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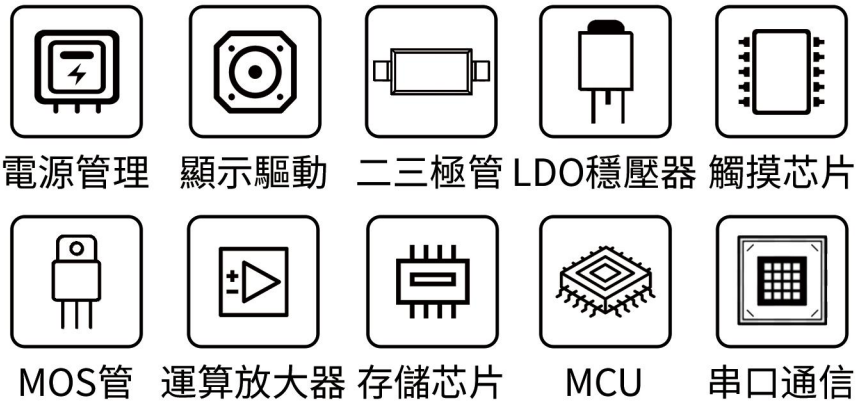


SI2302-TD

產品規格說明書

TDSEMIC

SI2302-TD

20V N-Channel Enhancement Mode Field Effect Transistor

Description

- Trench Power LV MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching

Application

- Battery protection
- Load switch
- Power management

General Features

- V_{DS} 20V
- I_D 2.3A
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜75 mohm
- $R_{DS(ON)}$(at V_{GS}=2.5V) ＜120 mohm

RoHS Compliant

SOT-23 Pin Configuration

Package Marking and Ordering Information

Product ID	Package	Marking	QTY(PCS)	Packing methed
SI2302-TD	SOT-23	.A2SHB	3000	Reel

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	20	V
Gate-source Voltage	V_{GS}	±10	V
Drain Current-Continuous	I_D	2.3	A
Pulsed Drain Current [A]	I_{DM}	10	A
Total Power Dissipation @ T_A=25℃	P_D	0.7	W
Thermal Resistance Junction-to-Ambient @ Steady State [B]	$R_{\theta JA}$	178	℃/W
Junction and Storage Temperature Range	T_J ,T_{STG}	-55～+150	℃

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V,T_C=25℃			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±10V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	0.45	0.7	0.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 4.5V, I_D=2.5A		55	75	mΩ
		V_{GS}= 2.5V, I_D=2.0A		90	120	
Diode Forward Voltage	V_{SD}	I_S=2.5A,V_{GS}=0V			1.2	V
Maximum Body-Diode Continuous Current	I_S				2.8	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,f=1MHZ		140		pF
Output Capacitance	C_{oss}			39		
Reverse Transfer Capacitance	C_{rss}			22		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=4.5V,V_{DS}=10V,I_D=2.5A		2.9		nC
Gate Source Charge	Q_{gs}			0.4		
Gate Drain Charge	Q_{gd}			0.6		
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=4.5V,V_{DD}=10V, R_L=1.5Ω, R_{GEN}=3Ω		13		ns
Turn-on Rise Time	t_r			54		
Turn-off Delay Time	$t_{D(off)}$			18		
Turn-off Fall Time	t_f			11		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Characteristics

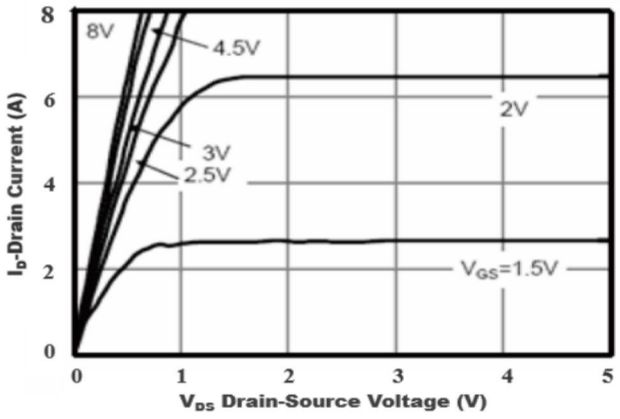


Figure1. Output Characteristics

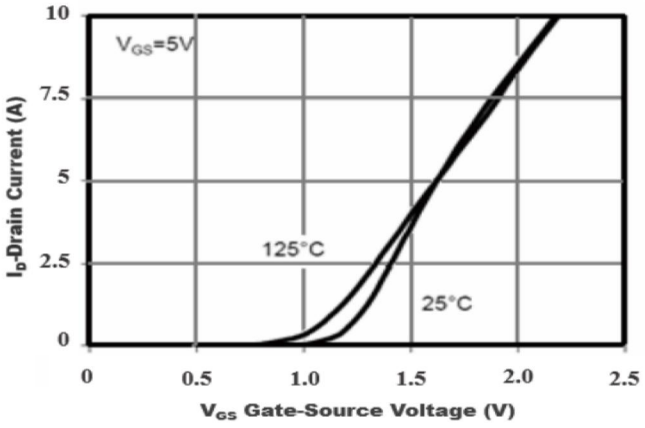


Figure2. Transfer Characteristics

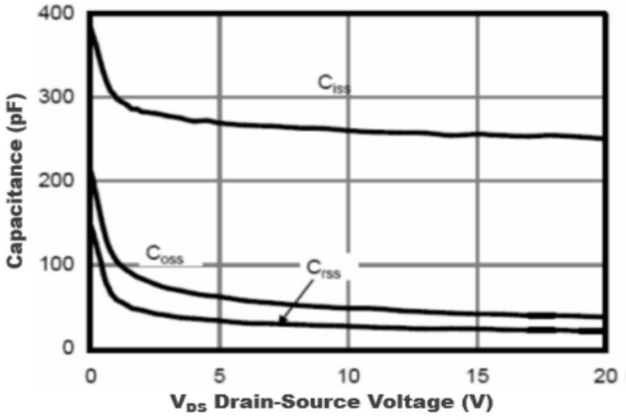


Figure3. Capacitance Characteristics

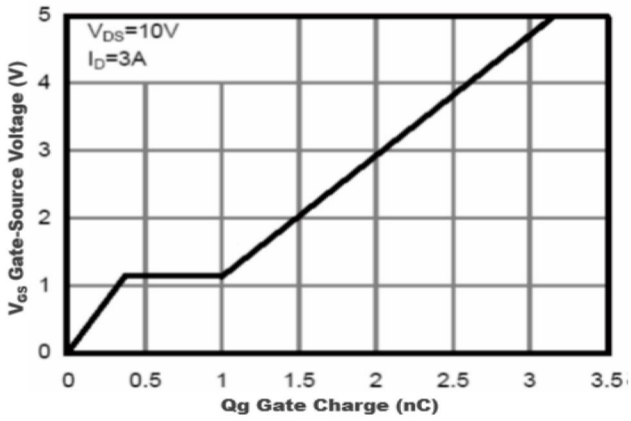


Figure4. Gate Charge

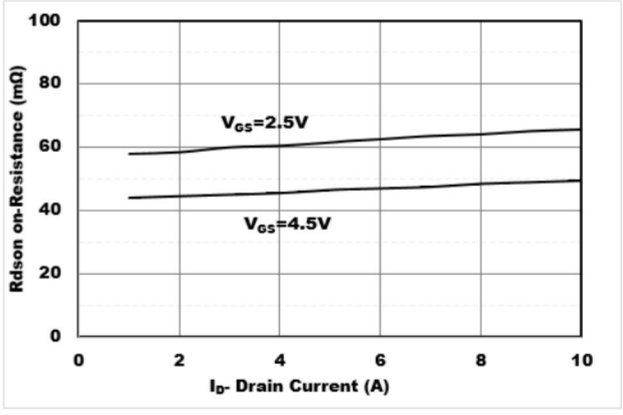


Figure5. Drain-Source on Resistance

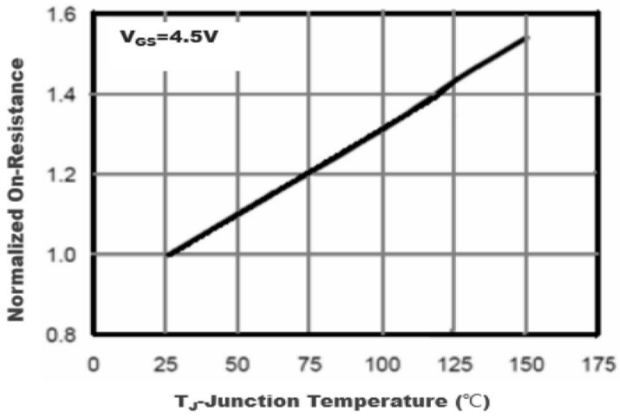


Figure6. Drain-Source on Resistance

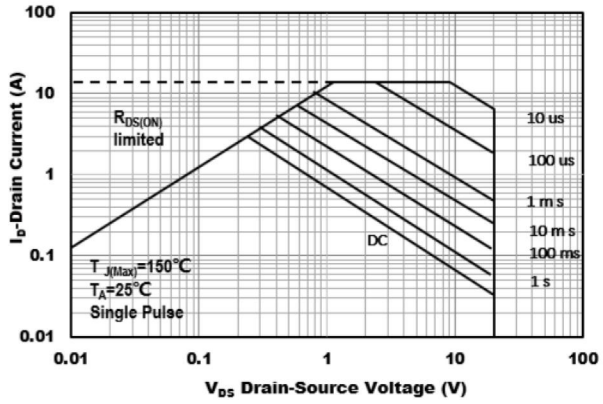


Figure7. Safe Operation Area

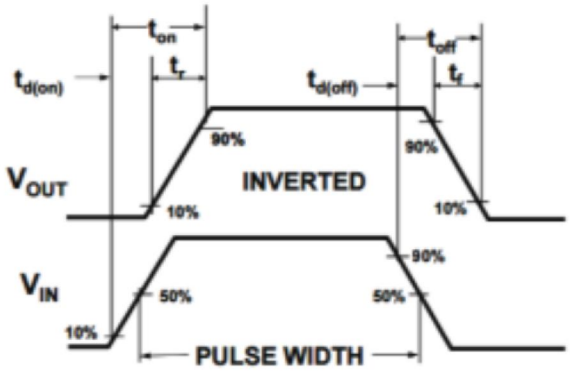
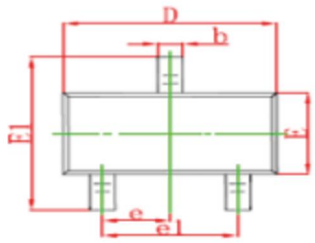
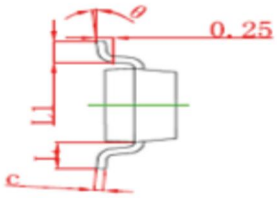
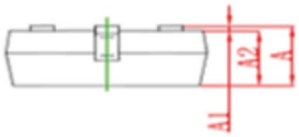


Figure8. Switching wave

■SOT-23 Package information







Symbol	Dimentions in Millimeter		Dimentions in Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.220REF	
L1	0.300	0.500	0.012	0.020
θ	0 °	8 °	0 °	8 °

■SOT-23 Suggested Pad Layout