

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

Product Summary

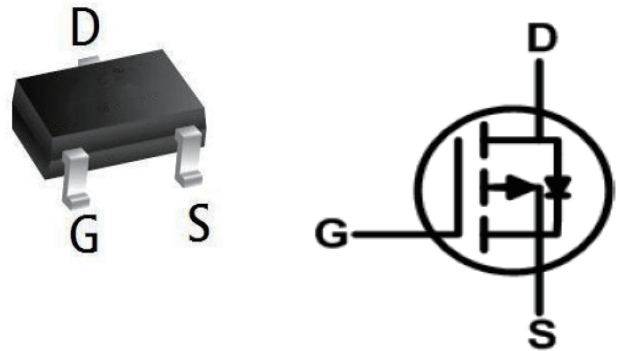
RoHS

BVDSS	RDSON	ID
-40V	63mΩ	-4A

Description

The 2319 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 2319 meets the RoHS and Green Product with full function reliability approved.

SOT23 Pin Configurations



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V _{DS}	Drain-Source Voltage	-40	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	-4	A
I _{DM}	Pulsed Drain Current ₁	-20	A
P _D	Power Dissipation	1.2	W
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Unit
R _{θJA}	Thermal Resistance from Junction to Ambient ₂	104	°C/W

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

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Units
Static Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -40V, V_{GS} = 0V$	-	-	-1	μA
I_{GSS}	Gate-Body Leakage	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
$V_{GS(th)}$	Gate-Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.2	-1.5	-2.5	V
$R_{DS(on)}$	Drain-Source on-Resistances ³	$V_{GS} = -10V, I_D = -5A$	-	63	85	m Ω
		$V_{GS} = -4.5V, I_D = -4A$	-	80	125	
Dynamic Characteristics⁴						
C_{iss}	Input Capacitance	$V_{GS} = 0V, V_{DS} = -20V,$ $f = 1.0MHz$	-	553	-	pF
C_{oss}	Output Capacitance		-	50	-	
C_{rss}	Reverse Transfer Capacitance		-	42	-	
Switching Characteristics⁴						
Q_g	Total Gate Charge	$V_{GS} = -10V, V_{DS} = -20V,$ $I_D = -5A$	-	11.8	-	nC
Q_{gs}	Gate-Source Charge		-	2.2	-	
Q_{gd}	Gate-Drain Charge		-	3	-	
$t_{d(on)}$	Turn-on Delay Time	$V_{DS} = -20V, V_{GS} = -10V$ $R_L = 2.5\Omega, R_G = 3\Omega$	-	7	-	ns
t_r	Rise Time		-	6.5	-	
$t_{d(off)}$	Turn-off Delay Time		-	24	-	
t_f	Fall Time		-	7.8	-	
Drain-Source Body Diode Characteristics						
V_{DS}	Body Diode voltage ³	$I_S = -5A, V_{GS} = 0V$	-	-	-1.2	V
I_S	Continuous Source Current		-	-	-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 20Z 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.

Typical Electrical and Thermal Characteristics (Curves)

Figure 1: Output Characteristics

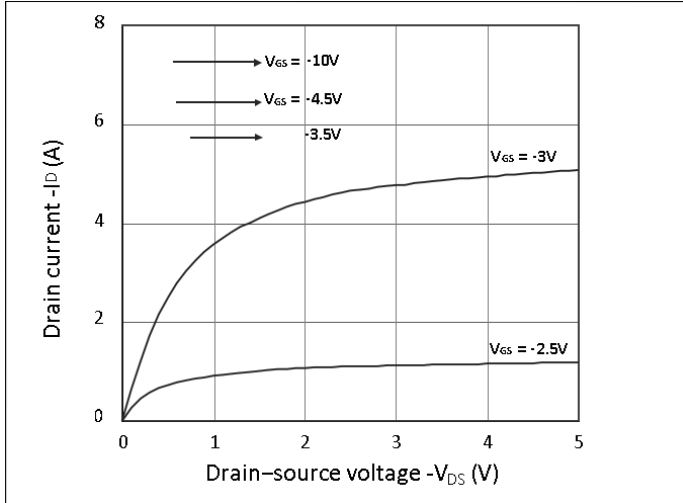


Figure 2: Typical Transfer Characteristics

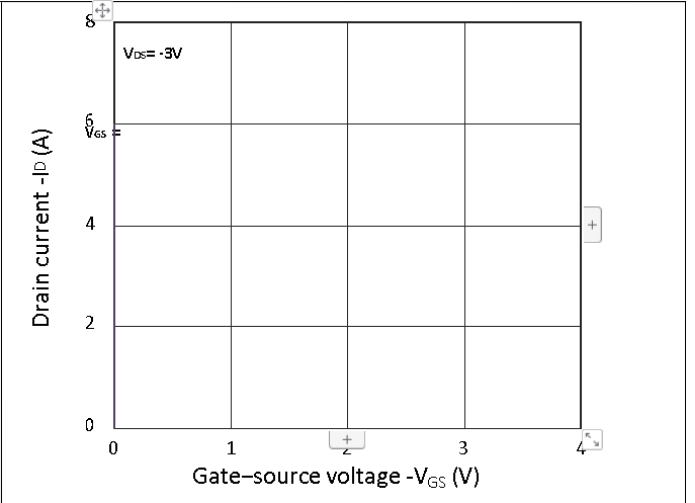


Figure 3: Forward Characteristics of Reverse

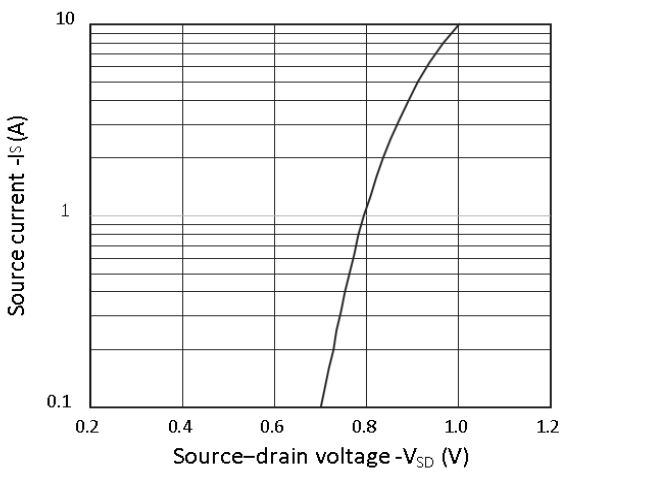


Figure 4: RDS(ON) vs. VGS

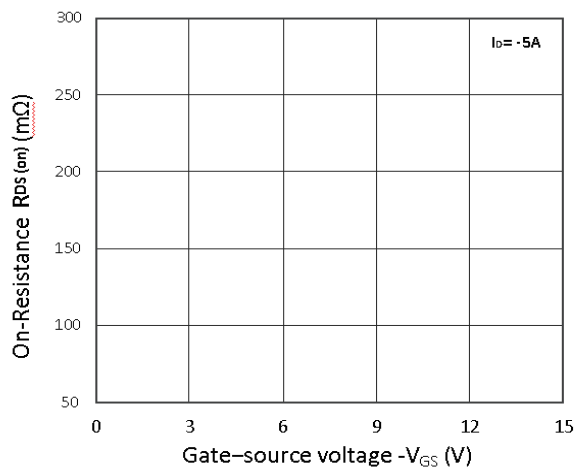


Figure 5: RDS(ON) vs. ID

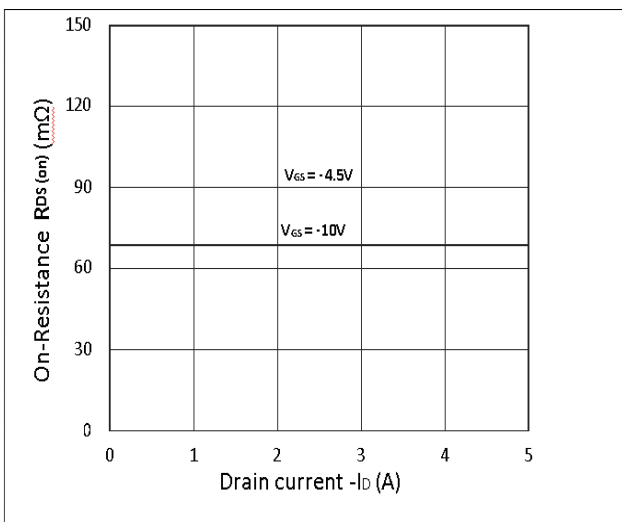
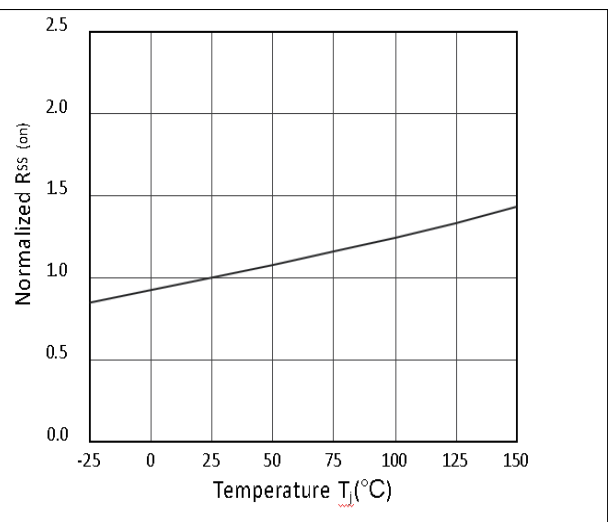


Figure 6: Normalized RDS(on) vs. Temperature



Typical Performance Characteristics

Figure 7: Capacitance Characteristics

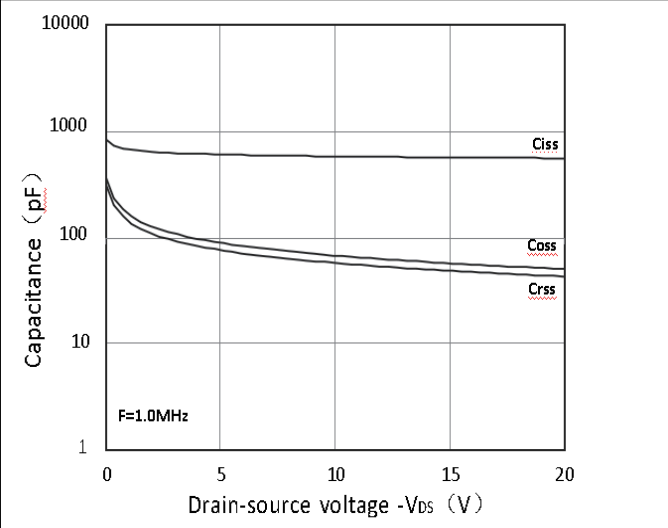
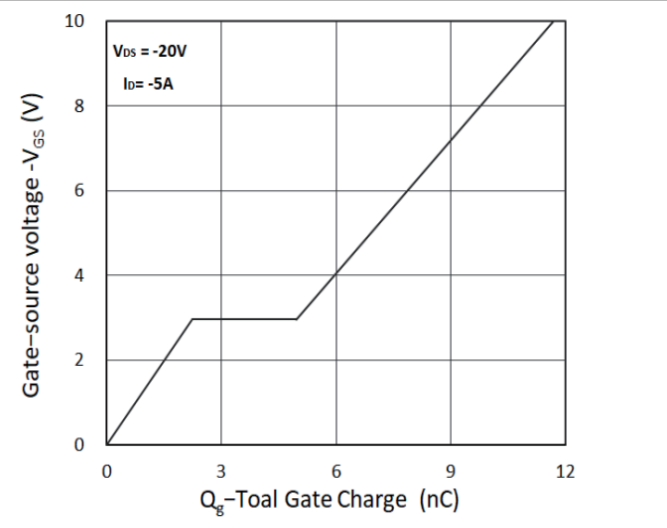
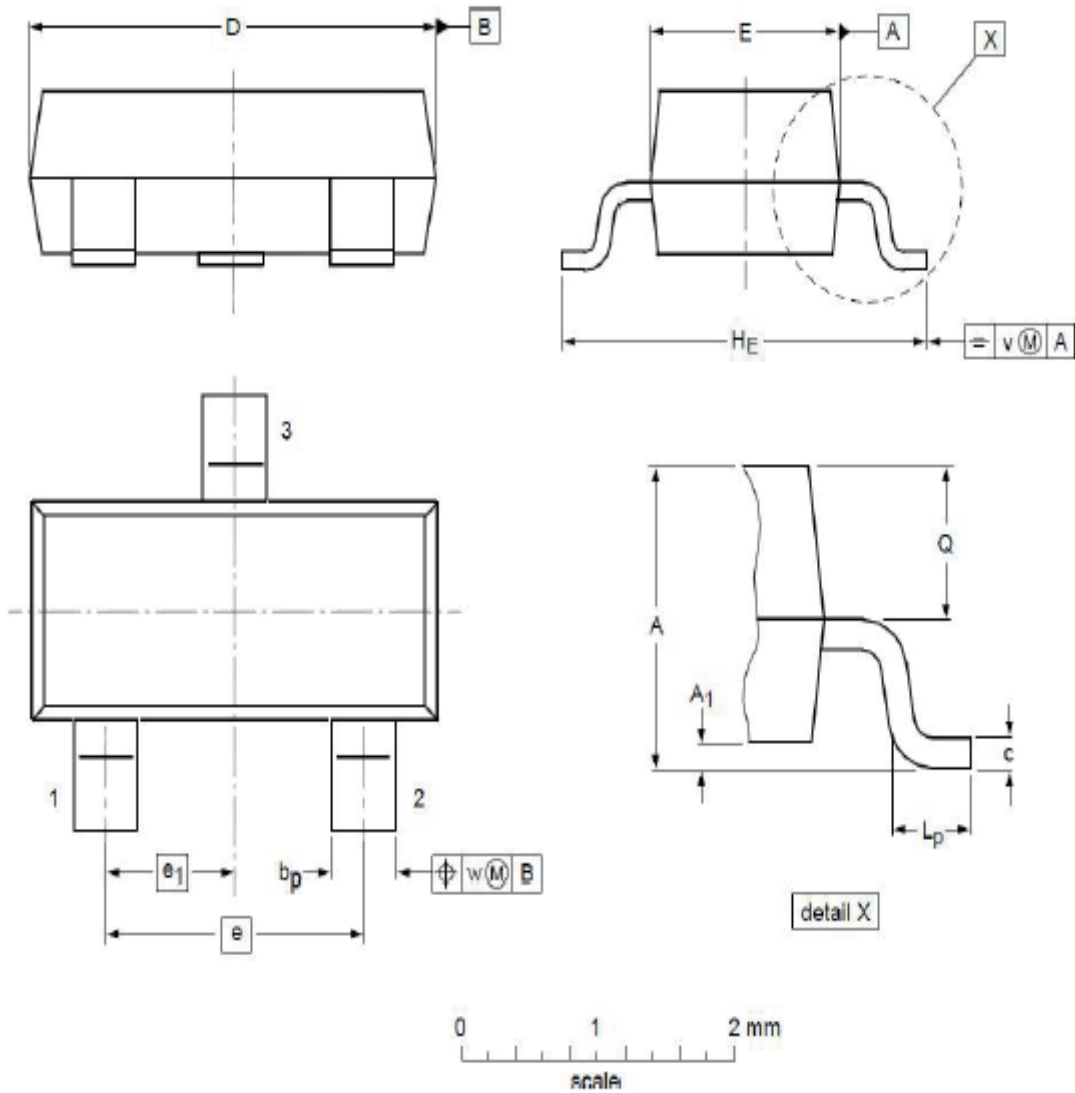


Figure 8: Gate Charge Characteristics



SOT23 Mechanical tData



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	A ₁	0.01	0.05	0.10
b _p	0.30	0.42	0.50	c	0.08	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	--	1.90	--	e ₁	--	0.95	--
H _E	2.25	2.40	2.55	L _p	0.30	0.42	0.50
Q	0.45	0.49	0.55	v	--	0.20	--
w	--	0.10	--				

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