JTD SEMI

P-Channel Enhancement Mode Power MOSFET

Description

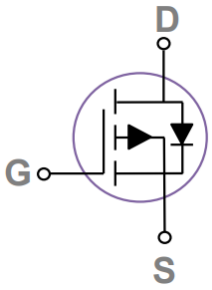
The 2307 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It can be used in a wide variety of applications.

General Features

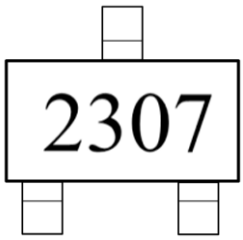
- V_{DS} =-16V， I_D =-12A
- $R_{DS(ON)}$: 17.5mΩ （Typ.）@V_{GS}=-4.5V
- $R_{DS(ON)}$: 22.8mΩ （Typ.）@V_{GS}=-2.5V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

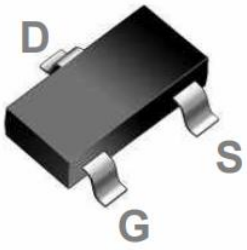
- PWM applications
- Load switch
- Power management



Schematic diagram



Marking and Pin Assignment



SOT23-3L Top view

Absolute Maximum Ratings（T_A=25℃ unless otherwise noted）

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-16	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current-Continuous	T_A=25℃	I_D	-12	A
	T_A=100℃		-7.5	A
Pulsed Drain Current(Note 1)		I_{DM}	-22	A
Maximum Power Dissipation		P_D	1.2	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃
Package Lead Soldering Temperature(10s)		T_{SOLDER}	260	℃

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient (Note 2)	R_{th} J_A	100	^{0}C/W

Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	-16	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-16V, V_{GS}=0V	-	-	-1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
On Characteristics(Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	-0.4	-0.65	-1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=-5A	-	17.5	23	mΩ
		V_{GS}=2.5V, I_D=-3A	-	22.8	29	
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-3A	-	5	-	S
Dynamic Characteristics(Note 4)						
Input Capacitance	C_{ISS}	V_{DS}=-8V V_{GS}=0V f=1.0MHz	-	925	-	pF
Output Capacitance	C_{OSS}		-	166	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	118	-	pF
Switching Characteristics						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} = -8V R_L = 10Ω I_D = -2A, V_{GEN} = -4.5V R_G = 3Ω	-	12	-	ns
Rise Time	tr		-	36	-	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	35	-	ns
Fall Time	tf		-	10	-	ns
Total Gate Charge	Q_g	V_{DS}=-8V,I_D=-2A, V_{GS}=-4.5V	-	11	-	nC
Gate-Source Charge	Q_{gs}		-	2	-	nC
Gate-Drain Charge	Qgd		-	3.1	-	nC
Drain-Source Diode Characteristics(Note 3)						
Diode forward voltage	V_{SD}	V_{GS}=0V,I_S=-1.25A		-0.8	-1.2	V

Notes

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

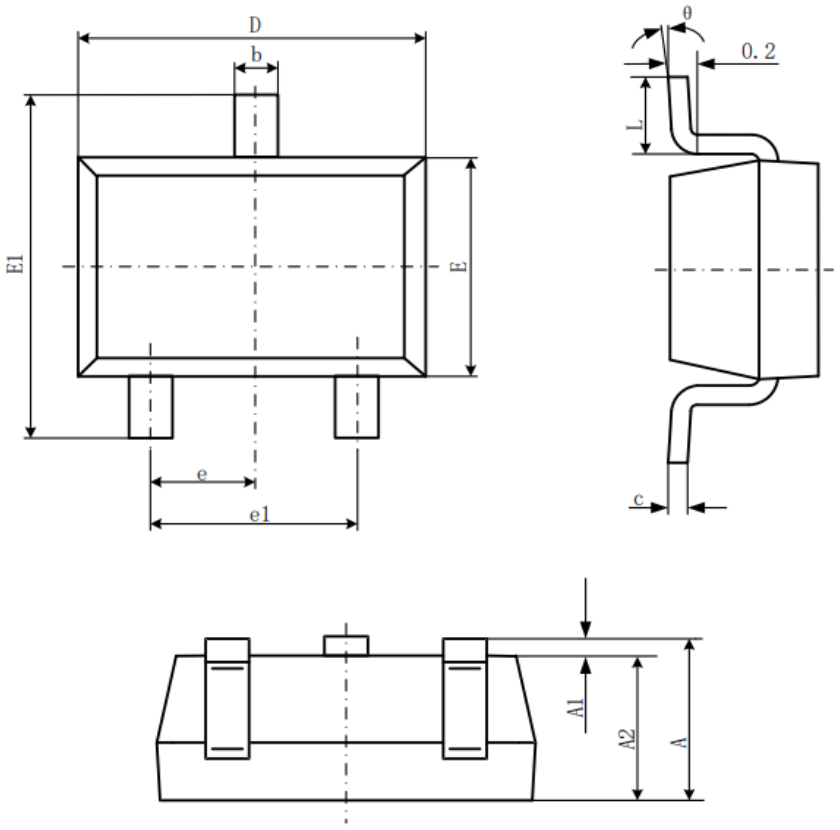
2. Surface Mounted on FR4 Board, t≦10sec.

3. Pulse Test: PulseWidth≦300uS, Duty Cycle≦2%

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

Package Information

SOT23-3L



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°