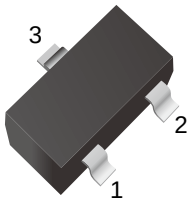
N-Channel 1.8-V(G-S) MOSFET

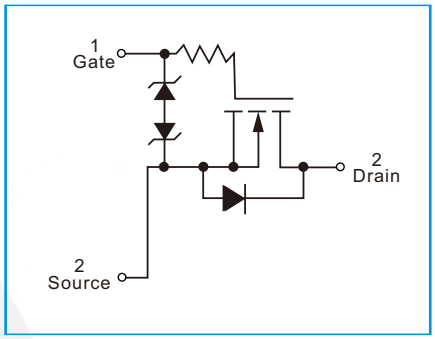


1. Gate
2. Source
3. Drain

Features

- TrenchFET®Power MOSFET: 1.8-V Rated
- Gate-Source ESD Protected: 2000V
- High-side Switching
- Low On-Resistance: 0.7Ω
- Low Threshold: 0.8V (Typ.)
- Fast Switching Speed: 10ns
- S-Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- RoHS Compliant
- Green EMC
- Matte Tin(Sn) Lead Finish
- Weight: approx. 0.002g
- Marking: A

Functional Diagram



Applications

- Drivers: Relays, Solenoids, Lamps, Hammers, displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, agers

Abosolute Maximum Ratings

(T_A = 25°C unless otherwise noted)

Symbol	Parameter	5 secs	Steady State	Units
V_{DS}	Drain-Source Voltage	20		V
V_{GS}	Gate-Source Voltage	±6V		V
I_D	Continuous Drain Current [e] T_A=25℃ T_A=85℃	600 400	500 350	mA
I_{DM}	Pulsed Drain Current [d]	1000		mA
I_S	Continuous Source Current [e]	275	250	mA
P_D	Power Dissipation [e] T_A=25℃ T_A=85℃	175 90	150 80	mW
T_{STG}	Storage Temperature Range	-55 to +150		°C
T_J	Operating Junction Temperature	+150		°C
ESD	Gate-source ESD Rating (HBM, Method 3015)	2000		V

These ratings are limiting values above which the serviceability of the device may be impaired.
Notes:
d. Pulse width limited by maximum junction temperature.
e. Surface mounted on FR4 board.

Electrical Characteristicss

(T_A = 25°C unless otherwise noted)

Static

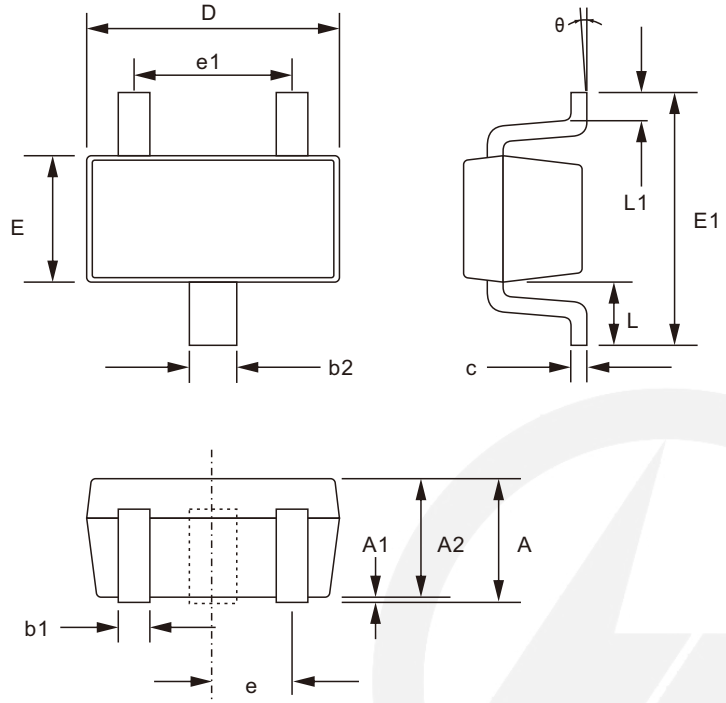
Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
$V_{th(GS)}$	Gate-Threshold Voltage	V_{DS}= V_{GS}, I_D=250uA	0.45		0.9	Volts
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±4.5V		±0.5	±1.0	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V		0.3	100	nA
$I_{D(ON)}$	On-state Drain Current [a]	V_{DS}=5V, V_{GS}=4.5V	700			mA
$R_{DS(on)}$	Drain-Source On-Resistance [a]	V_{GS}=4.5V, I_D=600mA		0.41	0.70	Ω
		V_{GS}=2.5V, I_D=500mA		0.53	0.85	
		V_{GS}=1.8V, I_D=350mA		0.70	1.25	
g_{fs}	Forward Trans Conductance [a]	V_{DS}=10V, I_D=400mA		1		s
V_{SD}	Diode Forward Voltage [a]	I_S=150mA, V_{GS}=0V		0.8	1.2	V

Dynamic [b]

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D=250mA	--	750	--	pC
Q_{gs}	Gate-Source Charge		--	75	--	
Q_{gd}	Gate-Drain Charge		--	225	--	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V, R_L=47Ω, I_D=200mA, V_{GEN}=4.5V R_G=10Ω	--	5	--	ns
t_r	Rise Time		--	5	--	
$t_{d(off)}$	Turn-Off Delay Time		--	25	--	
t_f	Fall Time		--	11	--	

Notes:
a. Pulse test: pulse width≤300us, duty cycle ≤2%.
b. Guaranteed by design, not subject to production testing.

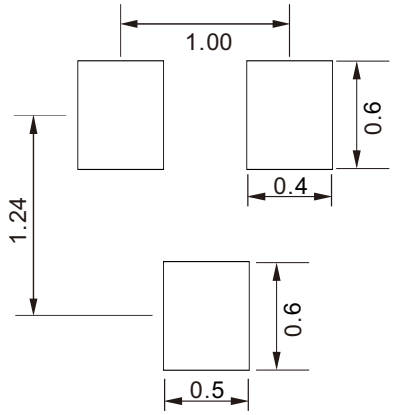
SOT-523 Package Outline



Unit : mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.70	0.90
A1	0.00	0.10
A2	0.70	0.80
b1	0.15	0.25
b2	0.25	0.35
c	0.10	0.20
D	1.50	1.70
E	0.70	0.90
E1	1.45	1.75
e	0.50 TYP.	
e1	0.90	1.10
L	0.40 TYP.	
L1	0.10	0.30
θ	0°	8°

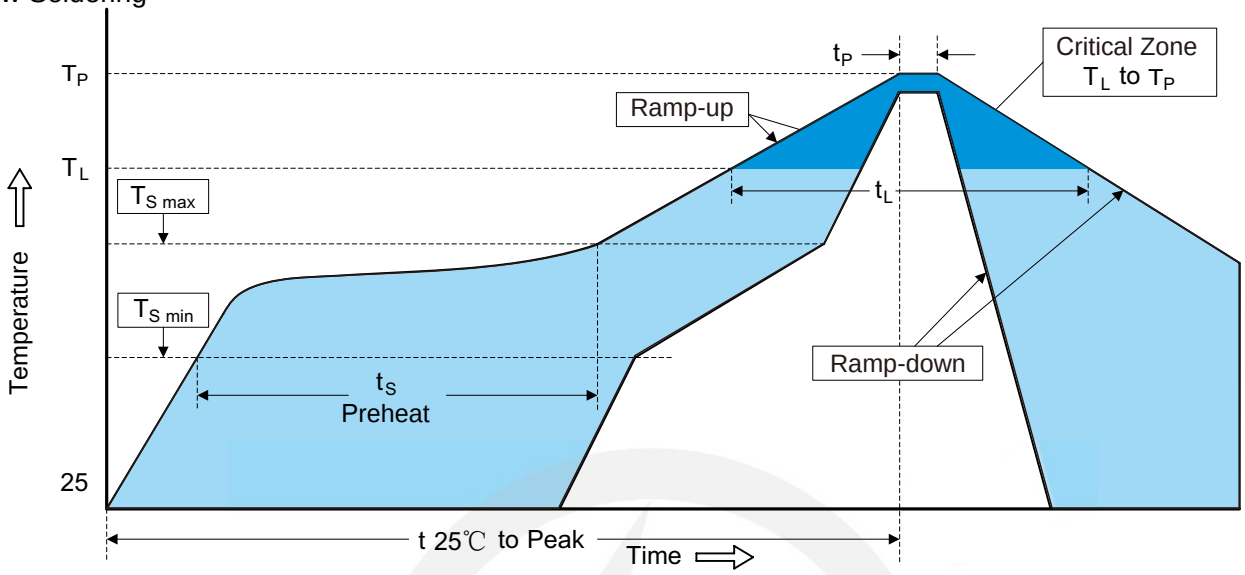
Recommended Solder Pad Footprint



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

Recommended Soldering Conditions

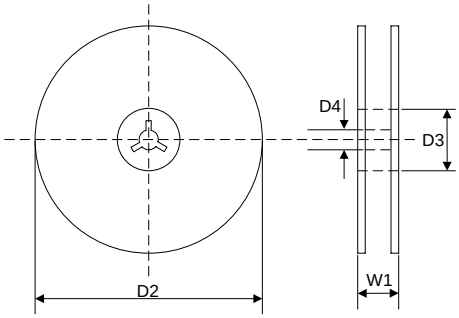
Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

7” Reel



D2	Φ178.0±2.0
D3	Φ50.0Min.
D4	Φ13.0±0.5
W1	16.0±2.0
Quantity: 3000PCS	