



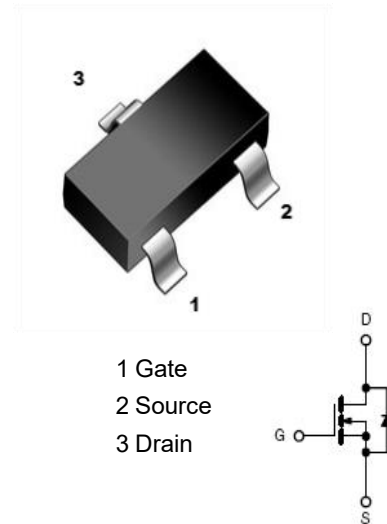
1. Features

- High power and current handing capability
- Surface mount package

2. Mechanical Data

- Case:Molded Plastic,SOT-23 .
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable perMIL-STD-750,Method-2026.
- Marking:S10
- Mounting Position : Any.

SOT-23



3. Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	3	A
Drain Current-Pulsed ¹	I_{DM}	12	A
Power Dissipation	P_D	1.56	W
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	125	°C/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55~ +150	°C

**4. Electrical Characteristics**

Rating at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On characteristics ³						
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3A$		85	100	m Ω
		$V_{GS} = 4.5V, I_D = 2A$		90	120	m Ω
Forward tranconductance	g_{FS}	$V_{DS} = 10V, I_D = 3A$		7		S
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.9	1.3	2	V
Dynamic Characteristics ⁴						
Input capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		409		pF
Output capacitance	C_{oss}			45		pF
Reverse transfer capacitance	C_{rss}			40		pF
Switching Characteristics ⁴						
Total Gate Charge	Q_g	$V_{DS} = 48V, V_{GS} = 10V, I_D = 6A$		9.3		nC
Gate-Source Charge	Q_{gs}			2.1		nC
Gate-Drain Charge	Q_{gd}			1.8		nC
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 30V, I_D = 1A, R_G = 3.3\Omega$		2.9		ns
Turn-on rise time	t_r			9.5		ns
Turn-off delay time	$t_{d(off)}$			18.4		ns
Turn-off fall time	t_f			5.3		ns
Source-Drain Diode characteristics ⁴						
Body Diode Voltage	V_{SD}	$I_S = 1A, V_{GS} = 0V$		0.7	1.4	V

Notes :

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , $t \leq 10s$
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to producing.



5. Rating And Characteristic Curves

Fig1: Output Characteristics

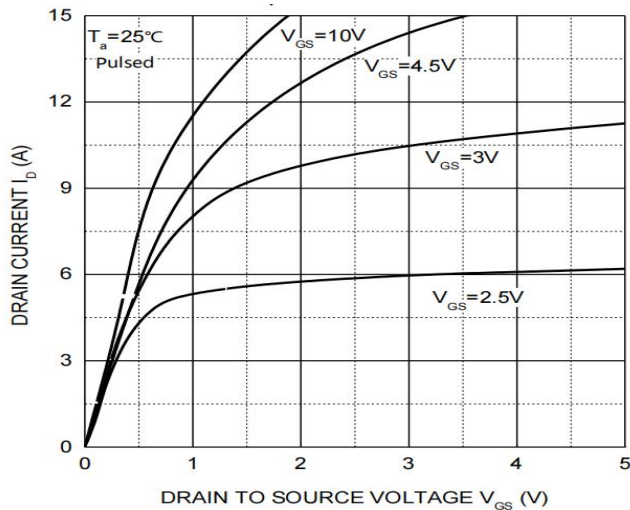


Fig2: Transfer Characteristics

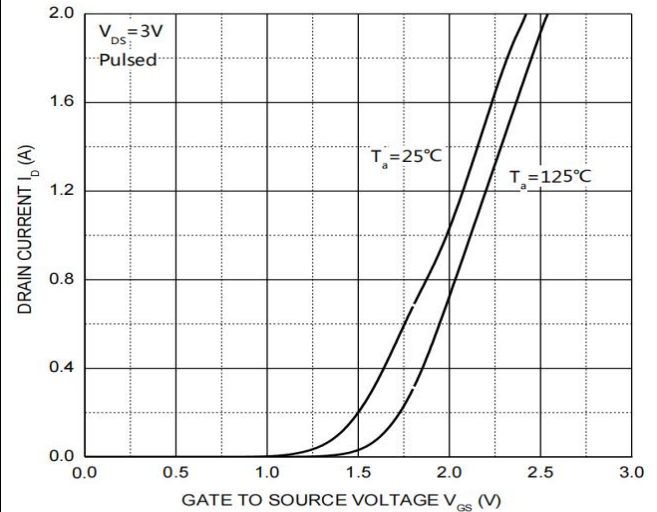


Fig.3 $R_{DS(on)}$ - I_D

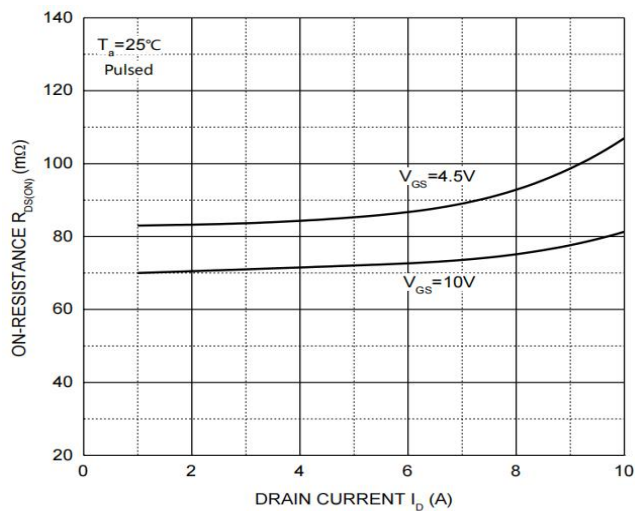


Fig.4 $R_{DS(on)}$ - V_{GS}

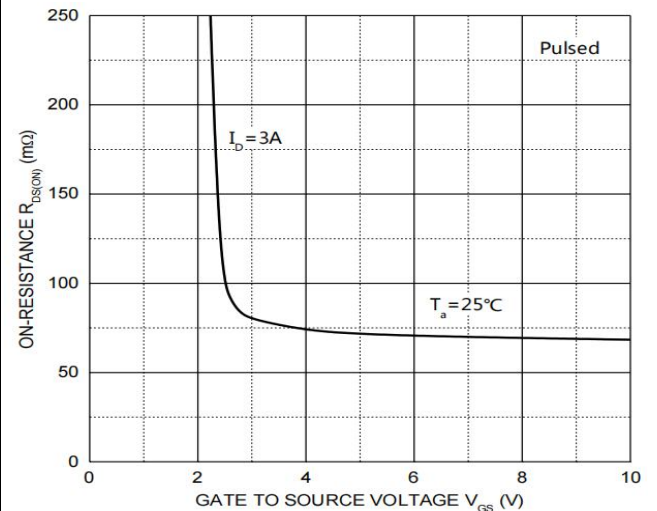


Fig.5 I_S - V_{SD}

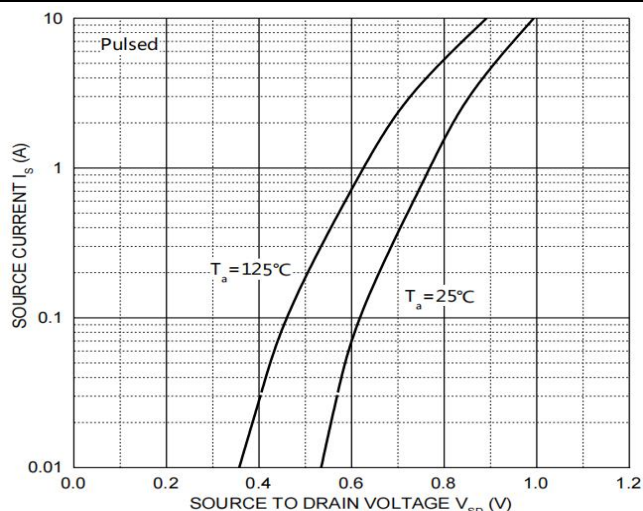
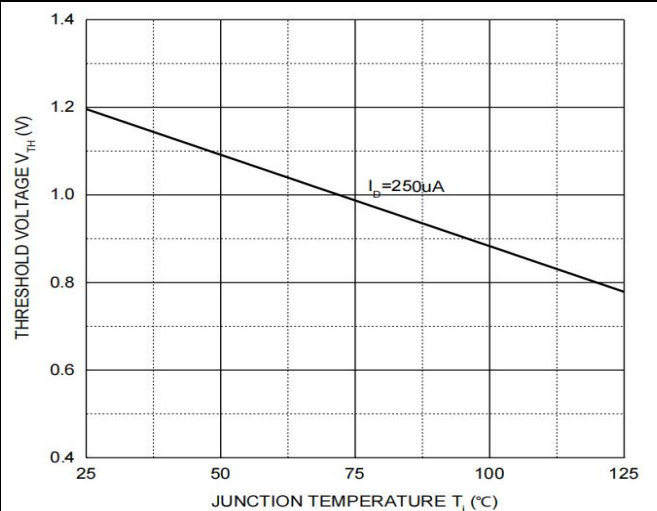
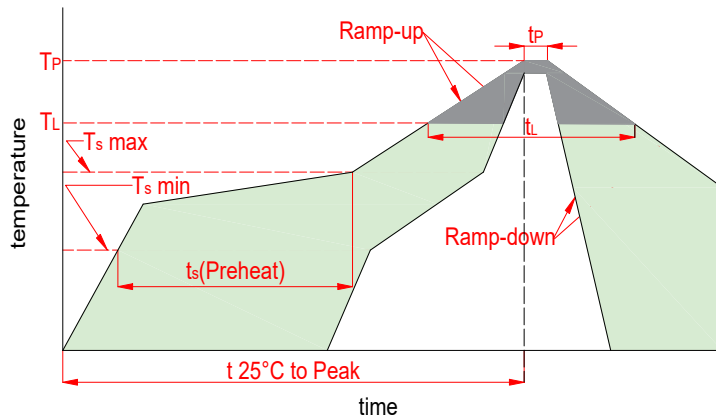


Fig.6 Threshold Voltage



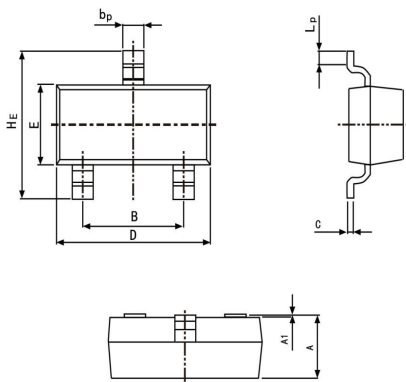


6. Soldering Parameters



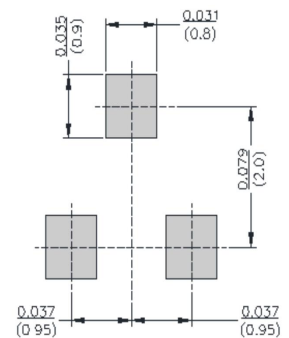
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150℃
	Temp. max(T_s (min))	200℃
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3℃/s max
T_s (max) to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp. (T_L)(Liquidus)	217℃
	Temp. (t_L)(Liquidus)	60~150s
Peak Temp. (T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp. (t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe. (T_P)		8 minutes max
Do not exceed		260℃

7. Dimensions

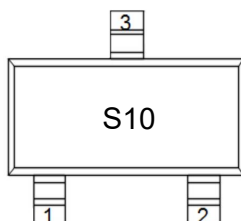


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
bp	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50

Mounting PAD Layout



8. Part Marking System



9. Package Information

Package	Part Number	Marking Code	Quantity(pcs)
SOT-23	XN2310	S10	3000



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