

Description

The SI2319 is the high cell density trenched P-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The SI2319 meet the RoHS and Green Product requirement with full function reliability approved.

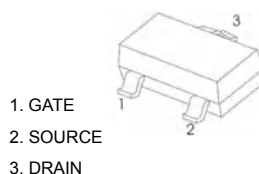
V_{DS} -40 V
 I_D -4 A
 $R_{DS(ON)}$ 63m Ω

2319

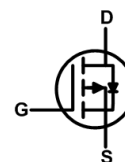
Features

Green Device Available
Super Low Gate Charge
Excellent Cdv/dt effect decline
Advanced high cell density Trench technology

SOT-23



Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	-4	A
Pulsed Drain Current ¹		I_{DM}	-20	A
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	1.2	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	104	$^\circ\text{C/W}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V	-	-	-1	μA
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.2	-1.5	-2.5	V
Drain-Source on-Resistance ³	R _{DS(on)}	V _{GS} = -10V, I _D = -5A	-	63	85	mΩ
		V _{GS} = -4.5V, I _D = -4A	-	80	125	
Dynamic Characteristics ⁴						
Input Capacitance	C _{iss}	V _{GS} = 0V , V _{DS} = -20V, f=1.0MHz	-	553	-	pF
Output Capacitance	C _{oss}		-	50	-	
Reverse Transfer Capacitance	C _{rss}		-	42	-	
Switching Characteristics ⁴						
Total Gate Charge	Q _g	V _{GS} = -10V , V _{DS} = -20V, I _D = -5A	-	11.8	-	nC
Gate-Source Charge	Q _{gs}		-	2.2	-	
Gate-Drain Charge	Q _{gd}		-	3	-	
Turn-on Delay Time	t _{d(on)}	V _{DS} = -20V, V _{GS} = -10V R _L = 2.5Ω, R _G = 3Ω	-	7	-	ns
Rise Time	t _r		-	6.5	-	
Turn-off Delay Time	t _{d(off)}		-	24	-	
Fall Time	t _f		-	7.8	-	
Drain-Source Body Diode Characteristics						
Body Diode voltage ³	V _{DS}	I _S = -5A, V _{GS} =0V	-	-	-1.2	V
Continuous Source Current	I _S		-	-	-4	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$.
2. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. This value is guaranteed by design hence it is not included in the production test.

RATING AND CHARACTERISTIC CURVES

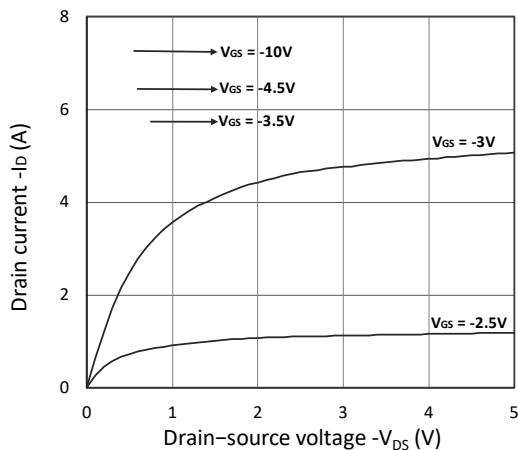


Figure 1. Output Characteristics

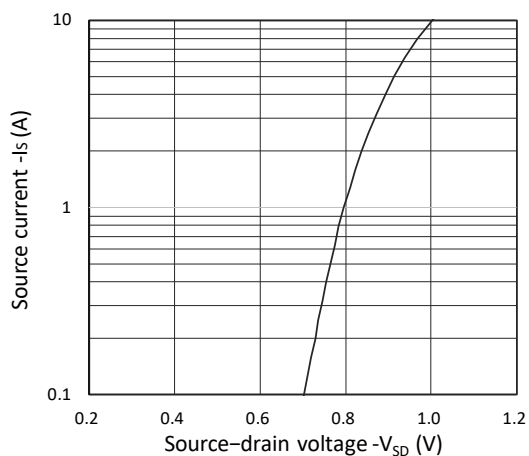


Figure 3. Forward Characteristics of Reverse

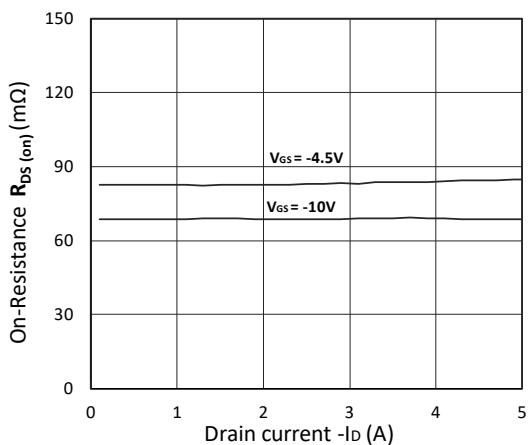


Figure 5. $R_{DS(on)}$ vs. I_D

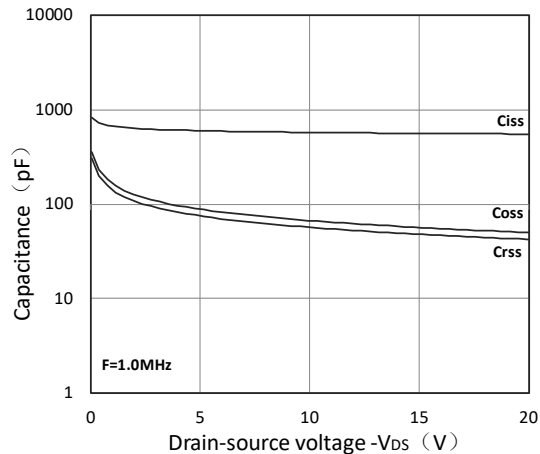


Figure 7. Capacitance Characteristics

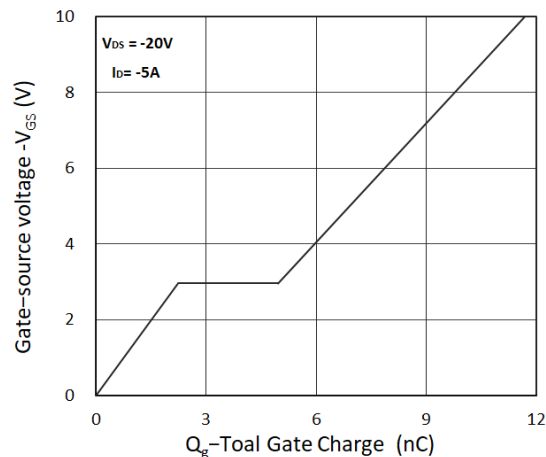


Figure 3. Gate Charge Characteristics

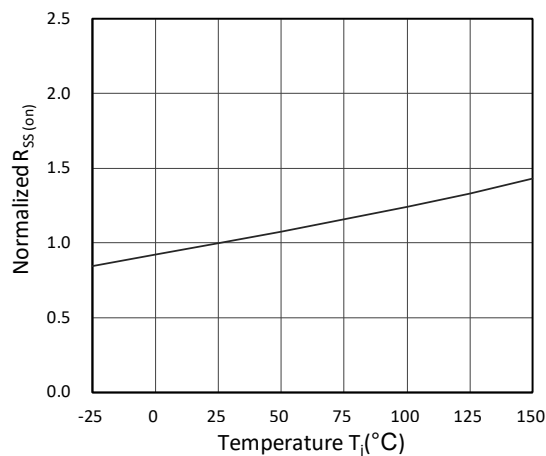
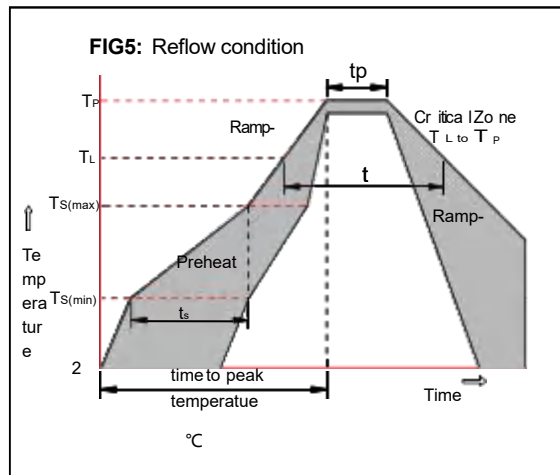


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

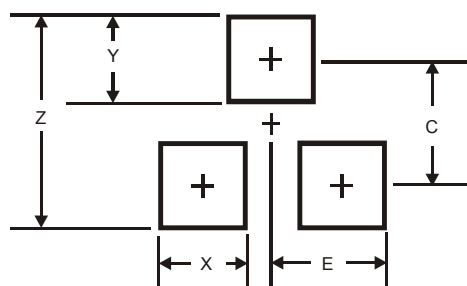
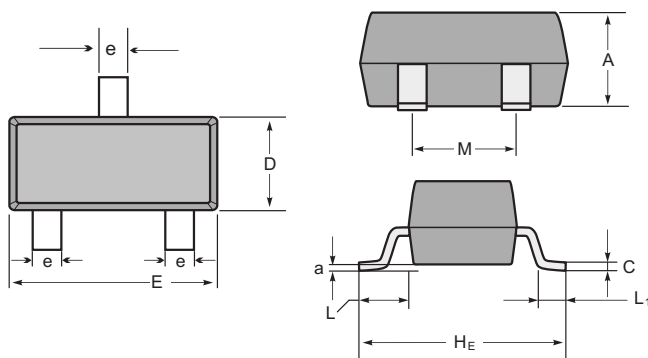
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

SOT23

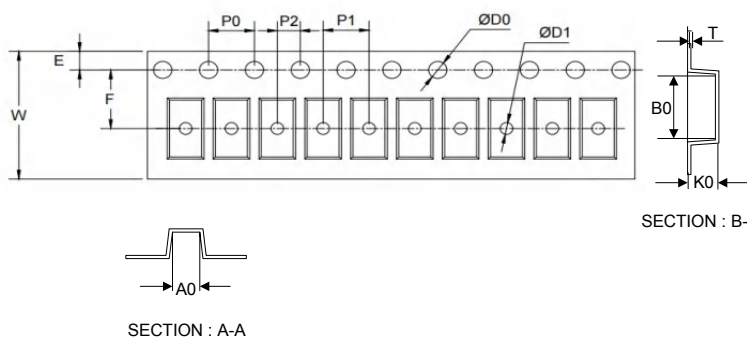
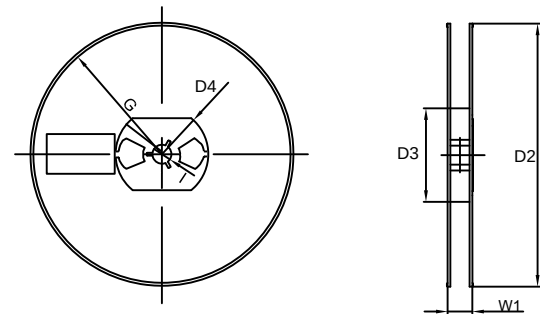


SOT-23 mechanical data

UNIT	A	C	D	E	H _E	e	M	L	L ₁	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7		0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)
	min	35	3	47	110	87	12	67		6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape & reel specification

Tape		Symbol	Dimension (mm)
 SECTION : A-A SECTION : B-B		P0	4.00±0.10
		P1	4.00±0.10
		P2	2.00±0.10
		D0	1.55±0.10
		D1	1.05±0.10
		E	1.55±0.10
		F	3.60±0.10
		W	8.00±0.10
		A0	3.80±0.20
		B0	3.25±0.20
		K0	1.45±0.10
		T	0.25±0.05
		D2	178.0±3.0
		D3	55Min.
		D4	R24.0±3.0
		G	R82.0±3.0
7" Reel		I	13.0±2.0
		W1	11.0±3.0
		Quantity: 3000PCS	