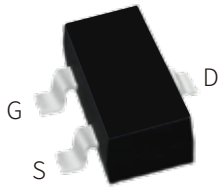
FEATURES

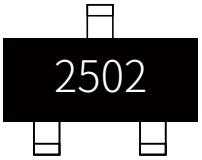
- Fast switching
- Ultra Low On-Resistance
- Surface Mount device



SOT-23

APPLICATION

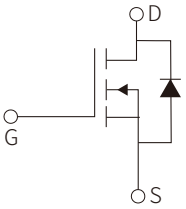
- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0



Marking

APPROVALS

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



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS(T_a=25°C)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Continuous drain current	I_D	4.2	A
Pulsed Drain Voltage (Note 1)	I_{DM}	33	A
Gate-Source Voltage	V_{GS}	±12	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	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V,V_{GS}=0V			1	μA
Gate–Body Leakage	I_{GSS}	V_{GS}=±12V,V_{DS}=0V			±100	nA
Gate Threshold Voltage (Note1)	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.6		1.2	V
Static Drain-Source On–Resistance(Note1)	$R_{DS(on)}$	V_{GS}=4.5V,I_D=4.2A		35	45	mΩ
		V_{GS}=2.5V,I_D=3.6A		50	80	
Forward Transconductance(Note1)	g_{FS}	V_{DS}=10V,I_D=4A		2.8		S
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V,f=1.0MHz		740		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			66		
Turn–On Delay Time	$t_{d(on)}$	R_L=10Ω,R_{GEN}=6Ω V_{DD}=10V,I_D=1A		7.5		ns
Turn–On Rise Time	t_r			10		
Turn–Off Delay Time	$t_{d(off)}$			54		
Turn–Off Fall Time	t_f			26		
Diode forward voltage (note 1)	V_{SD}	I_S=1.3A,V_{GS}=0V,T_j=25°C			1.2	V
Total Gate Charge	Q_g	V_{GS}=5V,V_{DS}=10V,I_D=4A		8	12	nC
Gate Source Charge	Q_{gs}			1.8	2.7	
Gate Drain Charge	Q_{gd}			1.7	2.6	
Diode forward current	I_S				1.3	A

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

PARAMETER CHARACTERISTIC CURVE

Fig 1: Typical Output Characteristics

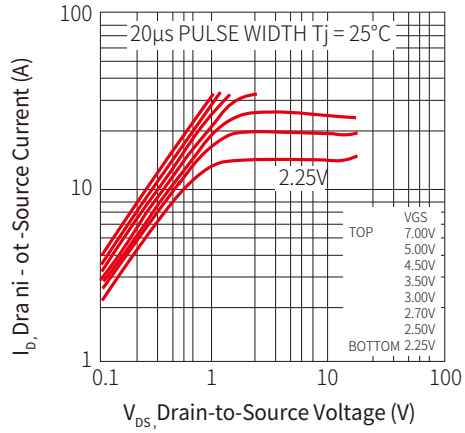


Figure 2: Typical Output Characteristics

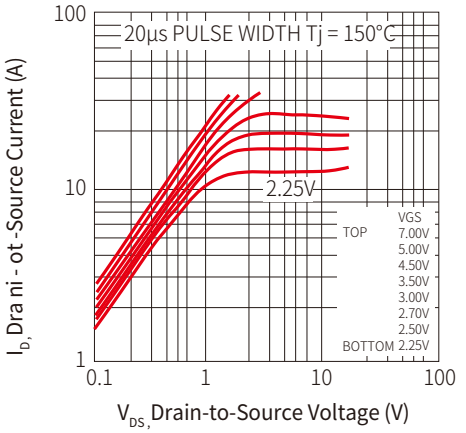


Figure 3: Typical Transfer Characteristics

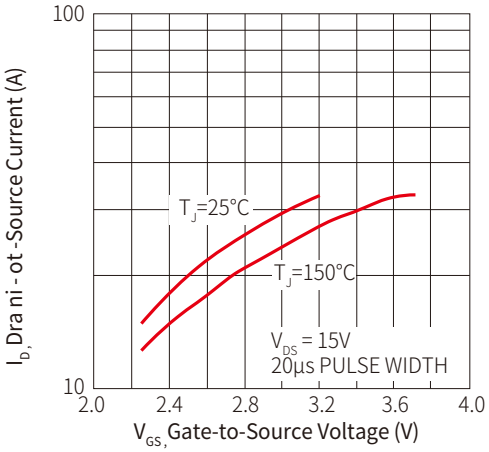


Figure 4: Normalized On-Resistance Vs. Temperature

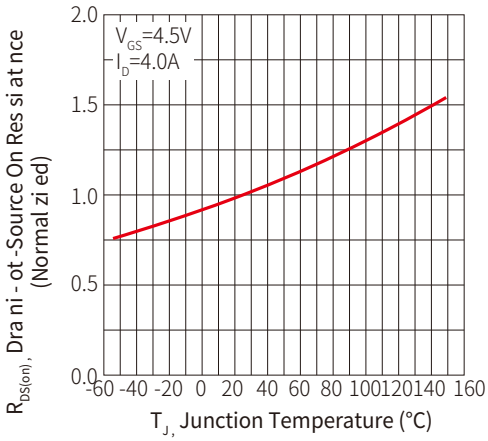


Figure 5: Typical Capacitance Vs. Drain-to-Source Voltage

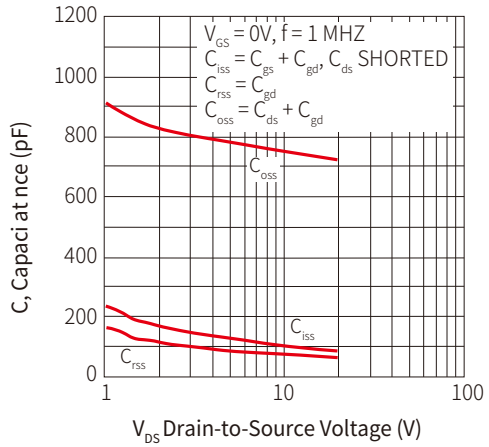


Figure 6: Typical Gate Charge Vs. Gate-to-Source Voltage

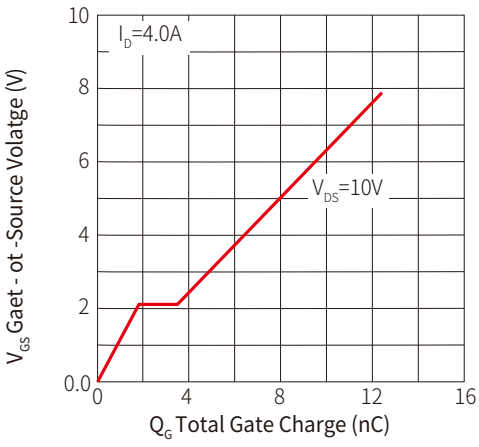


Figure 7: Typical Source-Drain Diode Forward Voltage

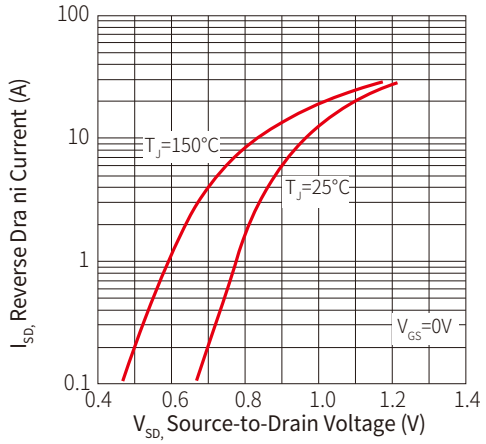


Figure 8: Maximum Safe Operating Area

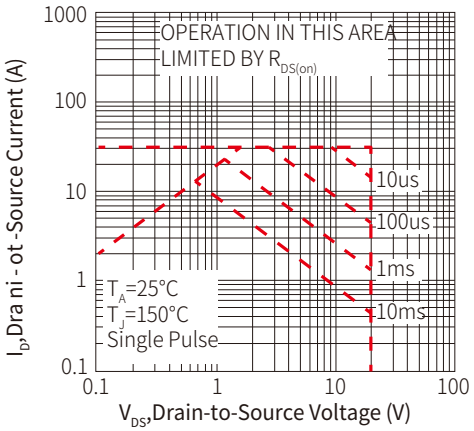


Figure 9: Maximum Drain Current Vs. Case Temperature

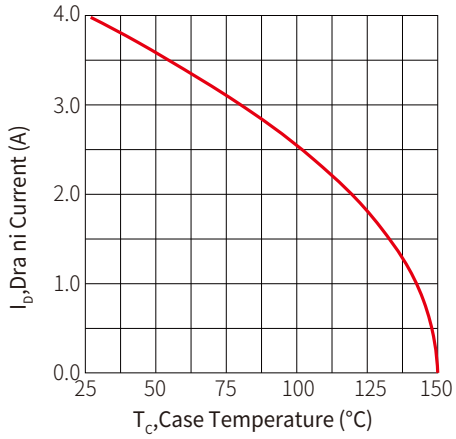
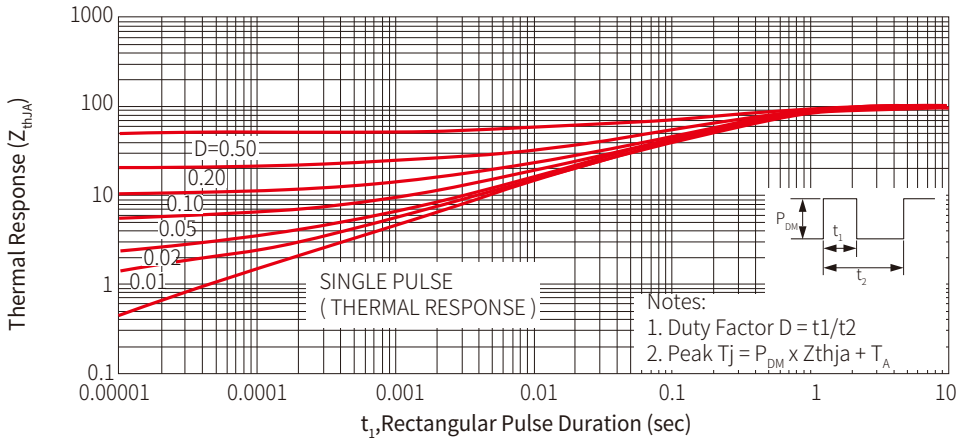
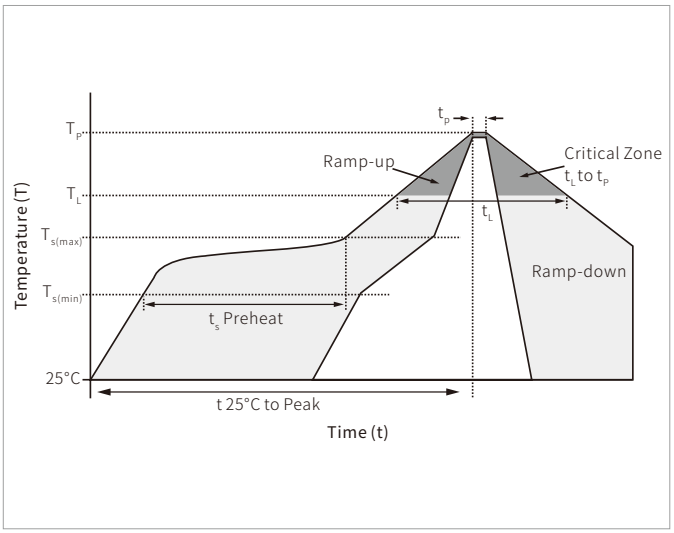


Figure 10: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

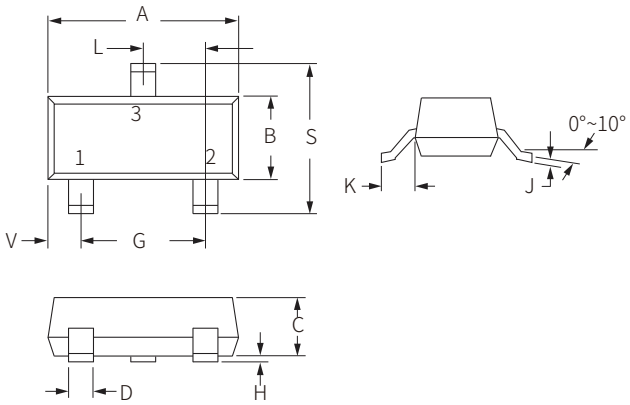


SOLDERING PARAMETERS

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

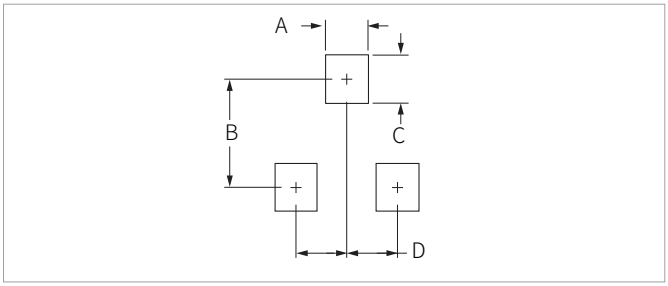


SOT-23 PACKAGE INFORMATION



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
SNM2502S	SOT-23	3000PCS	7”

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