

General Description

The MY4406 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It is ESD Protected. This device is suitable for use as a low side switch in SMPS and general purpose applications.

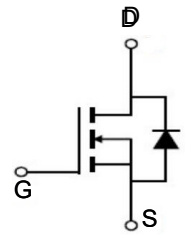
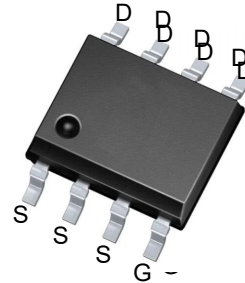


Features

V_{DSS}	30	V
I_D	12	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	< 12.5	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	< 19	$m\Omega$

Application

- Battery protection
- Load switch
- PWM application



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4406	SOP-8	4406	3000

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current ^a	I_D	12	A
		7.0	
Drain Current – Pulsed ^a	I_{DM}	52	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	3.0	W
Power Dissipation ($T_C=75^\circ\text{C}$)		2.0	
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60	$^\circ\text{C/W}$

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	---	---	2	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 300	nA
On Characteristics ^a						

Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

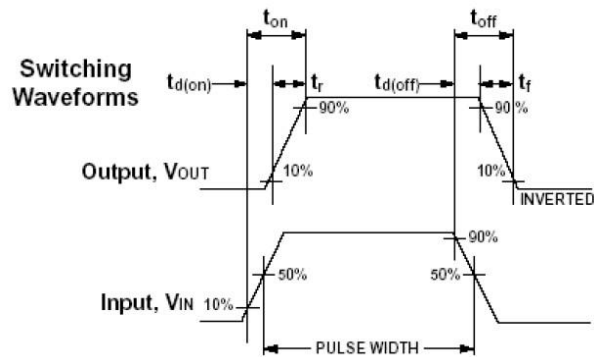
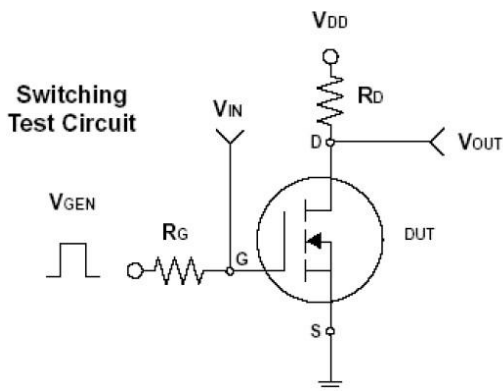
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =12A	---	8.5	12.5	mΩ
		V _{GS} =4.5V, I _D =10A	---	13	19	
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =12A	---	25	---	S
Drain-Source Diode Characteristics ^a						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	13	A
Pulsed Source Current	I _{SM}		---	---	52	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =10A	---	---	1.2	V
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	1	---	Ω
Dynamic Characteristics ^b						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, F=1MHz	---	293	520	pF
Output Capacitance	C _{oss}		---	57	100	
Reverse Transfer Capacitance	C _{rss}		---	40	80	
Switching Characteristics ^b						
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =5V, I _D =13A	---	3.7	7	nC
Gate-Source Charge	Q _{gs}		---	1.48	3	
Gate-Drain Charge	Q _{gd}		---	1.56	3.5	
Turn-On Delay Time	T _{d(on)}	V _{DD} =25V, V _{GS} =10V, R _G =6Ω I _D =1A	---	2.6	5	nS
Rise Time	Tr		---	8.8	16	
Turn-Off Delay Time	T _{d(off)}		---	18.4	35	
Fall Time	T _f		---	5.1	10	

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

b. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

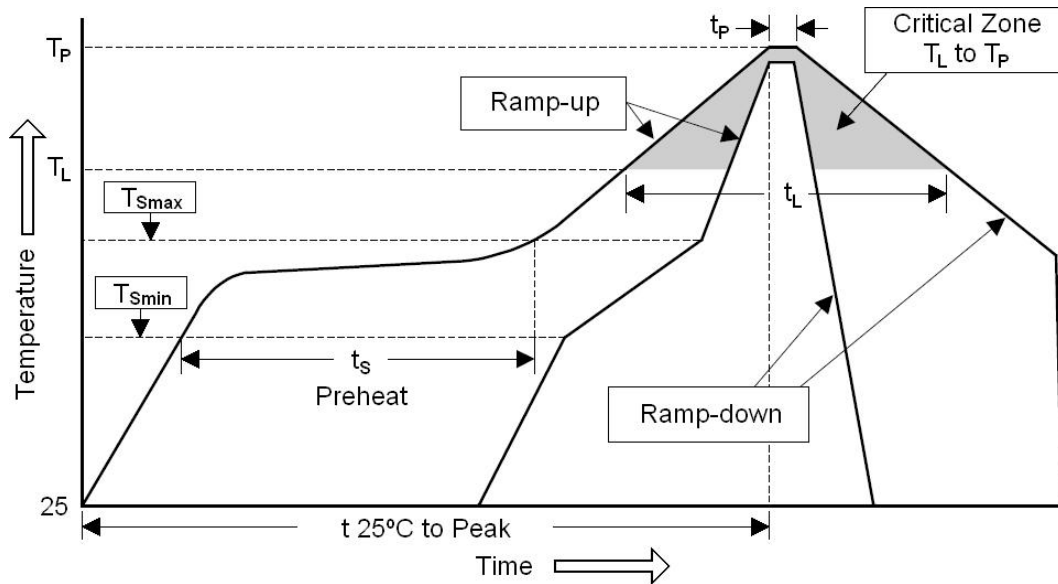


Figure : Temperature Profile

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) (t_s)	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

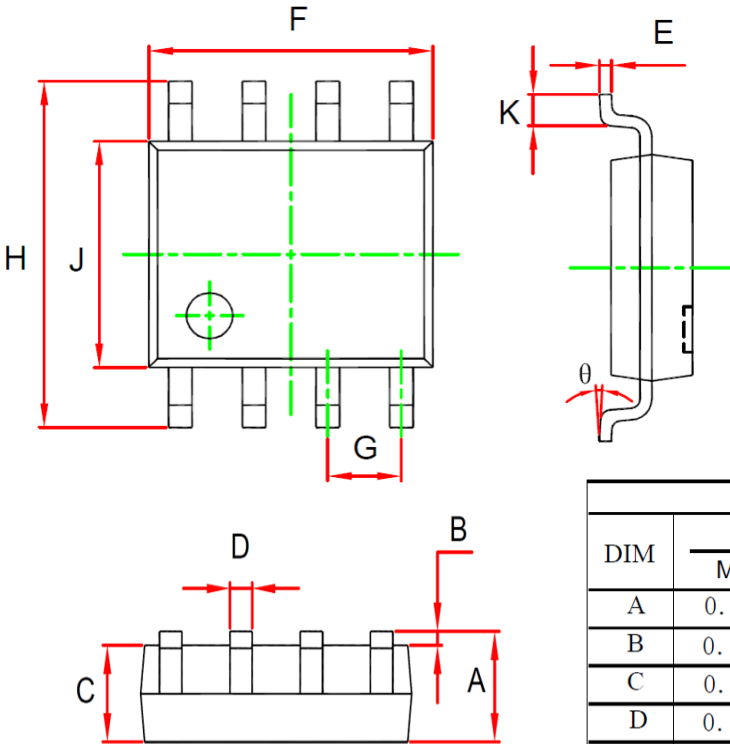
3. Flow (wave) soldering (solder dipping)

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-SOP-8



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.350	1.750	
B	0.004	0.010	0.100	0.250	
C	0.053	0.061	1.350	1.550	
D	0.013	0.020	0.330	0.510	
E	0.007	0.010	0.170	0.250	
F	0.189	0.197	4.800	5.000	
G	0.050 (BSC)		1.270 (BSC)		
H	0.228	0.244	5.800	6.200	
J	0.150	0.157	3.800	4.000	
K	0.016	0.050	0.400	1.270	
θ	0°	8°	0°	8°	