

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

APPLICATION

PWM applications

Load switch

APPROVALS

RoHS Compliance with 2011/65/EU

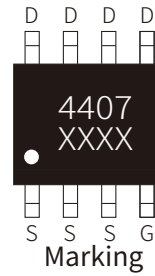
HF Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

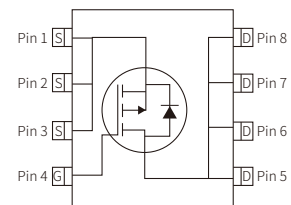
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Drain Current ($T_C = 25^\circ C$)	I_D	-12	A
Drain Current ($T_C = 100^\circ C$)	I_D	-9	A
Drain Current - Pulsed	I_{DM}	-42	A
Gate-Source Voltage	V_{GS}	± 20	V
Power Dissipation ($T_C = 25^\circ C$)	P_{tot}	3	W
Thermal Resistance from Junction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



SOP-8



Marking



Schematic Symbol

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				48	
Gate-Source Charge	Q_{gs}	$V_{DS}=-15V, I_D=-8A$ $V_{GS}=-10V$		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

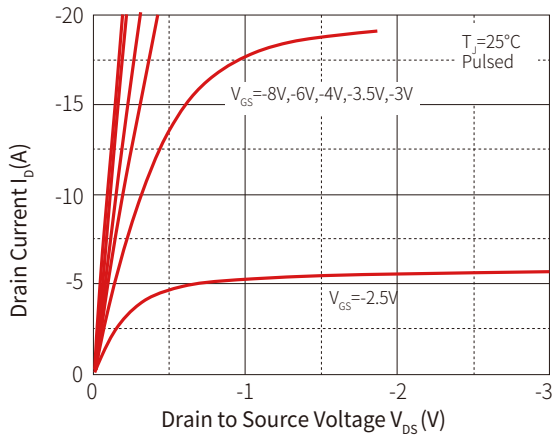


Figure 2: Transfer Characteristics

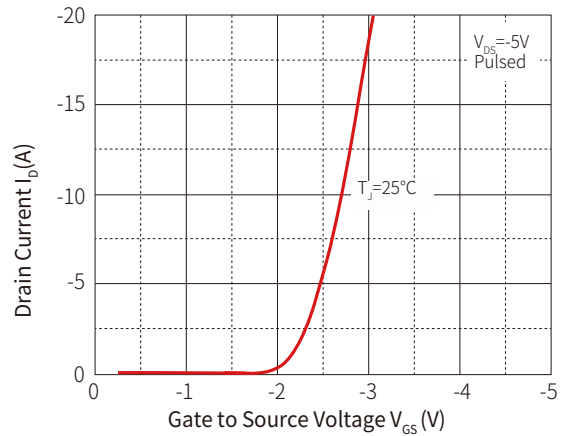


Figure 3: $R_{DS(ON)}$ — I_D

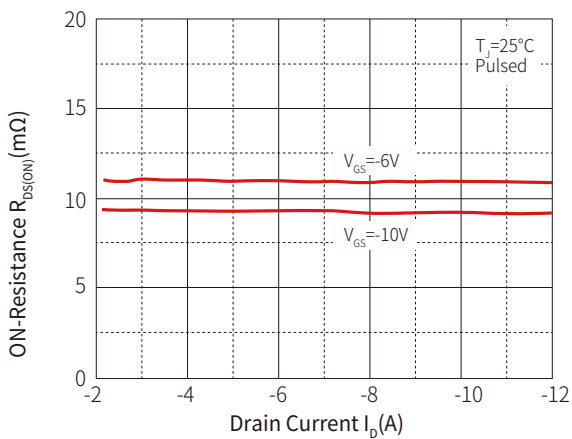


Figure 4: $R_{DS(ON)}$ — V_{GS}

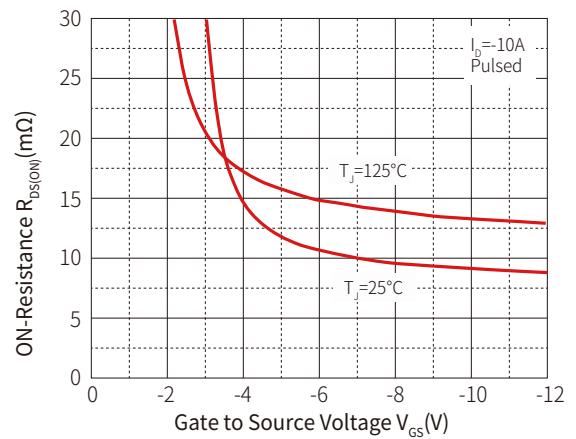


Figure 5: I_S — V_{SD}

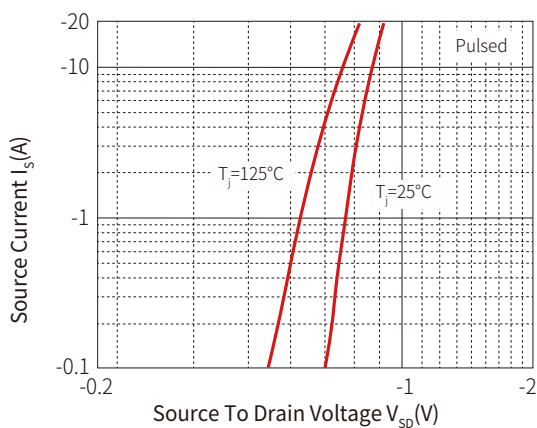
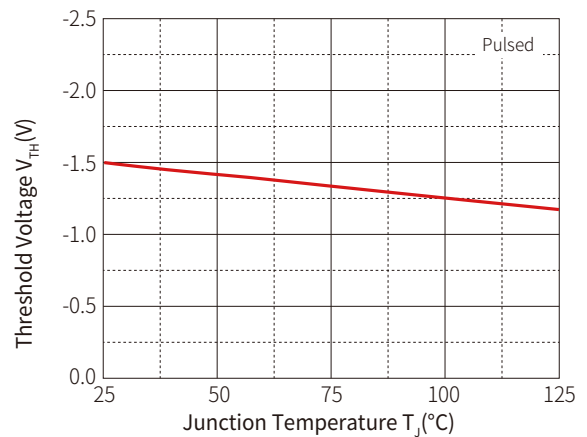
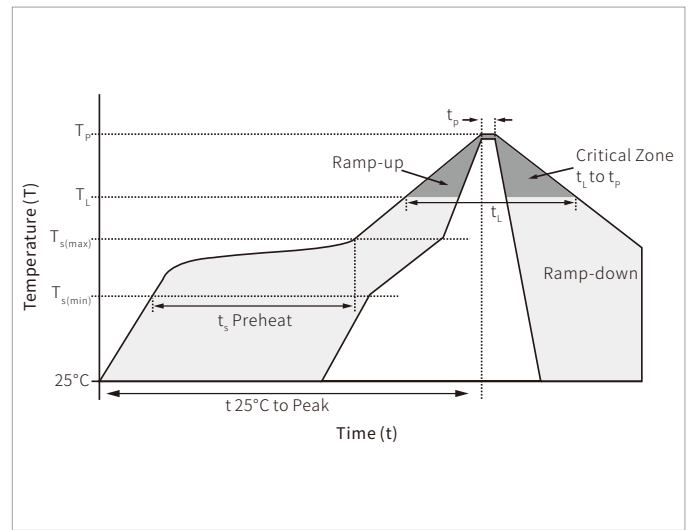


Figure 6: Threshold Voltage

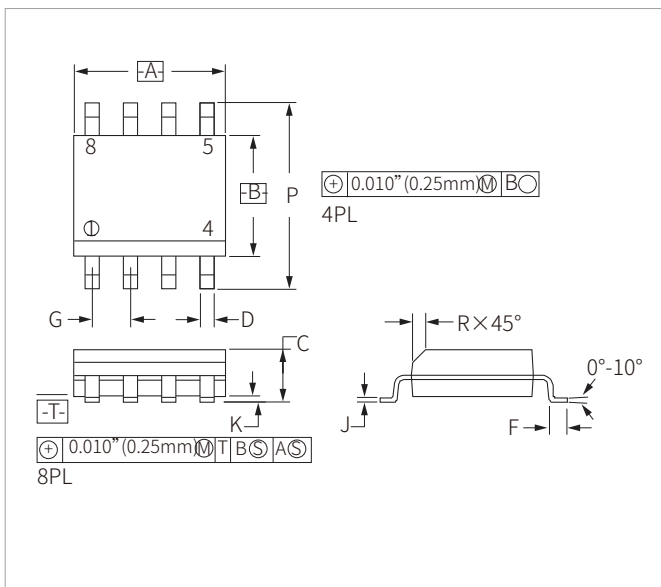


SOLDERING PARAMETERS

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

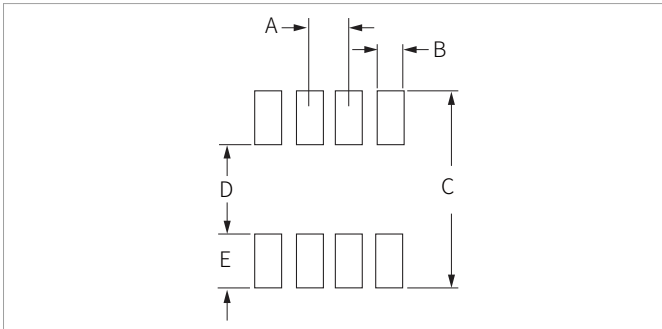


SOP-8 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
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

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