

General Description

The MY4406A is the high cell density trench N-ch MOSFETs, which provide excellent R_{DS(ON)} and gate charge for most of the synchronous buck converter applications.

The MY4406A meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

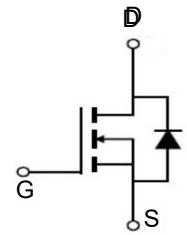
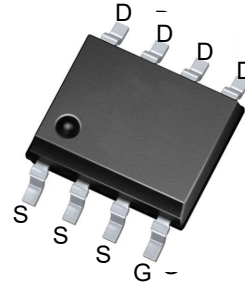


Features

V _{DSS}	30	V
I _D	13	A
R _{DS(ON)} (at V _{GS} =10V)	8.5	mΩ
R _{DS(ON)} (at V _{GS} =4.5V)	10.5	mΩ

Application

- Battery protection
- Load switch
- PWM application



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4406A	SOP-8	4406	3000

Absolute Maximum Ratings (T_A=25°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	T _C =25°C	13
		T _C =70°C	8.0
Drain Current –Pulsed ^a	I _{DM}	52	A
Power Dissipation (T _C =25°C)	P _D	3.0	W
Power Dissipation (T _C =75°C)		2.0	
Storage Temperature Range	T _{STG}	-55 ~ +150	°C
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Thermal Resistance, Junction-to-Ambient	R _{θJA}	60	°C/W

Electrical Characteristics (T_A=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	30	---	---	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	---	---	2	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±300	nA
On Characteristics ^a						

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

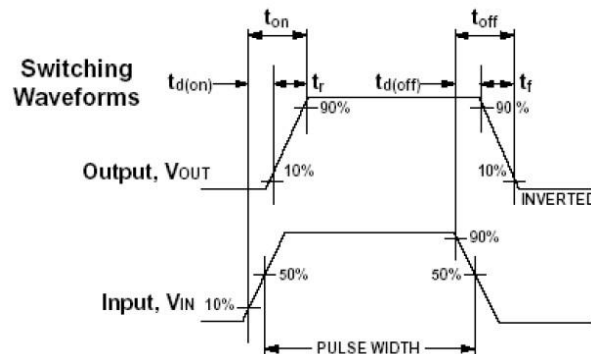
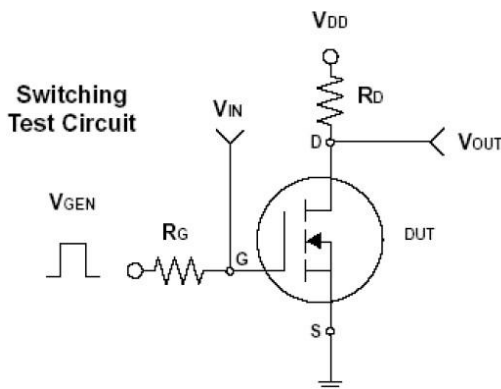
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=12A$	---	8.5	12.5	m Ω
		$V_{GS}=4.5V, I_D=10A$	---	13	19	
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=12A$	---	25	---	S
Drain-Source Diode Characteristics ^a						
Continuous Source Current	I_S	$V_G=V_D=0V$, Force Current	---	---	13	A
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	$T_d(on)$	$V_{DD}=25V, V_{GS}=10V,$ $R_G=6\Omega, I_D=1A$	---	2.6	5	nS
Rise Time	T_r		---	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

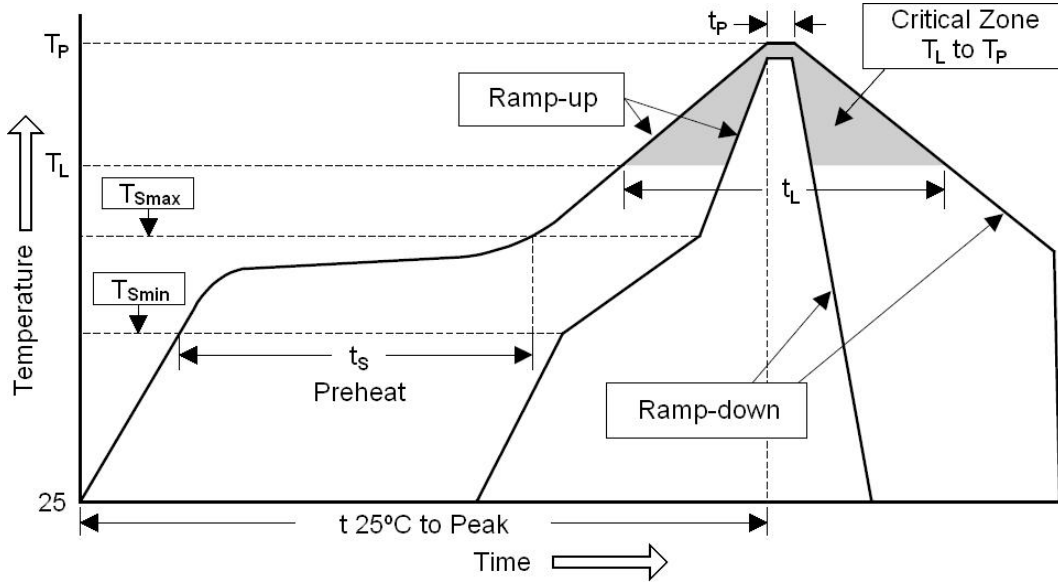


Figure : Temperature Profile

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

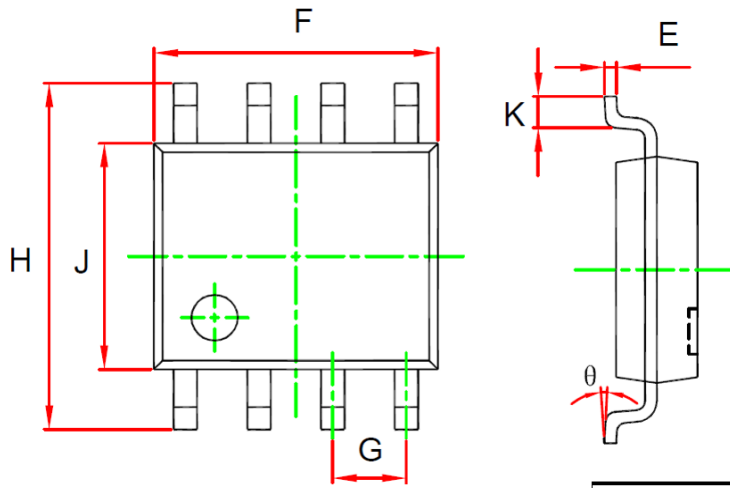
3. Flow (wave) soldering (solder dipping)

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°	