

General Description

The MY2300 is the high cell density trenched N-CH MOSFET, which provides excellent $R_{DS(ON)}$ and efficiency for most of the small power switching and load switch applications.

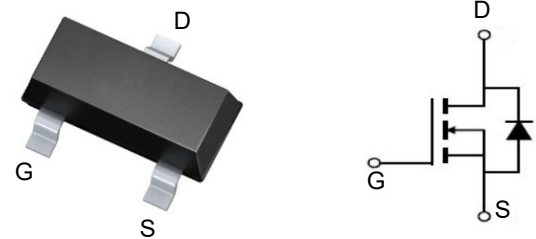


Features

V_{DSS}	20	V
I_D	2.3	A
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	46	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS}=2.5V$)	58	$m\Omega$

Application

- Green Device Available
- Super Low Gate Charge
- Excellent Cdv/dt effect decline



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY2300	SOT-23	MY2300	3000

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current ^a	I_D	$T_C=25^\circ C$	2.3
		$T_C=25^\circ C, t \leq 5s$	2.8
		$T_C=70^\circ C$	1.38
Drain Current – Pulsed ^a	I_{DM}	9.2	A
Power Dissipation ($T_C=25^\circ C$)	P_D	1.56	W
Power Dissipation – Derate above $25^\circ C$		0.012	W/ $^\circ C$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ C$
Thermal Resistance, Junction-to-Ambient1	$R_{\theta JA}$	100	$^\circ C/W$

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

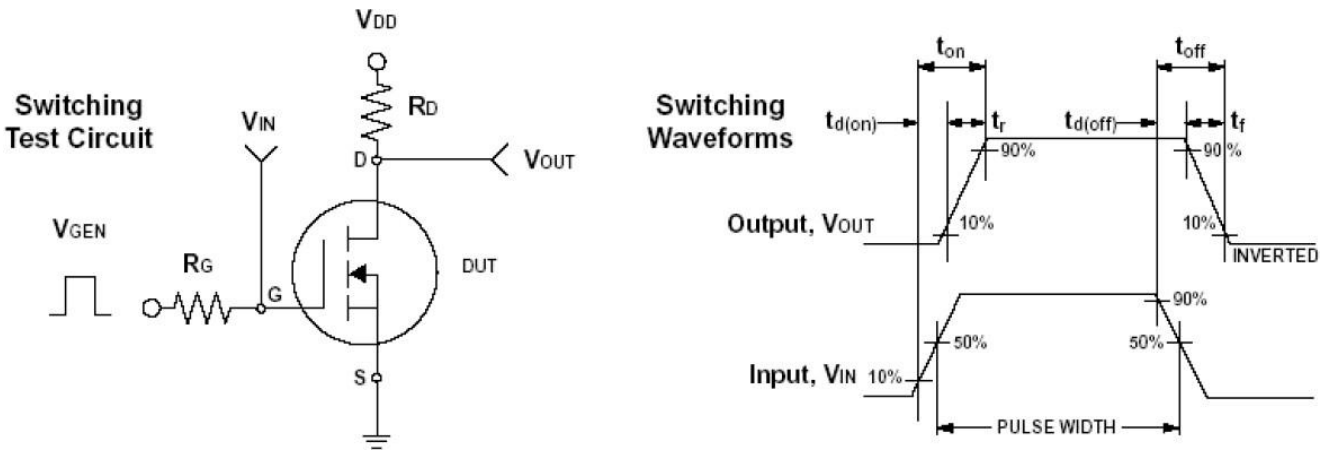
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA		20*	---	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =16V, V _{GS} =0V	---	---	1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	---	---	±100	nA
On Characteristics ^a						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.3	0.6	1.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =2.8A	---	46	65	mΩ
		V _{GS} =2.5V, I _D =2.0A	---	58	80	
		V _{GS} =1.8V, I _D =1.0A	---	80	120	
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =2A	---	4.4	---	S
Drain-Source Diode Characteristics ^a						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	2.3	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A	---	---	1.3	V
Dynamic Characteristics ^b						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, F=1MHz	---	180	360	pF
Output Capacitance	C _{oss}		---	32	64	
Reverse Transfer Capacitance	C _{rss}		---	26	52	
Switching Characteristics ^b						
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =2.3A	---	3.6	7.2	nC
Gate-Source Charge	Q _{gs}		---	0.38	0.76	
Gate-Drain Charge	Q _{gd}		---	0.6	1.2	
Turn-On Delay Time	T _{d(on)}	V _{DD} =10V, V _{GS} =4.5V, R _G =25Ω, I _D =1A	---	1.8	5	ns
Rise Time	T _r		---	5.6	12	
Turn-Off Delay Time	T _{d(off)}		---	11.3	24	
Fall Time	T _f		---	3.2	7	

Notes: a. Repetitive Rating: Pulsed width limited by maximum junction temperature.

b. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.

c. Guaranteed by design, not subject to production testing.

Switching Time Test Circuit and Waveforms



Soldering Methods For Products

1. Storage environment : Temperature=10°C~35°C, Humidity=65%±15%
2. Reflow soldering of surface mount devices

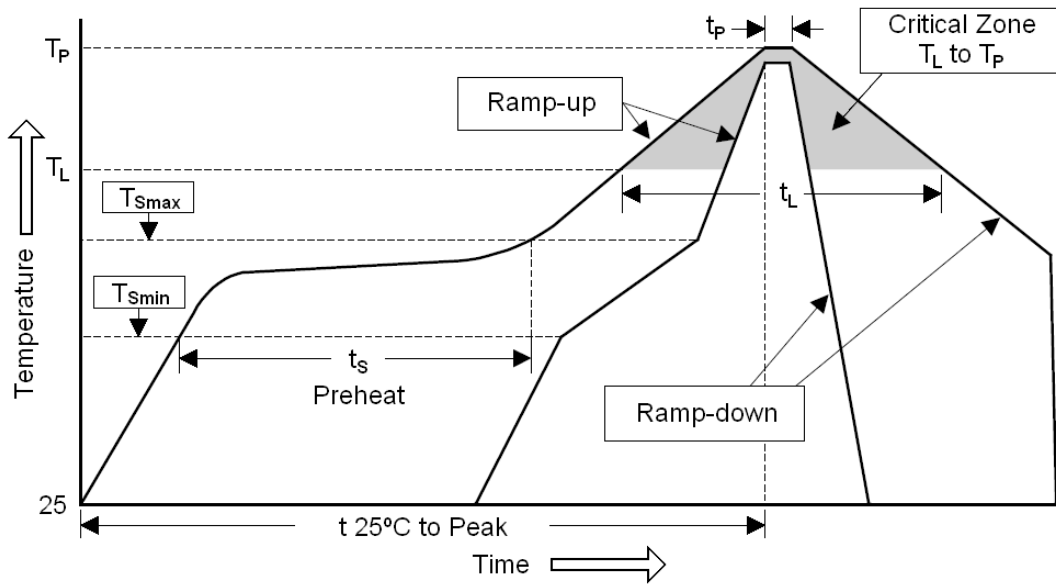


Figure : Temperature Profile

Figure : Temperature Profile

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	< 3°C/sec	< 3°C/sec
Preheat		
- Temperature Min (T_{Smin})	100°C	100°C
- Temperature Max (T_{Smax})	150°C	200°C
- Time (Min to Max) (ts)	60 ~ 120 sec	60 ~ 180 sec
T_{Smax} to T_L		
- Ramp-up rate	< 3°C/sec	< 3°C/sec
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60 ~ 150 sec	60 ~ 150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10 ~ 30 sec	20 ~ 40 sec
Ramp-down rate	< 6°C/sec	< 6°C/sec
Time 25°C to Peak Temperature	< 6 minutes	< 8 minutes

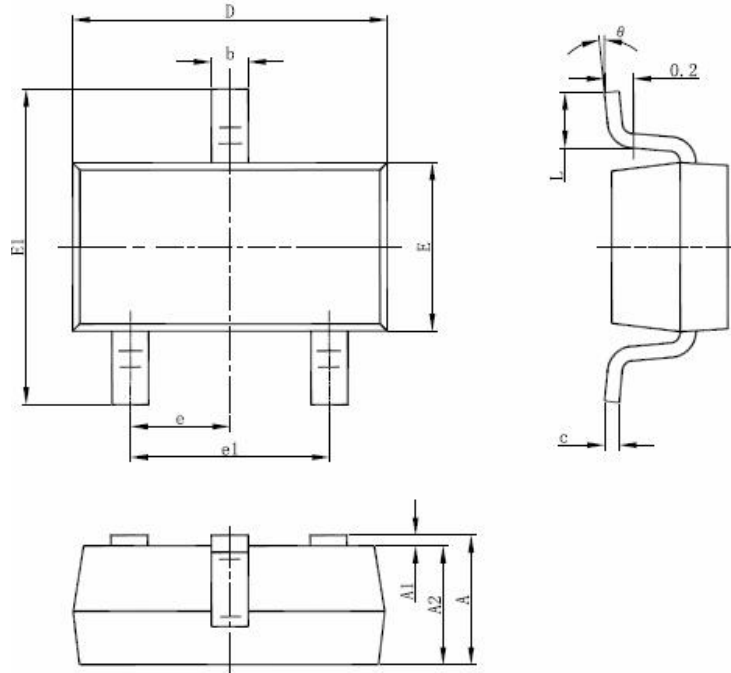
3. Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb devices	245°C ±5°C	5sec ±1sec
Pb-Free devices	260°C +0/-5°C	5sec ±1sec

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- MOS 管电路是静电敏感元器件，且对生产环境要求较严，建议在存放及生产操作时一定要避免静电干扰，经锡炉或回焊炉的温度切勿超过 260 度。

Package Mechanical Data-SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°