

FEATURES

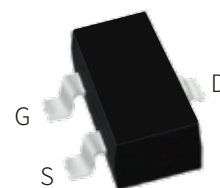
- | Split Gate Trench MOSFET technology
- | Excellent package for heat dissipation
- | High density cell design for low $R_{DS(ON)}$

APPLICATION

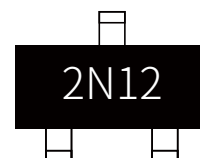
- | DC-DC Converters
- | Power management functions
- | Synchronous-rectification applications

APPROVALS

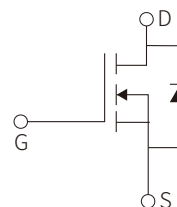
RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



SOT-23



Marking



Schematic Symbol

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	120	V
Drain Current-Continuous $T_A=25^\circ\text{C}$	I_D	2	A
Pulsed Drain Current ¹⁾	I_{DM}	8	A
Gate-Source Voltage	V_{GS}	± 20	V
Power dissipation $T_A=25^\circ\text{C}$	P_D	1.5	W
Thermal resistance from Junction to ambient ²⁾	$R_{\theta JA}$	83.3	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D =250μA	120			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =120V,V _{GS} =0V			1	μA
Gate-body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _{DS} =250μA	1.1	1.6	2.2	V
Drain-Source On-state Resistance ³	R _{DS(on)}	V _{GS} =10V,I _D =2A		180	234	mΩ
		V _{GS} =4.5V,I _D =1A		200	260	
Dynamic Characteristics ⁴						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V,f=1MHz		186		pF
Output Capacitance	C _{oss}			44		
Reverse Transfer Capacitance	C _{rss}			2.6		
Switching Characteristics ⁴						
Turn-On Delay Time	t _{d(on)}	V _{DD} =50V,I _D =2A V _{GS} =10V,R _G =3Ω		12.8		ns
Turn-On Rise Time	t _r			19.7		
Turn-Off Delay Time	t _{d(off)}			21		
Turn-Off Fall Time	t _f			29		
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =50V,I _D =2A		5		nC
Gate Source Charge	Q _{gs}			0.7		
Gate Drain Charge	Q _{gd}			1.45		
Source-Drain Diode characteristics						
Body Diode Voltage ³	V _{SD}	V _{GS} =0V,I _S =2A			1.2	V
Continuous Source Current	I _S				2	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{j(MAX)}=150^{\circ}\text{C}$.
2. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. This value is guaranteed by design hence it is not included in the production test.

PARAMETER CHARACTERISTIC CURVE

Figure 1: Output Characteristics

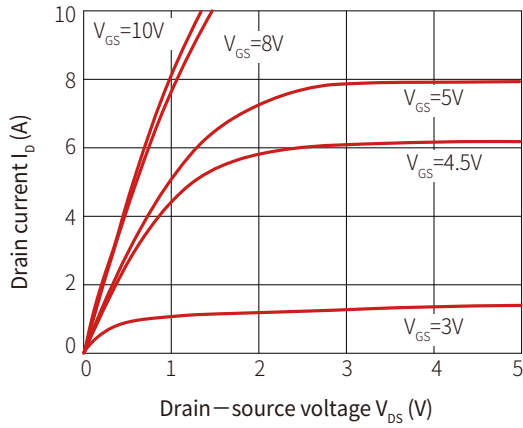


Figure 2: Transfer Characteristics

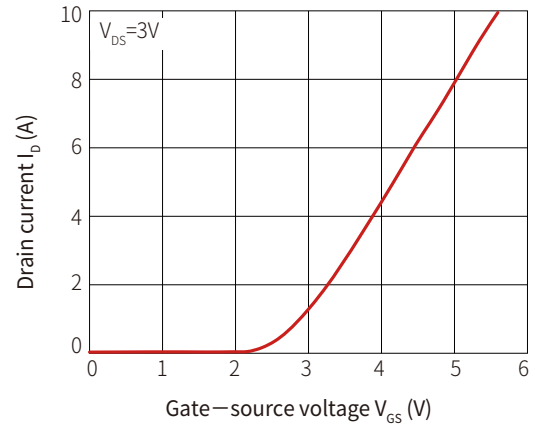


Figure 3: Forward Characteristics of Reverse

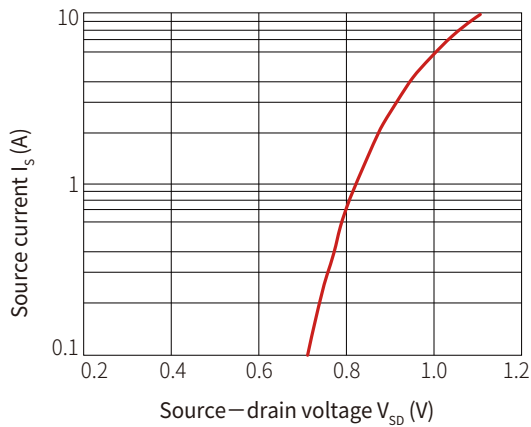


Figure 4: $R_{DS(on)}$ vs. V_{GS}

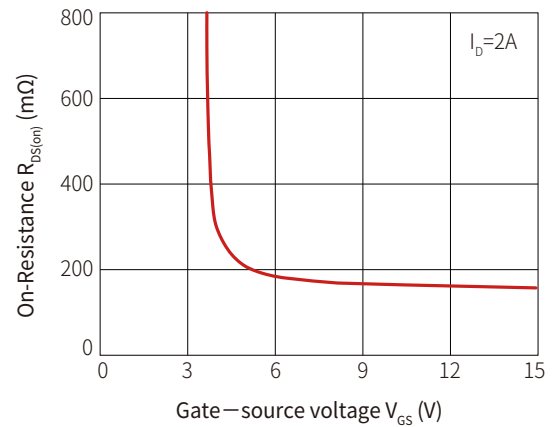


Figure 5: $R_{DS(on)}$ vs. I_D

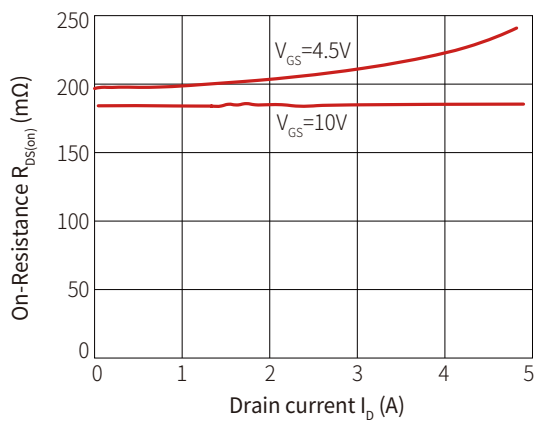


Figure 6: Normalized $R_{DS(on)}$ vs. Temperature

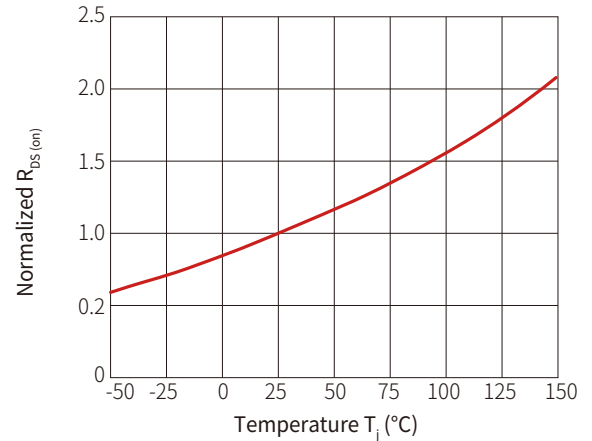
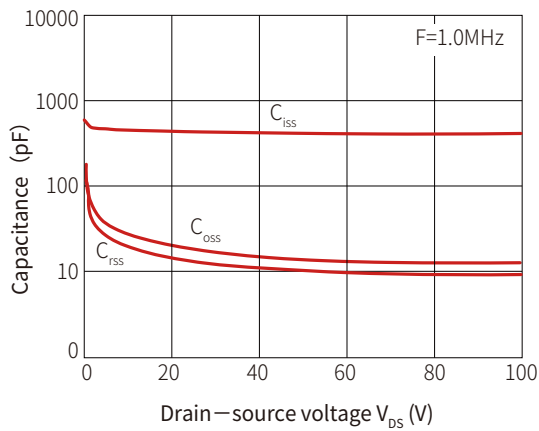
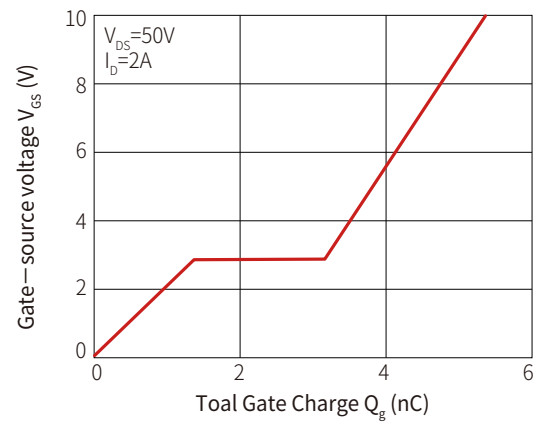
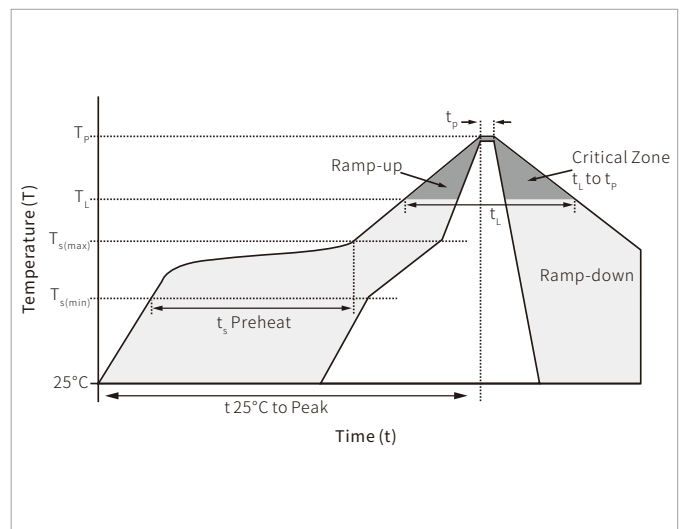


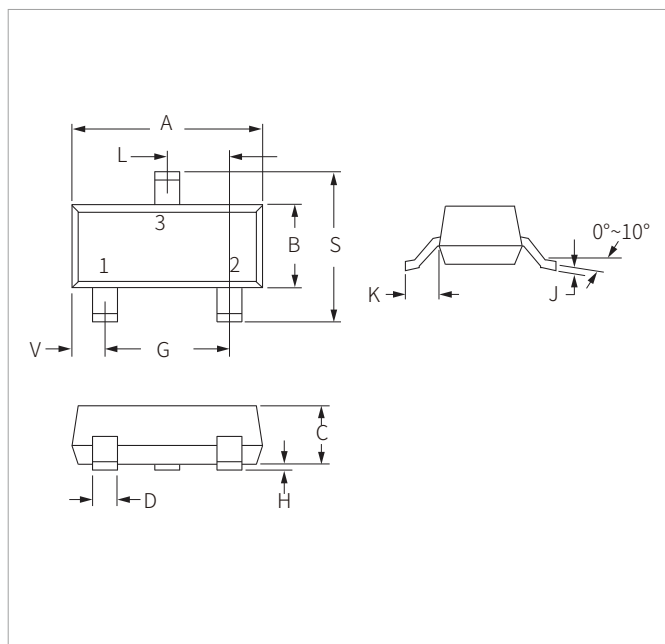
Figure 7: Capacitance Characteristics

Figure 8: Gate Charge Characteristics


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

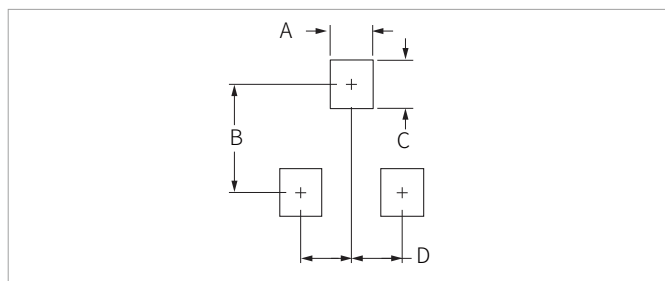


SOT-23 PACKAGE INFORMATION



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
SNM2N12S	SOT-23	3000PCS	7"

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