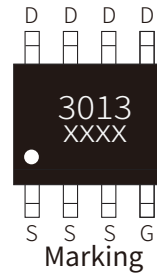


FEATURES

- Low $R_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Excellent ON resistance for higher DC current :
 $R_{DS(ON)} < 13m\Omega @ V_{GS} = -10V$ (Type:12.5m Ω)
- $V_{DS} = -30V, I_D = -30A$
- Supper high density cell design
- High performance trench technology
- High Power and current handing capability
- Surface Mount Package

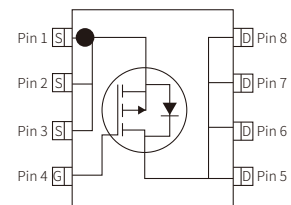


SOP-8



APPLICATION

- Load/Power Switching for portable device
- Charging device
- Power supply converters circuit



Schematic Symbol

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
Maximum Drain Current - Continuous ($T_a=25^{\circ}C$)	I_D	-30	A
Maximum Drain Current - Continuous($T_a=70^{\circ}C$)	I_D	-21.7	A
Pulsed Drain Current	I_{DM}	-96	A
Gate-Source Voltage	V_{GS}	± 20	V
Maximum Power Dissipation	P_D	2.5	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
Static Characteristics						
Drain-source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D =-250μA	-30			V
Gate-body leakage current	I _{GSS}	V _{DS} =±20V,V _{DS} =0V			±0.1	μA
Zero gate voltage drain current	I _{DSS}	V _{DS} =-30V,V _{GS} =0V			-1	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =-250μA	-1.0	-1.5	-2.2	V
Forward Trans conductance	g _{FS}	V _{DS} =-10V,I _D =-2.8μA		20		S
Drain-source on-state resistance ⁽²⁾	R _{DS(on)}	V _{GS} =-10V,I _D =-8A		10.6	13	mΩ
		V _{GS} =-4.5V,I _D =-4A		15.6	21	mΩ
Dynamic characteristics						
Input capacitance	C _{iss}	V _{DS} =-25V,V _{GS} =0V,f=1MHz		1680		pF
Output capacitance	C _{oss}			220		pF
Reverse transfer capacitance	C _{rss}			350		pF
Turn-on delay time	t _{d(on)}	V _{DD} =-15V,I _D =-1.0A V _{GS} =-4.5V,R _G =6.8Ω		19		ns
Turn-on Rise Time	t _r			57		ns
Turn-Off Delay Time	t _{d(off)}			80		ns
Turn-off Fall yime	t _f			66		ns
Total Gate Charge	Q _g	V _{DS} =-15V,I _D =-9.6A V _{GS} =-10V		35	52	nC
Gate-Source Charge	Q _{gs}			5.3		nC
Gate-Drain Charge	Q _{gd}			8.5		nC
Drain Source Body Diode Characteristics						
Diode Forward voltage ⁽²⁾	V _{DS}	V _{GS} =0V,I _S =-2.5A			-1.2	V

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

PARAMETER CHARACTERISTIC CURVE

Figure1: Typical Output Characteristics

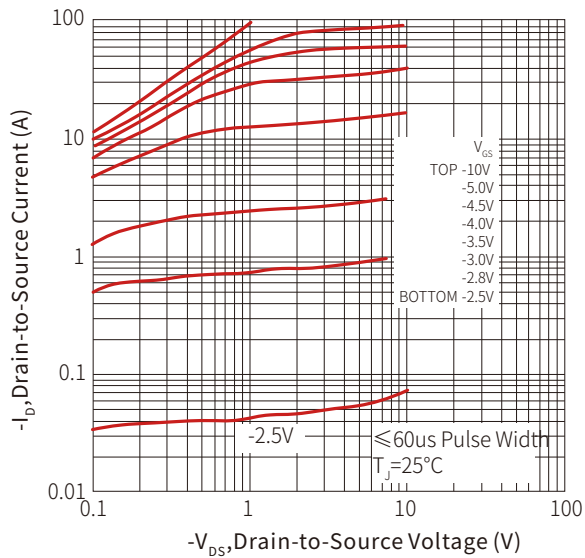


Figure2: Typical Output Characteristics

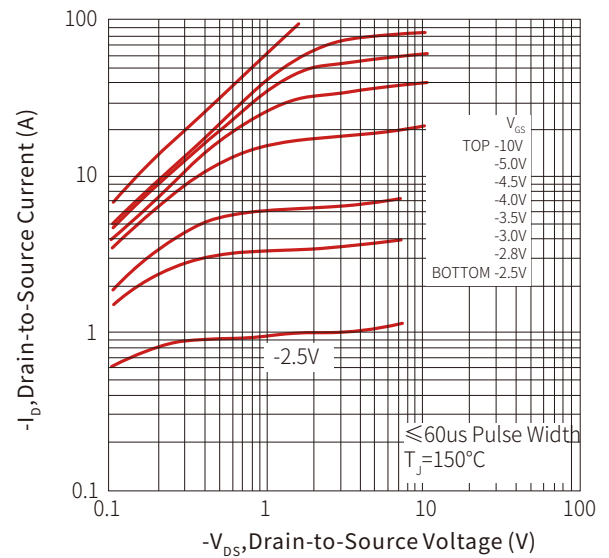


Figure3: Typical Transfer Characteristics

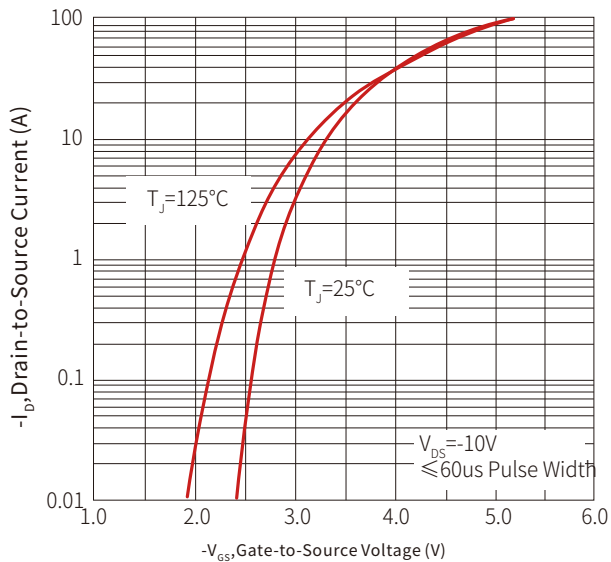


Figure 4: Normalized On-Resistance Vs.Temperature

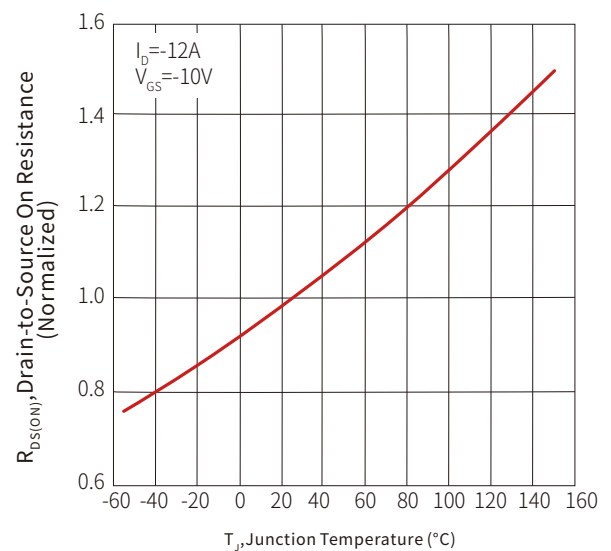


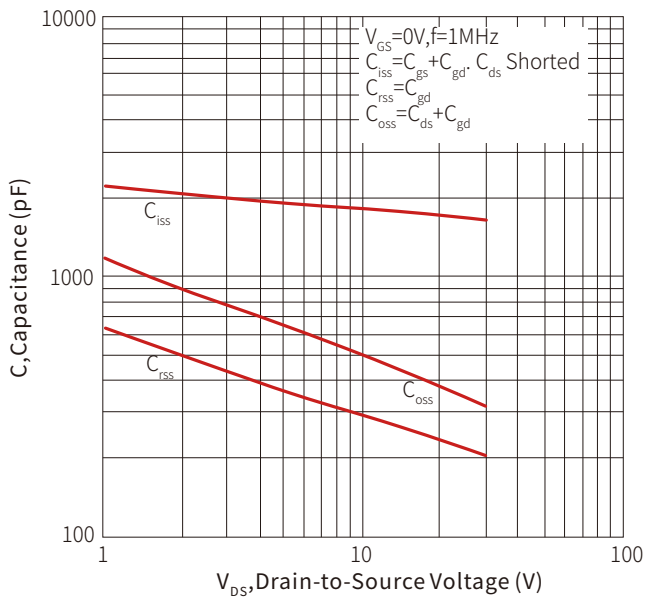
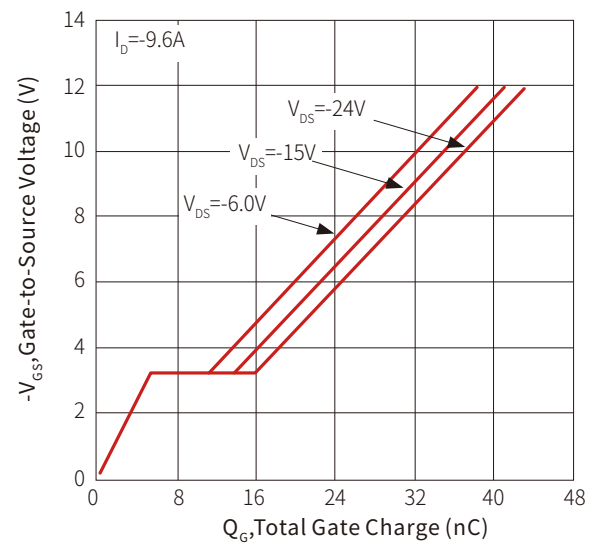
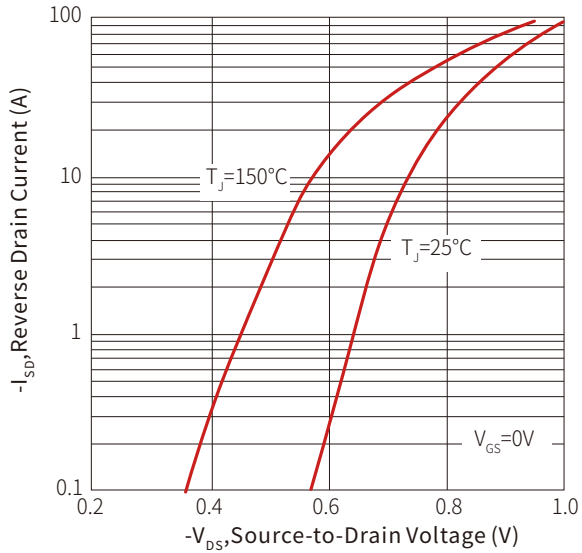
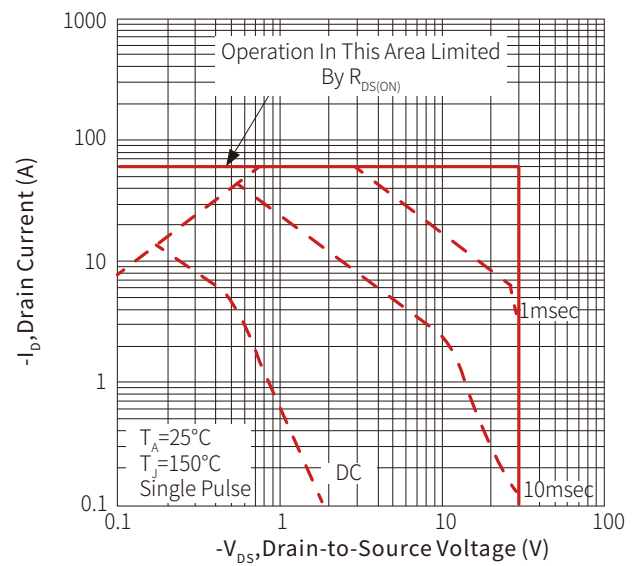
Figure 5: Typical Capacitance Vs. Drain-to-Source Voltage

Figure 6: Typical Gate Charge Vs. Gate-to-Source Voltage

Figure 7: Typical Source-Drain Diode Forward Voltage

Figure 8: Maximum Safe Operation Area


Figure 9: Maximum Drain Current vs. Ambient Temperature

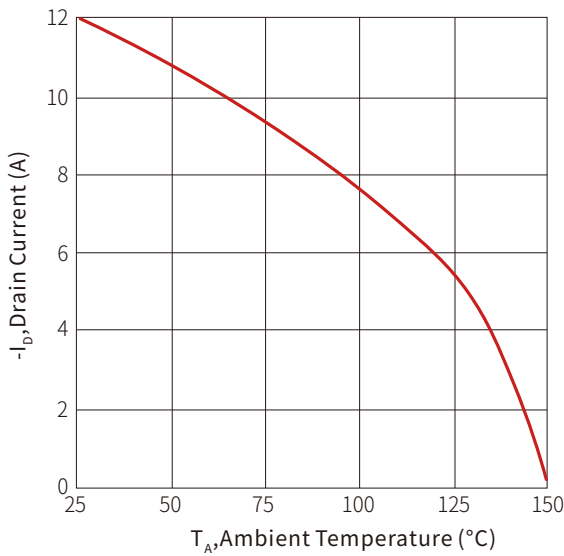


Figure 10: Threshold Voltage vs. Temperature

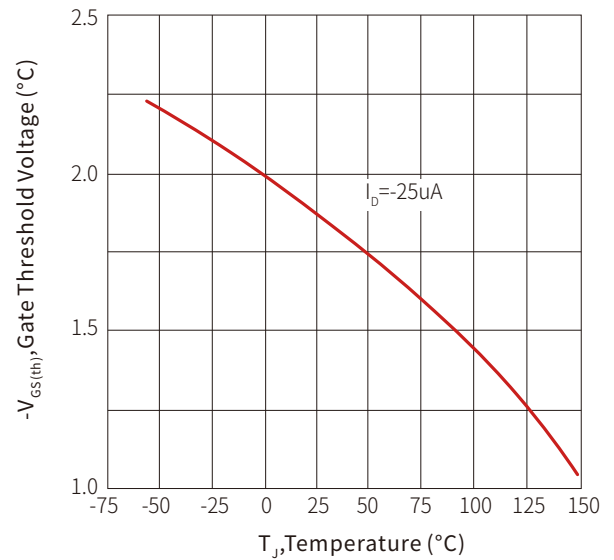
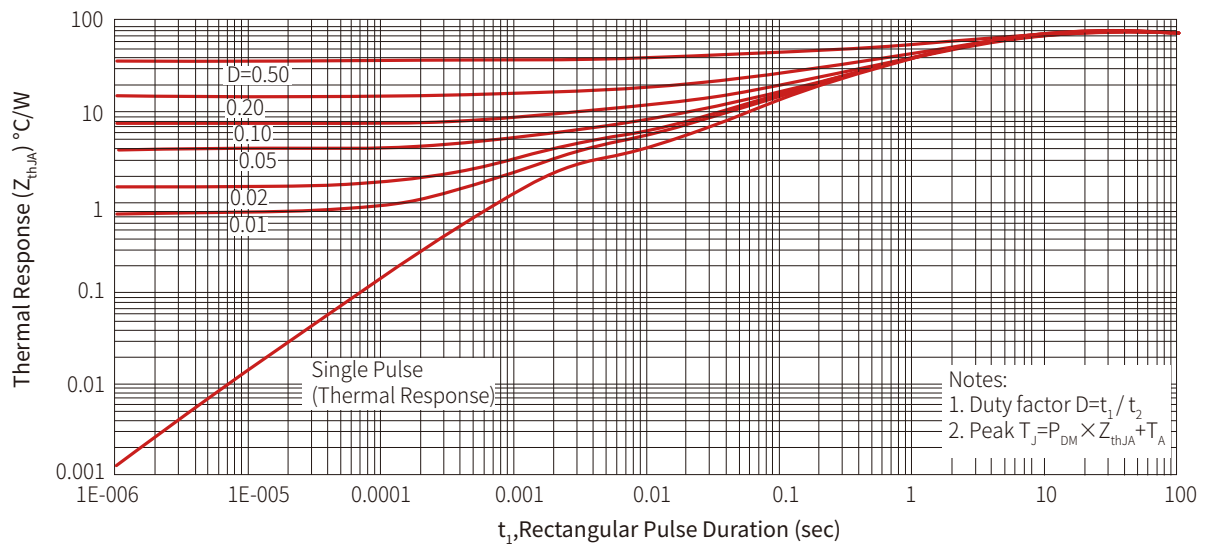
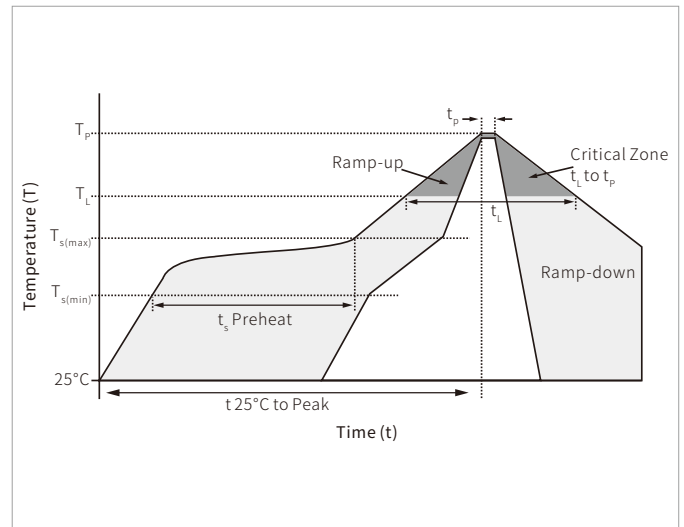


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

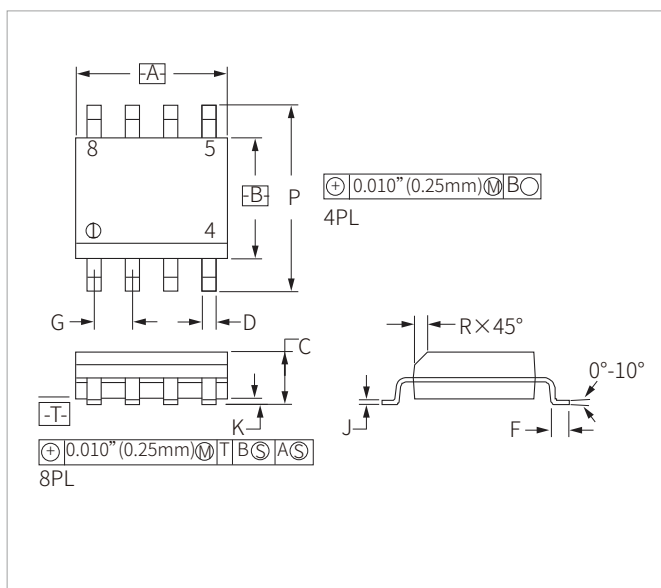


SOLDERING PARAMETERS

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

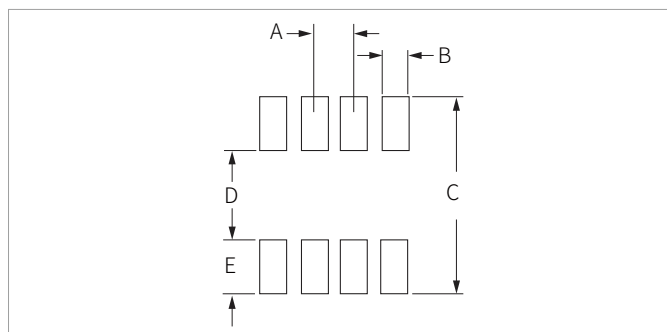


SOP-8 PACKAGE INFORMATION



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
SPM3013PE	SOP-8	3000PCS	7"

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