ($T_C = 100^\circ C$)	I_D	-9	A
Drain Current - Pulsed	I_{DM}	-42	A
Gate-Source Voltage	V_{GS}	± 20	V
Power Dissipation ($T_C = 25^\circ C$)	P_{tot}	3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	41.7	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-body leakage	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.2	V
Forward Trans conductance	g_{FS}	$V_{DS}=-5V, I_D=-10A$	25			S
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$		9	15	m Ω
		$V_{GS}=-4.5V, I_D=-8A$		13	20	m Ω
Dynamic characteristics						
Input capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		2885		pF
Output capacitance	C_{oss}			341		pF
Reverse transfer capacitance	C_{rss}			305		pF
Turn-on delay time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-10A$ $V_{GEN}=-10V, R_L=1.25\Omega,$ $R_{GEN}=3\Omega$		16		ns
Turn-on Rise Time	t_r			12		ns
Turn-Off Delay Time	$t_{d(off)}$			45		ns
Turn-off Fall yime	t_f			21		ns
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-8A$ $V_{GS}=-10V$		48		nC
Gate-Source Charge	Q_{gs}			12		nC
Gate-Drain Charge	Q_{gd}			14		nC
Drain-source Diode Characteristics						
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=-2A$		-0.81	-1.2	V
Continuous drain-source diode forward current	I_S				-11	A
Pulsed drain-source diode forward current	I_{SM}				-42	A

PARAMETER CHARACTERISTIC CURVE

Figure 1: Output Characteristics

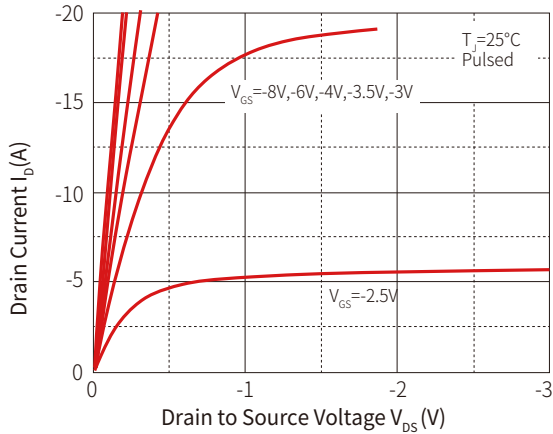


Figure 2: Transfer Characteristics

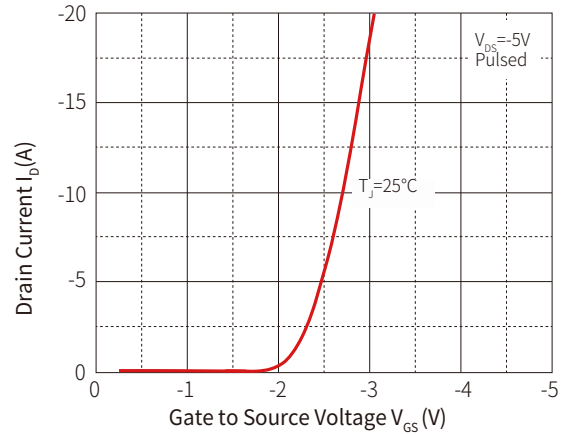


Figure 3: $R_{DS(ON)}$ — I_D

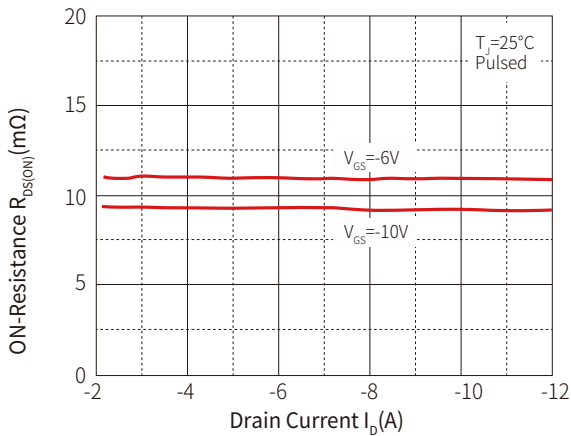


Figure 4: $R_{DS(ON)}$ — V_{GS}

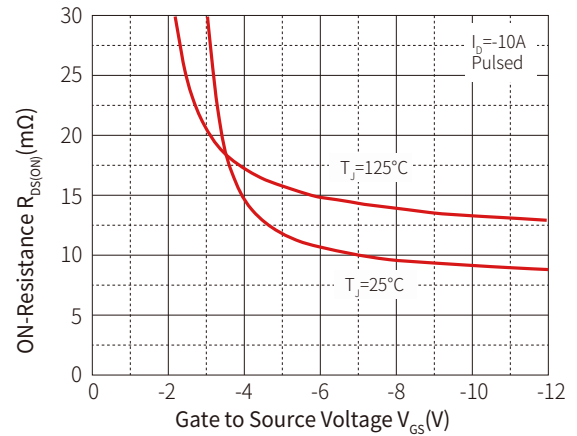


Figure 5: I_S — V_{SD}

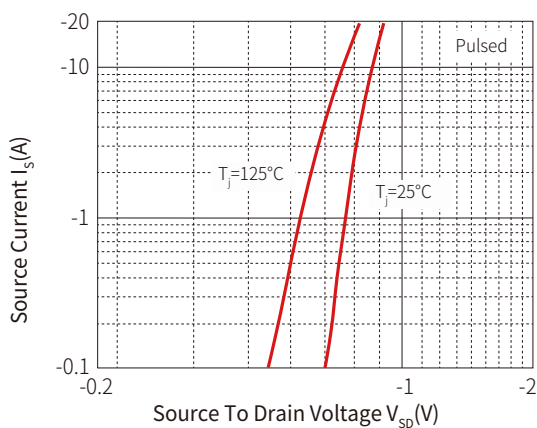
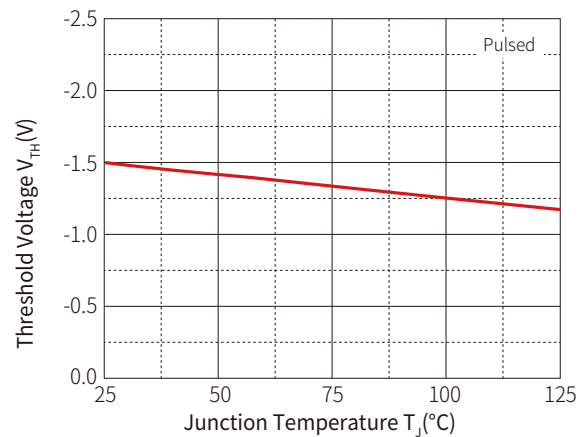
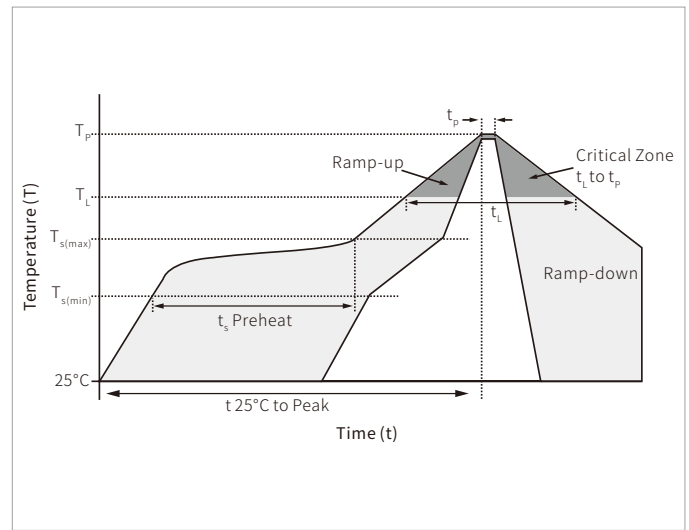


Figure 6: Threshold Voltage

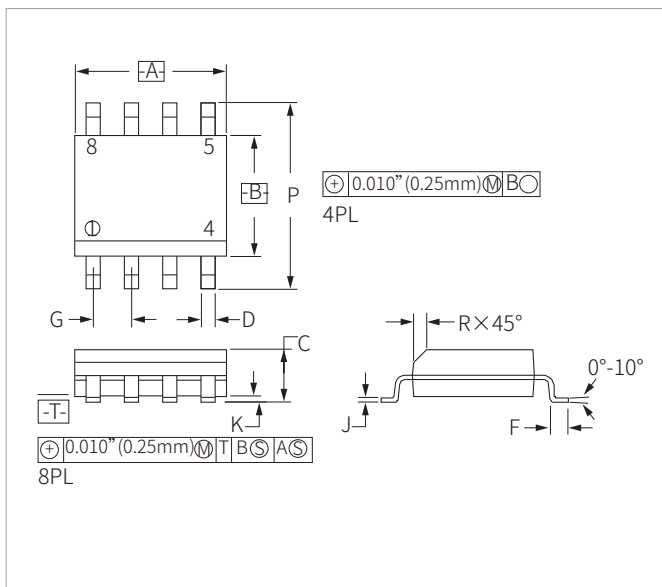


SOLDERING PARAMETERS

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

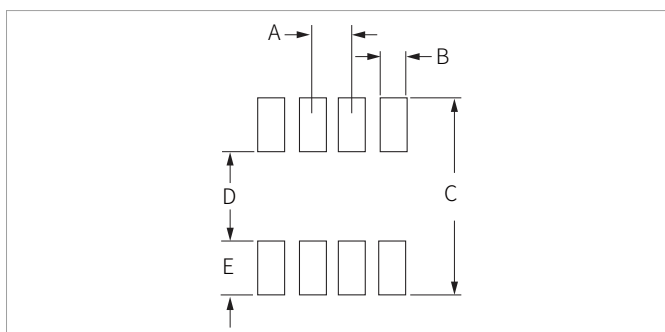


SOP-8 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
B	3.80	4.20	0.150	0.165
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.050BSC	
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.008
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min	Max	Min	Max
A	1.14	1.40	0.045	0.055
B	0.64	0.89	0.025	0.035
C	6.22	-	0.245	-
D	3.94	4.17	0.155	0.165
E	1.02	1.27	0.040	0.050

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM4407	SOP-8	3000PCS	13"

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.