

20V N-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

I_D	6.8A
V_{DSS}	20V
R_{DS(on)-typ}(@V_{GS}=4.5V)	<31.8mΩ (Typ:18mΩ)
R_{DS(on)-typ}(@V_{GS}=2.5V)	<35.6mΩ (Typ:23mΩ)
R_{DS(on)-typ}(@V_{GS}=1.8V)	<41.4mΩ (Typ:30mΩ)

Features

- ◆TrenchFET Power MOSFET
- ◆Load Switch for Portable Devices.
- ◆DC/DC Converter.

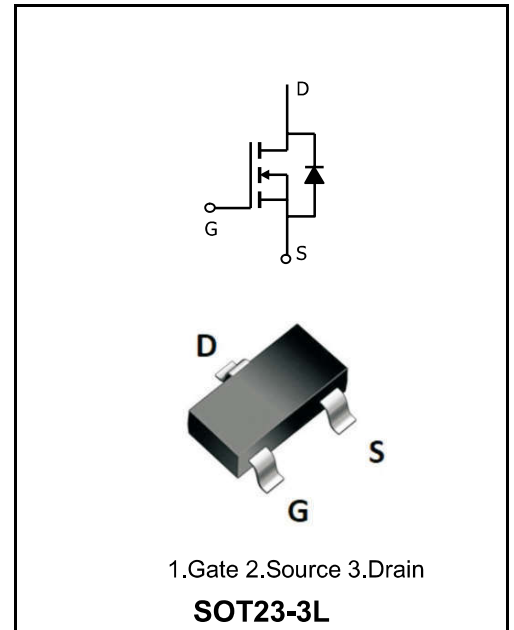
Mechanical Data

- ◆SOT23-3L Small Outline Plastic Package.
- ◆Epoxy UL: 94V-0.
- ◆Mounting Position: Any.

Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameters	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current t=5s	I_D	6.8	A
Pulsed Drain Current(note1)	I_{DM}	20	
Continuous Source-Drain Diode Current	I_S	1.04	A
Power Dissipation t=5s	P_D	350	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{stg}	-55~+150	°C
Thermal Resistance From Junction to Ambient (note 2)	R_{θJA}	357	°C/W



Marking Code	
YFW2312MI	S12

Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbols	Test Condition	Limits			Unit
			Min	Typ	Max	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Gate-Threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.7	1.2	V
Gate-body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 8V$	-	-	± 100	nA
Zero Gate Voltage Drain current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
Drain-Source On-Resistance(note3)	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=5A$	-	18	31.8	m Ω
		$V_{GS}=2.5V, I_C=4.7A$	-	23	35.6	m Ω
		$V_{GS}=1.8V, I_C=4.3A$	-	30	41.4	m Ω
Forward trans conductance(note3)	g_{fs}	$V_{DS}=10V, I_D=5A$	-	6	-	S
Body diode voltage(note3)	V_{SD}	$I_S=6.8A, V_{GS}=0V$	-	0.75	1.2	V
Input capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	-	865	-	pF
Output capacitance	C_{oss}		-	105	-	
Reverse Transfer capacitance	C_{rss}		-	55	-	
Gate resistance	R_g	$f=1MHz$	0.5	-	4.8	Ω
Turn-on Time	$t_{d(on)}$	$V_{DD}=10V, R_L=2.2\Omega, V_{GEN}=5V, I_D=4A, R_G=1\Omega$	-	-	10	ns
Rise time	t_r		-	-	20	
Turn-off Time	$t_{d(off)}$		-	-	32	
Fall time	t_f		-	-	12	

Notes: 1. Repetitive rating: Pulse width limited by junction temperature.

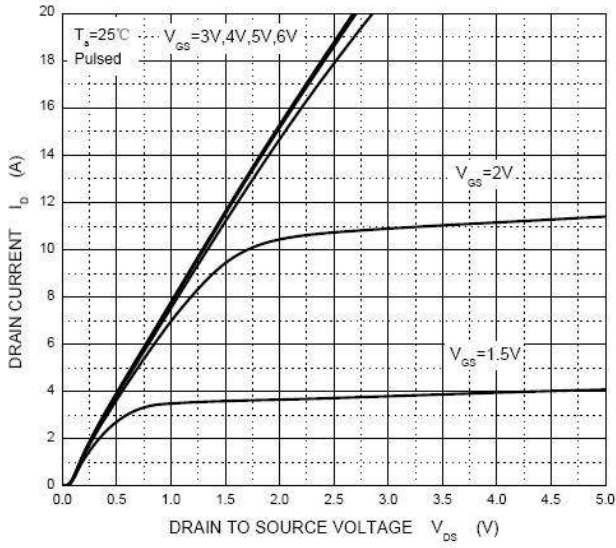
 2. Surface mounted on FR4 board, $t \leq 10s$.

 3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

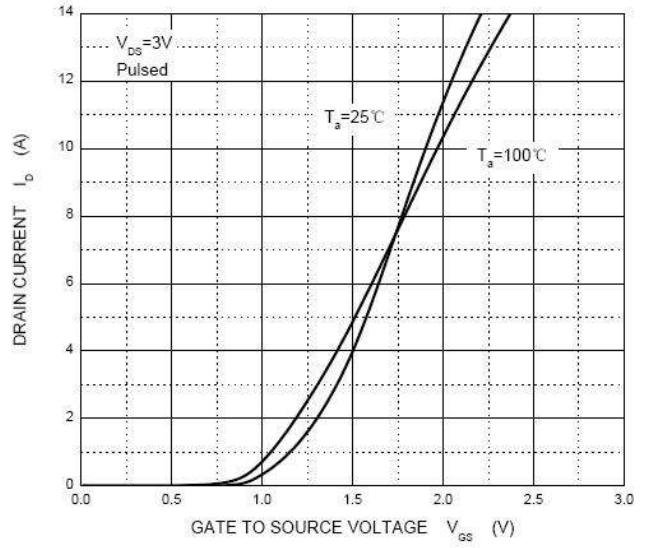
4. Guaranteed by design, not subject to producing.

Ratings and Characteristic Curves

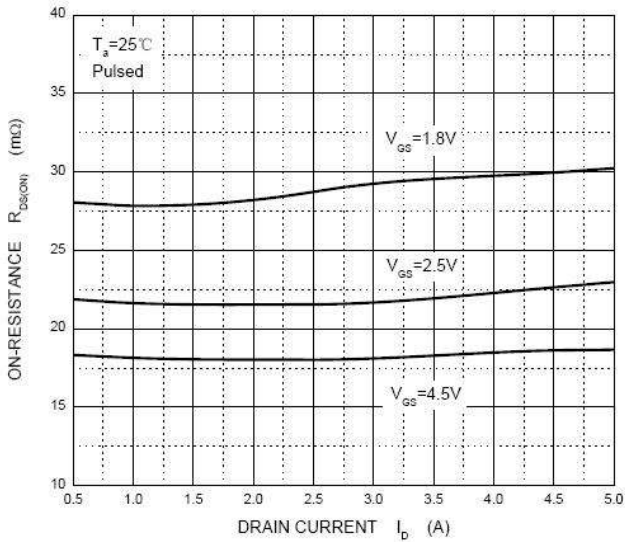
Output Characteristics



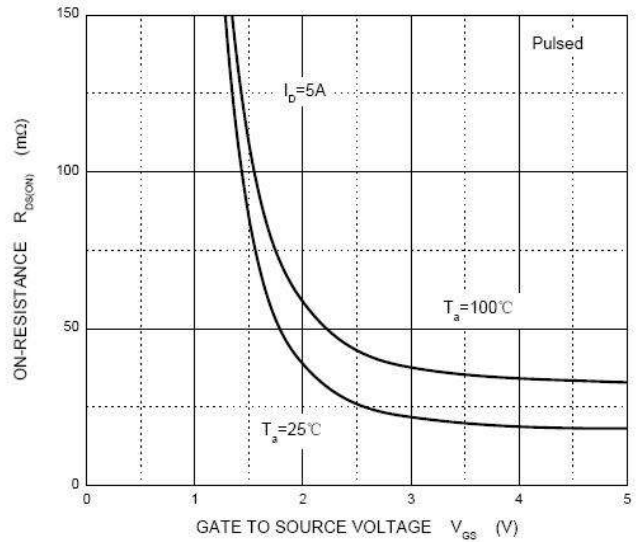
Transfer Characteristics



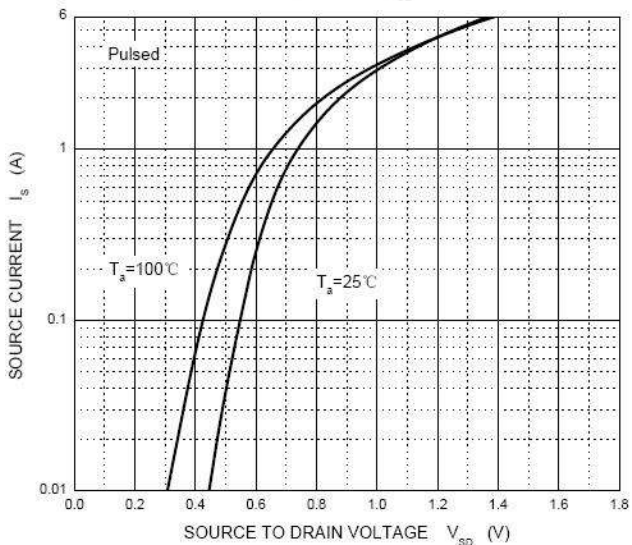
$R_{DS(ON)}$ — I_D



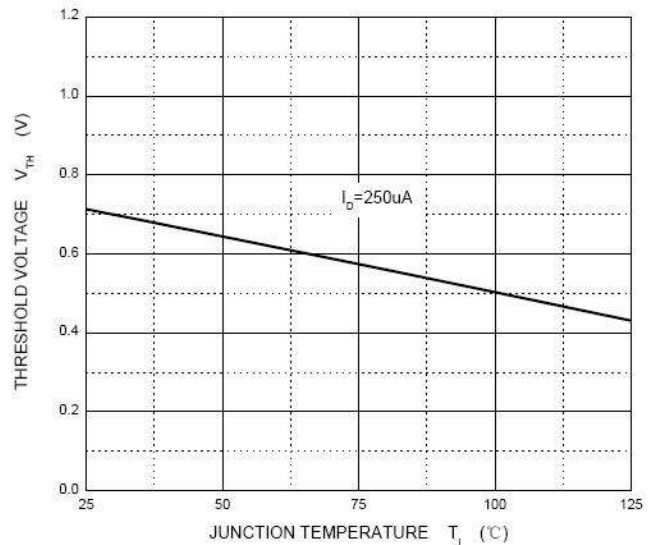
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage



Ordering information

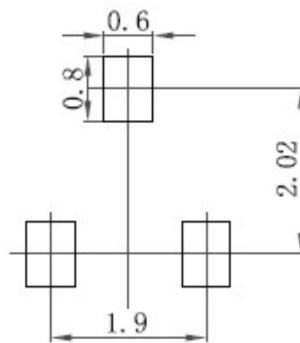
Package	Packing Description	Base Quantity	Packing Quantity
SOT23-3L	Tape/Reel, 7" reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

Package Dimensions

SOT23-3L

Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	1.05	1.25	41	49.2
A1	0.10		3.93	
A2	1.05	1.15	41	45
b	0.30	0.50	12	20
c	0.10	0.20	3.93	7.9
D	2.82	3.02	111	119
E	1.50	1.70	59	67
E1	2.65	2.95	104	116
e	0.95		37.4	
e1	1.80	2.00	71	78
L	0.30	0.066	12	26
Θ	8°			

The recommended mounting pad size



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