

FEATURES

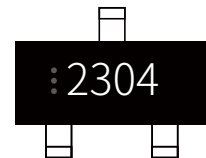
Ultra low on-resistance: $V_{DS}=30V, R_{DS(ON)} \leq 60m\Omega$

@ $V_{GS}=10V, I_D=3.3A$

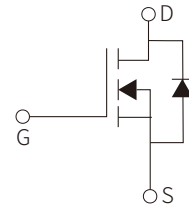
For Low power DC to DC converter application

For Load switch application

Surface Mount device



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

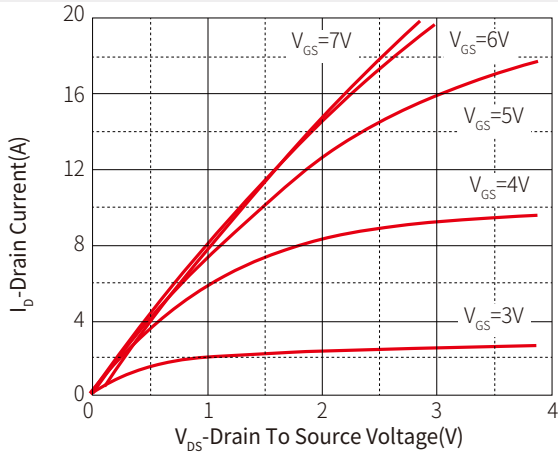
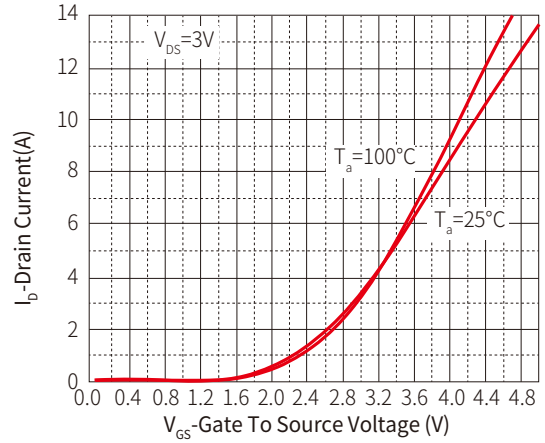
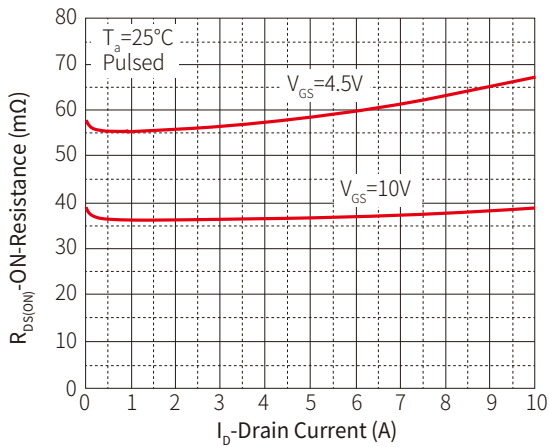
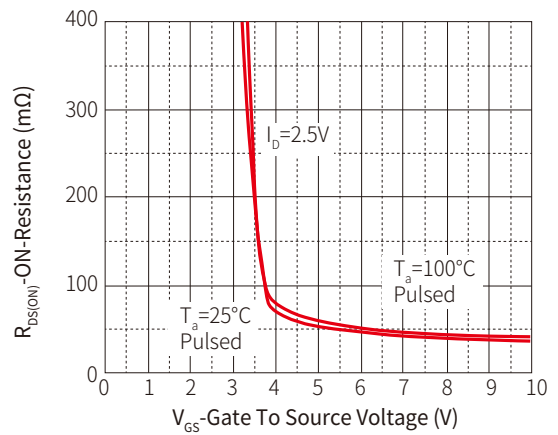
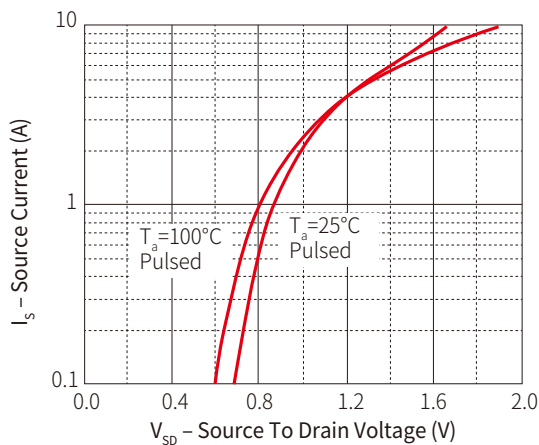
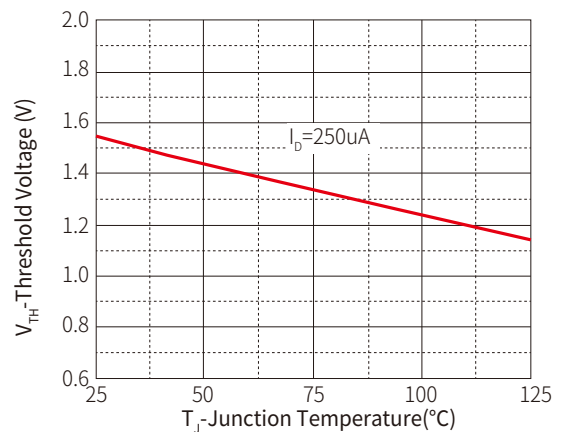
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Continuous drain current	I_D	3.3	A
Pulsed drain current (Note 1)	I_{DM}	15	A
Gate-Source Voltage	V_{GS}	± 20	V
Power dissipation	P_D	0.35	W
Thermal resistance from Junction to ambient	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to 150	$^\circ\text{C}$

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	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage (Note1)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.55	2.2	V
Static Drain-Source On-Resistance(Note1)	R _{DS(on)}	V _{GS} =10V, I _D =3.2A		37	60	mΩ
		V _{GS} =4.5V, I _D =2.8A		57	75	
Forward Transconductance(Note1)	g _{FS}	V _{DS} =4.5V, I _D =2.5A	2.5			S
Gate resistance	R _g	f=1.0MHz	0.8	4.4	8.8	Ω
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		235		pF
Output Capacitance	C _{oss}			45		
Reverse Transfer Capacitance	C _{rss}			17		
Turn-On Delay Time	t _{d(on)}	V _{GEN} =10V, R _G =1Ω V _{DD} =15V, I _D =2.7A R _L =5.6Ω		5	10	ns
Turn-On Rise Time	t _r			12	20	
Turn-Off Delay Time	t _{d(off)}			10	15	
Turn-Off Fall Time	t _f			5	10	
Diode forward voltage (note 1)	V _{SD}	I _S =2.7A, V _{GS} =0V, T _J =25°C		0.8	1.2	V
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =3.4A V _{GS} =4.5V, V _{DS} =15V, I _D =3.4A		4.5	6.7	nC
				2.1	3.2	
Gate Source Charge	Q _{gs}			0.85		
Gate Drain Charge	Q _{gd}			0.65		
Diode forward current(Body Diode)	I _S	T _C =25°C			1.4	A
Pulsed Source Current(Body Diode)	I _{SM}				15	A

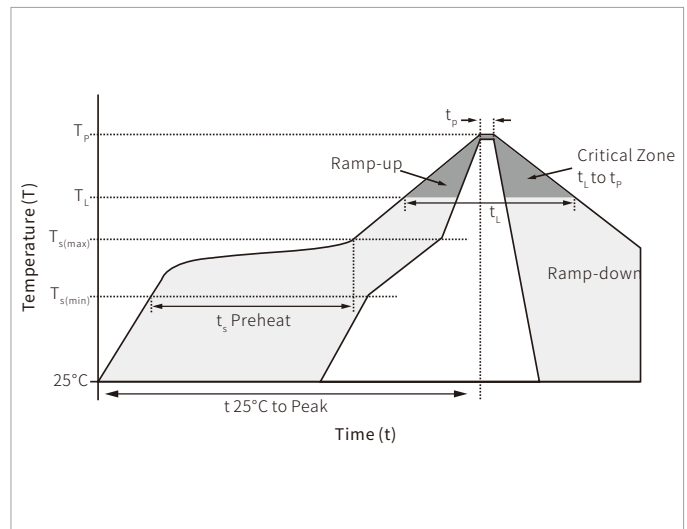
Note:1. Pulse test ; Pulse width ≤400μs, Duty cycle ≤ 2%

PARAMETER CHARACTERISTIC CURVE

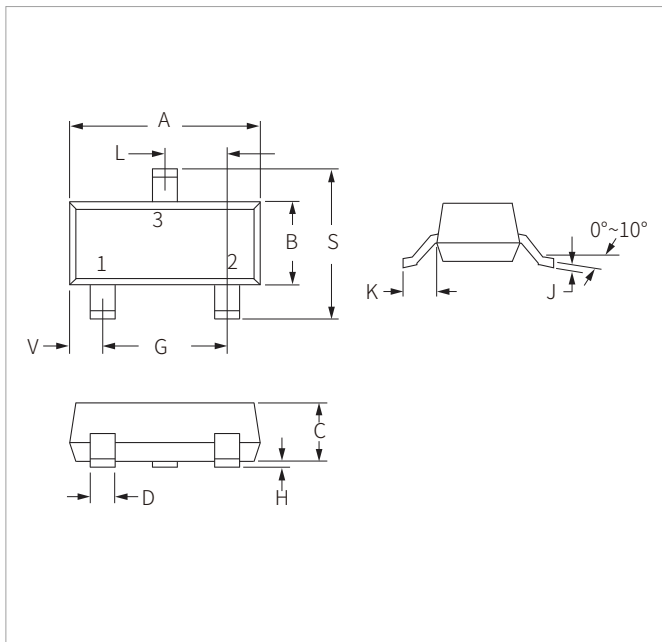
Fig 1: Output Characteristics

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

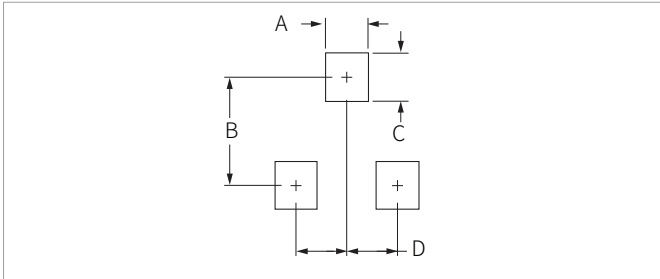


SOT-23 PACKAGE INFORMATION



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
SNM2304S	SOT-23	3000PCS	7"

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