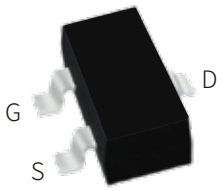
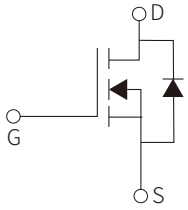
FEATURES

- Ultra low on-resistance:V_{DS}=40V,$R_{DS(ON)}$⩽45mΩ @V_{GS}=10V,I_D=3.9A
- For Low power DC to DC converter application
- For Load switch application
- Surface Mount device



SOT-23

Marking



Schematic Symbol

APPLICATION

- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS(T_a=25°C)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	40	V
Continuous drain current	T_A=25°C	I_D	3.9	A
	T_A=70°C		3.1	A
Continuous Source Current (Diode Conduction)		I_S	0.8	A
Pulsed drain current (Note 1)		I_{DM}	16	A
Gate-Source Voltage		V_{GS}	±20	V
Power dissipation		P_D	1.25	W
Thermal resistance from Junction to ambient		$R_{\theta JA}$	100	°C/W
Junction temperature		T_J	150	°C
Storage temperature		T_{STG}	-55 to 150	°C

ELECTRICAL CHARACTERISTICS(T_a=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=32V,V_{GS}=0V			1	μA
Gate–Body Leakage	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
Gate Threshold Voltage(Note 1)	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1		3	V
On-State Drain Current	$I_{D(ON)}$	V_{DS}≥4.5V,V_{GS}=10V	6			A
Static Drain-Source On–Resistance(Note1)	$R_{DS(on)}$	V_{GS}=10V,I_D=3.9A		36	45	mΩ
		V_{GS}=4.5V,I_D=3.5A		50	62.5	
Forward Transconductance(Note 1)	g_{FS}	V_{DS}=10V,I_D=3.9A		11		S
Input capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V,f=1MHz		540		pF
Output capacitance	C_{OSS}			80		
Reverse transfer capacitance	C_{rss}			45		
Total Gate Charge	Q_g	V_{DS}=20V,V_{GS}=10V,I_D=3.9A		10		nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			2.1		
Turn–On Delay Time	$t_{d(on)}$	V_{GEN}=10V,I_D=1A V_{DS}=20V,R_{GEN}=6Ω R_L=20Ω		5		ns
Turn–On Rise Time	t_r			12		
Turn–Off Delay Time	$t_{d(off)}$			20		
Turn–Off Fall Time	t_f			15		
Diode forward voltage(Note 1)	V_{SD}	I_S=1.25A,V_{GS}=0V		0.8	1.2	V

Note:1. Pulse test ; Pulse width ≤300μs, Duty cycle ≤ 2%

PARAMETER CHARACTERISTIC CURVE

Fig 1: Output Characteristics

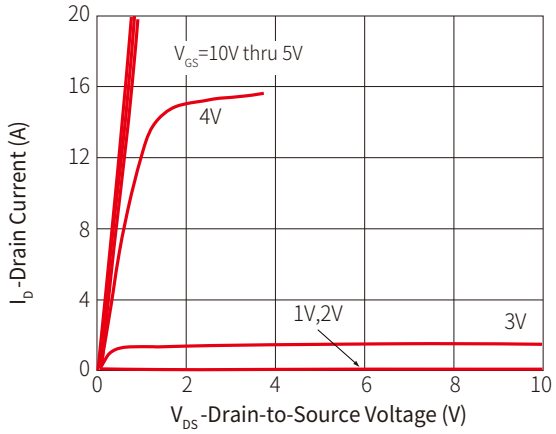


Figure 2: Transfer Characteristics

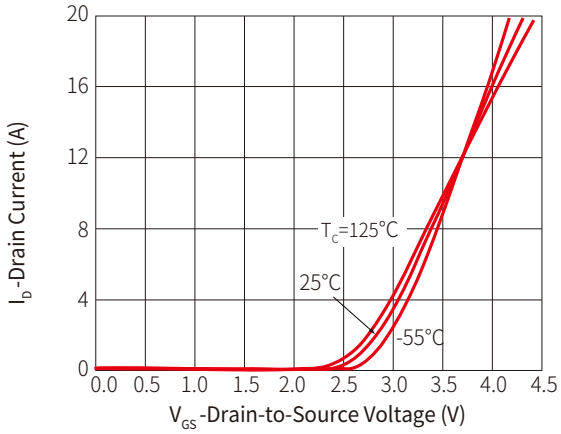


Figure 3: On-Resistance vs. Drain Current

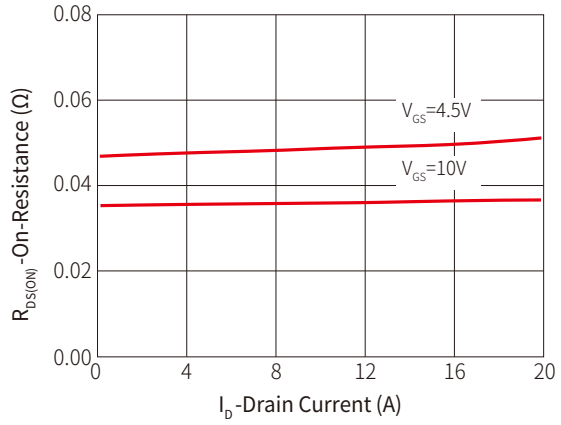


Figure 4: Capacitance

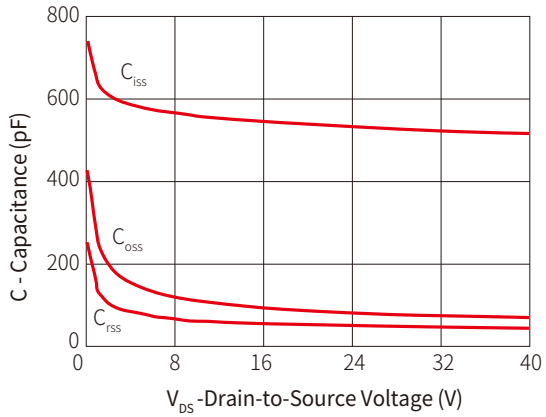


Figure 5: Gate Charge

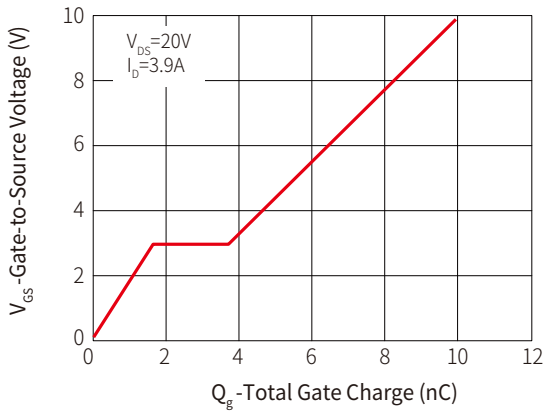


Figure 6: On-Resistance vs. Junction Temperature

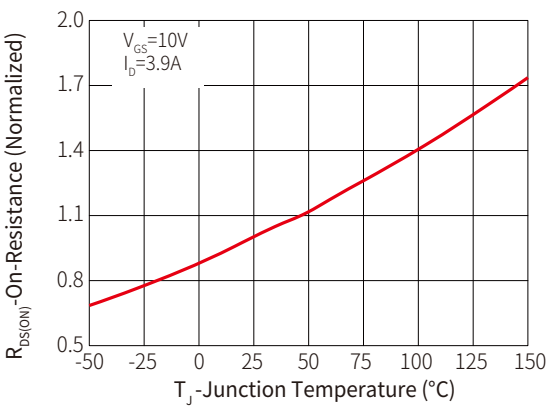


Figure 7: Source-Drain Diode Forward Voltage

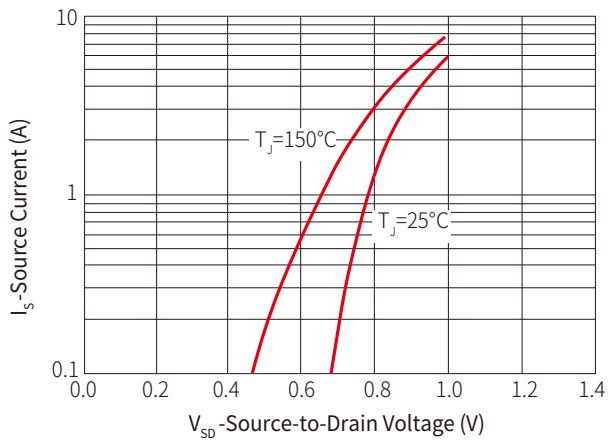


Figure 8: On-Resistance vs. Gate-to-Source Voltage

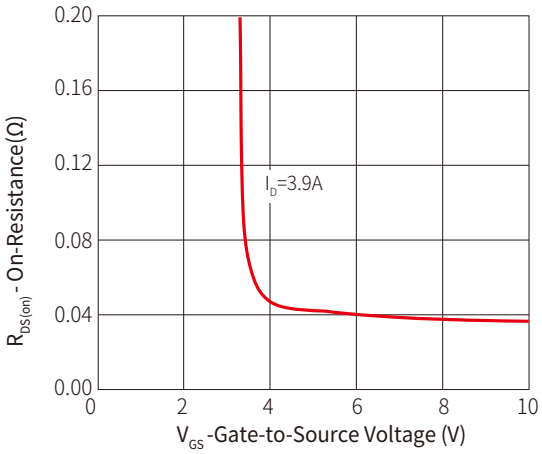


Figure 9: Threshold Voltage

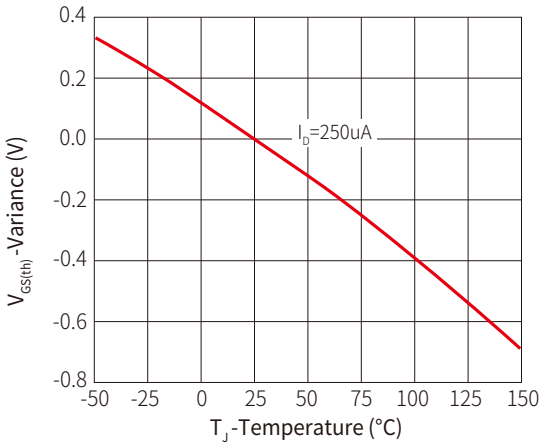


Figure 10: Single Pulse Power

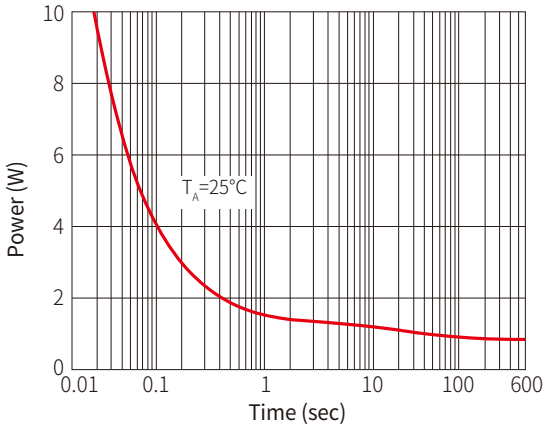


Figure 11: Safe Operating Area, Junction-to-Case

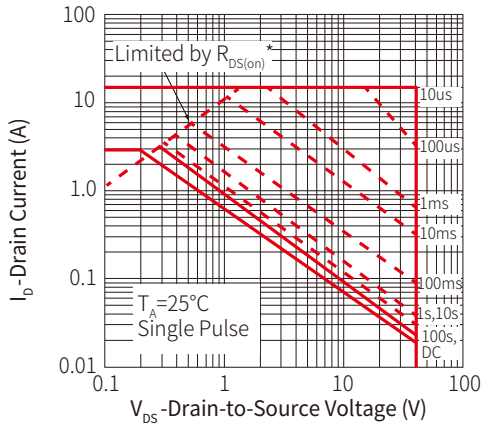
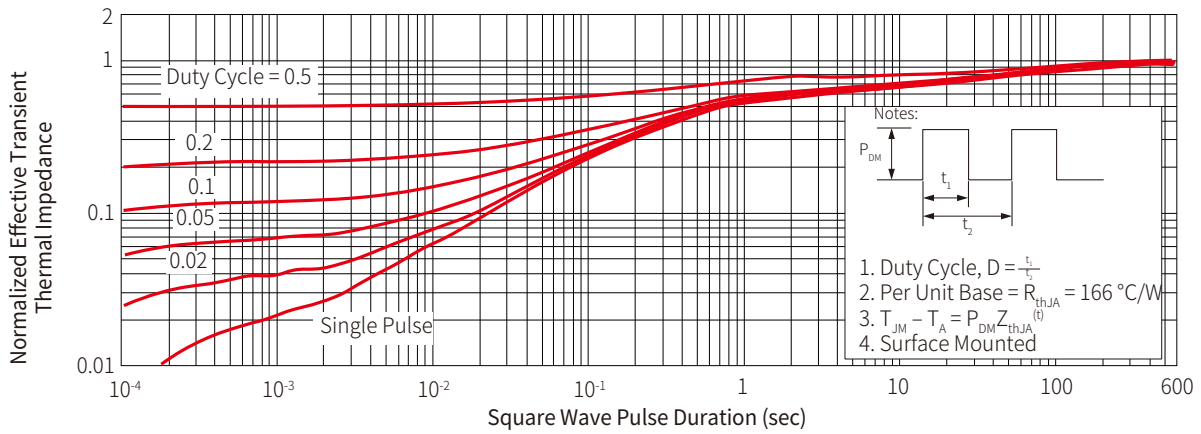
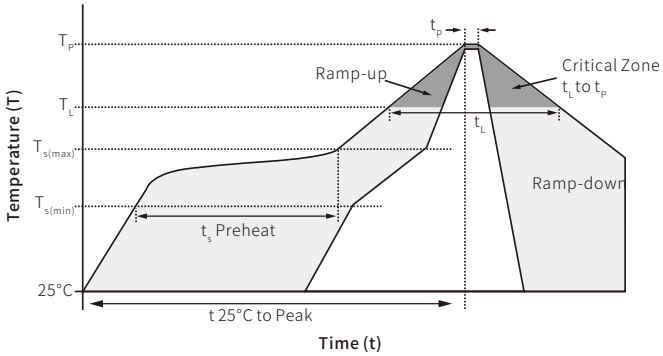


Figure 12: Normalized Thermal Transient Impedance, Junction-to-Ambient

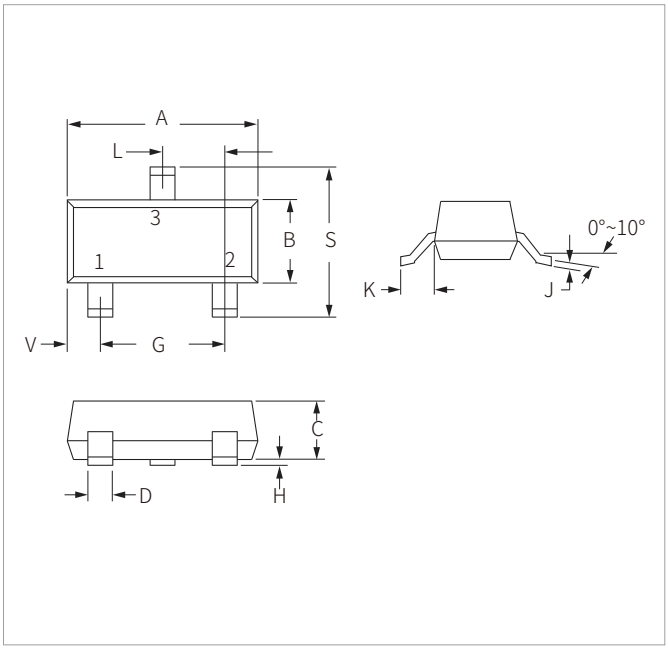


SOLDERING PARAMETERS

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

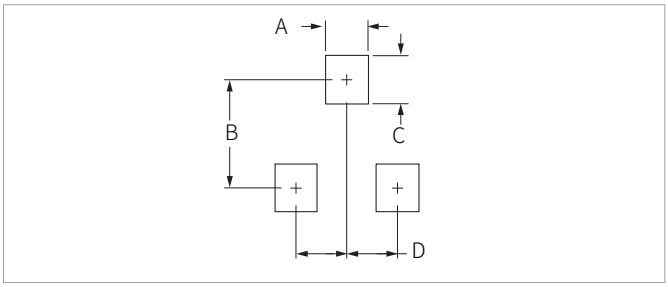


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNM2318S	SOT-23	3000PCS	7”

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