

General Description

The MY4953B uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

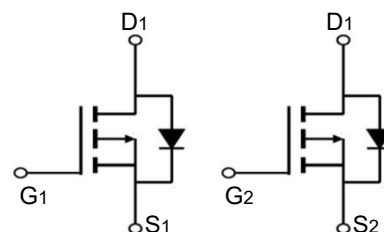
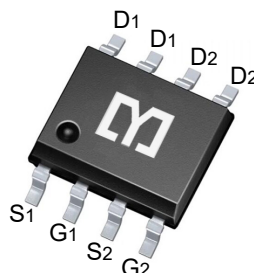


Features

V_{DSS}	-20	V
I_D	-5	A
$R_{DS(ON)}$ (at $V_{GS} = -4.5V$)	50	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS} = -2.5V$)	65	$m\Omega$

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4953B	SOP-8	MY4953B	3000

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ 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	-5	A
Drain Current – Pulsed ^a	I_{DM}	-14	A
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	2.1	W
Power Dissipation ($T_C = 75^\circ\text{C}$)	P_D	1.5	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

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

Parameter		Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V , I _D =-250uA	---	-20	---	V
ZeGateVoltageDrain	T _J =25 °C	I _{DSS}	V _{DS} =-16V , V _{GS} =0V	---	---	-1	uA
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 =-250uA	-0.3	---	-1.1	V
Drain-Source On-State Resistance		R _{DS(on)}	V _{GS} =-4.5V , I _D =-3.5A	---	50	68	mΩ
		R _{DS(on)}	V _{GS} =-2.5V , I _D =-2.0A	---	65	90	
Forward Transconductance		g _{fs}	V _{DS} =-15V, I _D =-3.5A	---		---	S
Drain-Source Diode Characteristics ^a							
Continuous Source Current		I _s	V _G =V _D =0V, Force Current	---	---	-3.9	A
Pulsed Source Current		I _{SM}		---	---	-7.8	A
Diode Forward Voltage		V _{SD}	V _{GS} =0V, I _s =-1.0A, T _J =25°C	---	---	-1.2	V
Dynamic Characteristics ^b							
Input Capacitance		C _{iss}	V _{DS} =-10V, V _{GS} =0V, F=1MHz	---	150	300	pF
Output Capacitance		C _{oss}		---	32	64	
Reverse Transfer Capacitance		C _{rss}		---	23	46	
Switching Characteristics ^b							
Total Gate Charge		Q _g	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-3.5A	---	2.5	5	nC
Gate-Source Charge		Q _{gs}		---	0.36	0.72	
Gate-Drain Charge		Q _{gd}		---	0.5	1.0	
Turn-On Delay Time		T _{d(on)}	V _{DD} =-10V, V _{GS} =-4.5V, R _G =25Ω, I _D =-1A	---	2	4	ns
Rise Time		T _r		---	7.8	15	
Turn-Off Delay Time		T _{d(off)}		---	16.6	32	
Fall Time		T _f		---	4.5	9	

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.

Typical Characteristics

Soldering Methods For Products

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

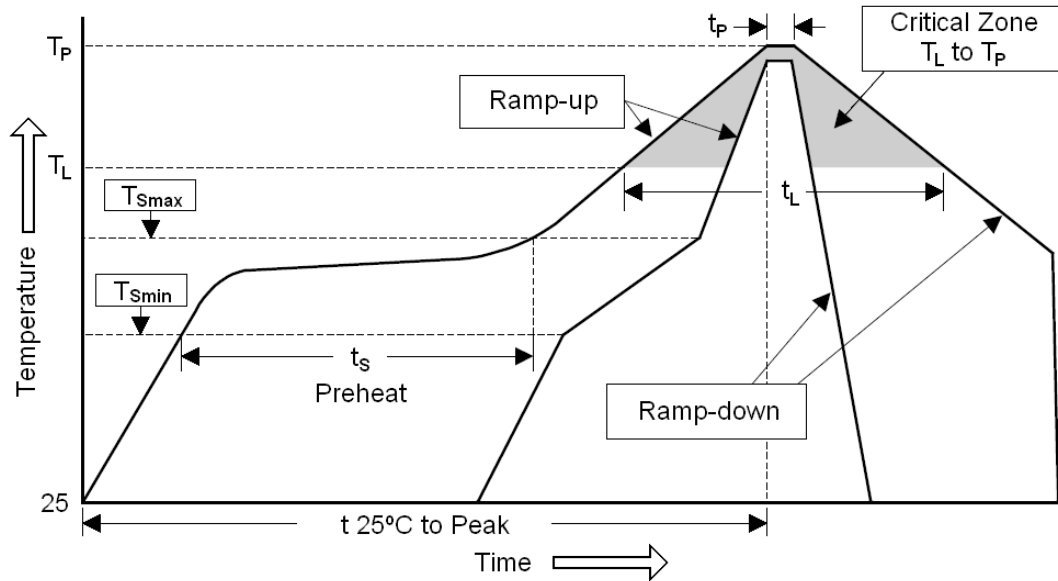


Figure : Temperature Profile

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}) - Temperature Max (T_{Smax}) - Time (Min to Max) (t_s)	100°C 150°C 60 ~ 120 sec	100°C 200°C 60 ~ 180 sec
T_{Smax} to T_L - Ramp-up rate	< 3°C/sec	< 3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	183°C 60 ~ 150 sec	217°C 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

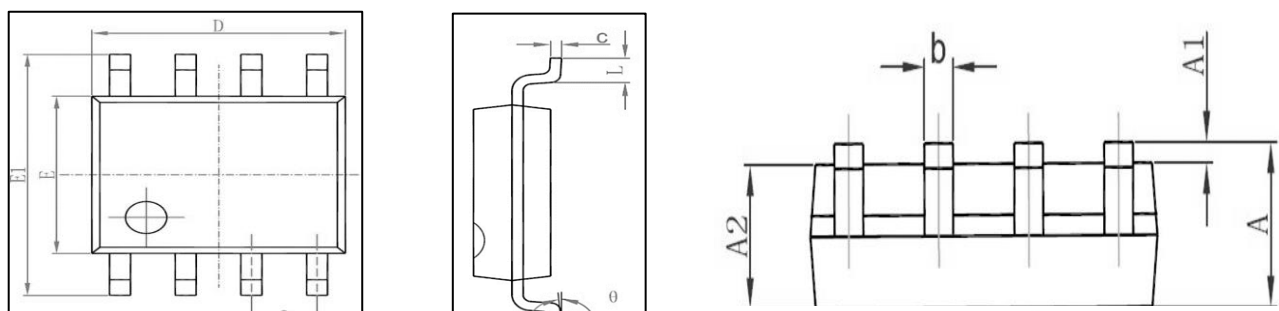
3. Flow (wave) soldering (solder dipping)

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

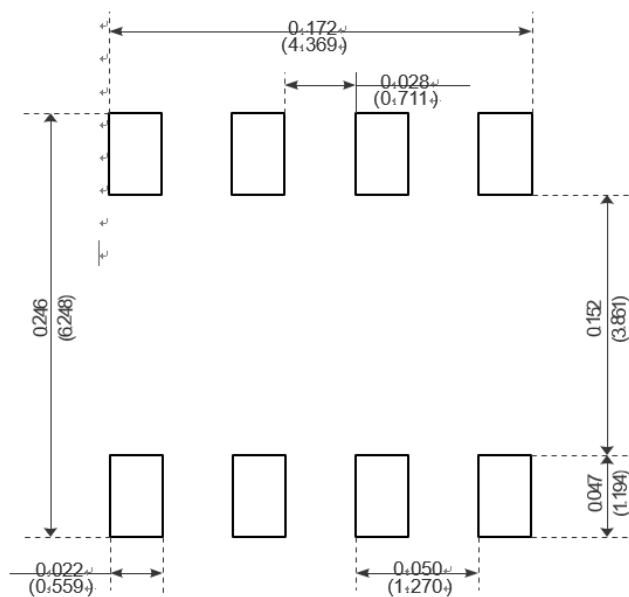
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- MOS 管电路是静电敏感元器件，且对生产环境要求较严，建议在存放及生产操作时一定要避免静电干扰，经锡炉或回焊炉的温度切勿超过 260 度。

Package Mechanical Data-SOP-8



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads