



CST2010S N-Ch 20V Fast Switching MOSFETs

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

CST2010S Product Summary



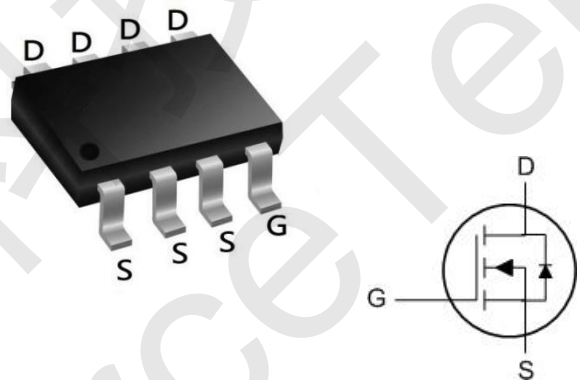
BVDSS	RDSON	ID
20V	13mΩ	8.0A

CST2010S Description

The CST2010S is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The CST2010S meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

CST2010S SOP8 Pin Configuration



CST2010S Absolute Maximum Rating ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	8	A
Pulsed Drain Current ¹	I_{DM}	28	A
Power Dissipation	P_D	2.25	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

CST2010S Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	80	$^{\circ}\text{C/W}$



CST2010S Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V _{GS} = 0V, I _D = 250μA	20	-	-	V
Gate Leakage Current	I_{GSS}	V _{GS} = ±12V, V _{DS} = 0V	-	-	±100	nA
Drain Cut-off Current	I_{DSS}	V _{DS} = 20V, V _{GS} = 0V	-	-	1	μA
Gate Threshold Voltage	V_{GS(th)}	V _{GS} = V _{DS} , I _D = 250μA	0.45	0.7	1	V
Drain-Source On-State Resistance ³	R_{DS(on)}	V _{GS} = 4.5V, I _D = 5A	-	13	20	mΩ
		V _{GS} = 2.5V, I _D = 4.7A	-	18	30	
		V _{GS} = 1.8V, I _D = 4.3A	-	28	57	
Dynamic Characteristics⁴						
Input Capacitance	C_{iss}	V _{GS} = 0V, V _{DS} = 10V, f = 1MHz	-	700	-	pF
Output Capacitance	C_{oss}		-	120	-	
Reverse Transfer Capacitance	C_{rss}		-	105	-	
Switching Characteristics⁴						
Total Gate Charge	Q_g	V _{GS} = 4.5V, V _{DS} = 10V, I _D = 5A	-	10.5	-	nC
Gate-Source Charge	Q_{gs}		-	2	-	
Gate-Drain Charge	Q_{gd}		-	2.5	-	
Turn-On Time	t_{d(on)}	V _{GS} = 5V, V _{DD} = 10V, I _D = 5A, R _G = 3Ω,	-	10	-	ns
Rise Time	t_r		-	20	-	
Turn-Off Time	t_{d(off)}		-	32	-	
Fall Time	t_f		-	12	-	
Source-Drain Diode Characteristics						
Body Diode Voltage ³	V_{SD}	I _S = 4A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	I_S		-	-	8	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)} = 150°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 ≤ 300μs, duty cycle ≤ 2%.
4. This value is guaranteed by design hence it is not included in the production test.



CST2010S Typical Characteristics

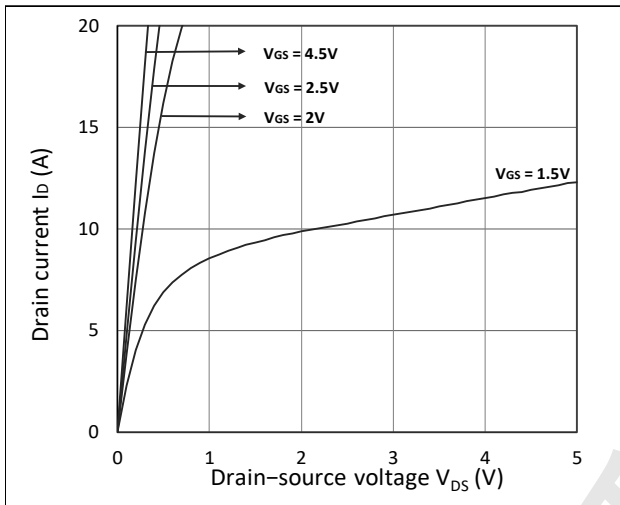


Figure 1. Output Characteristics

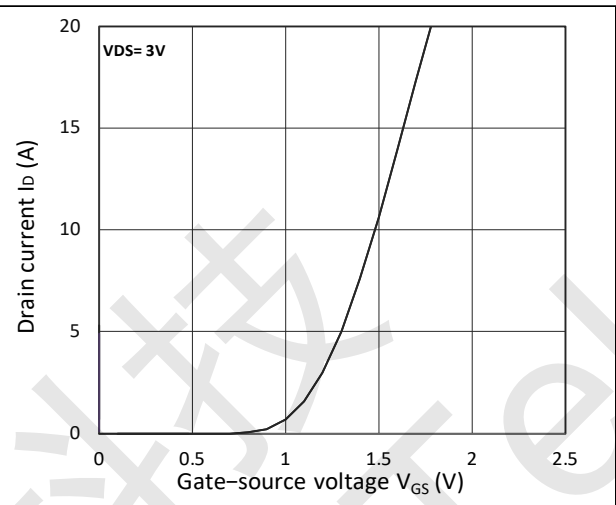


Figure 2. Transfer Characteristics

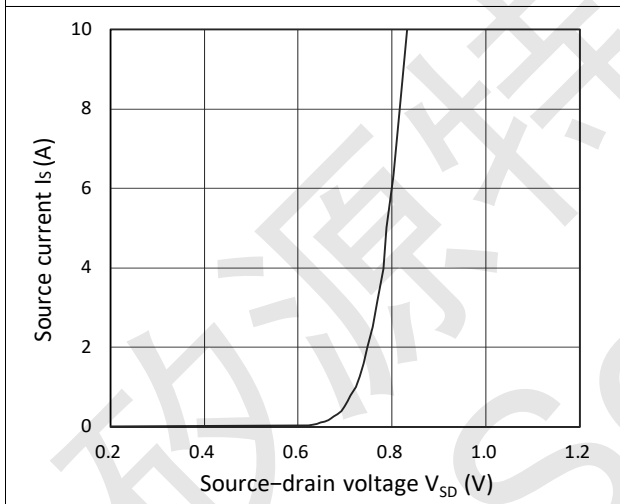


Figure 3. Forward Characteristics of Reverse

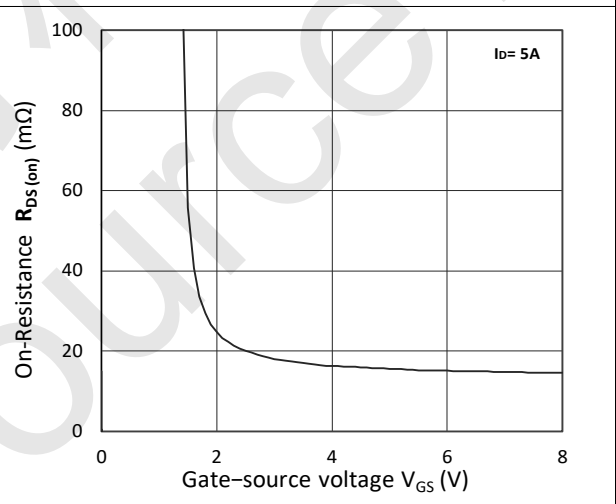


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

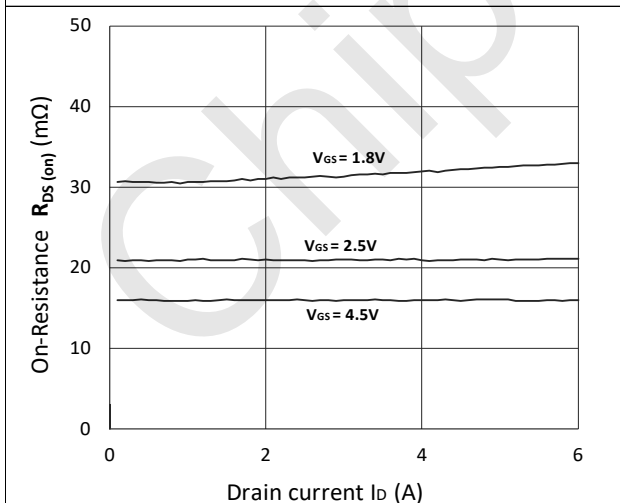


Figure 5. $R_{DS(ON)}$ vs. I_D

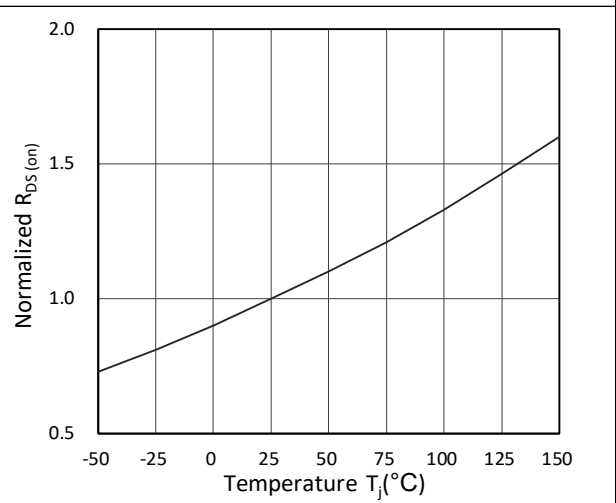


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature



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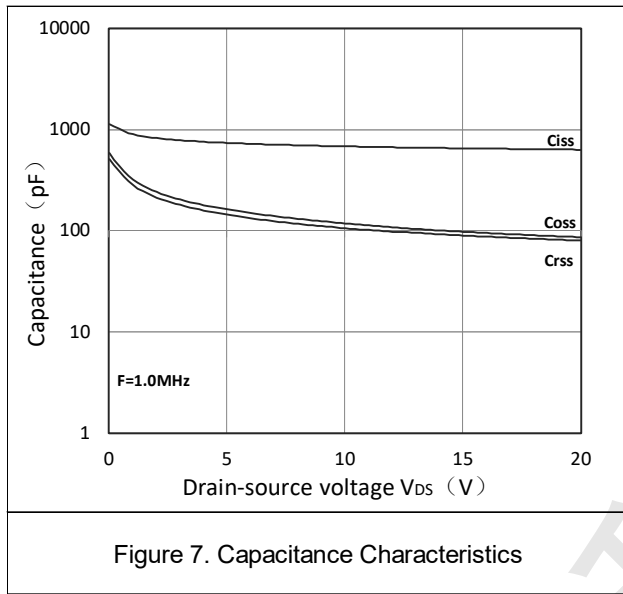


Figure 7. Capacitance Characteristics

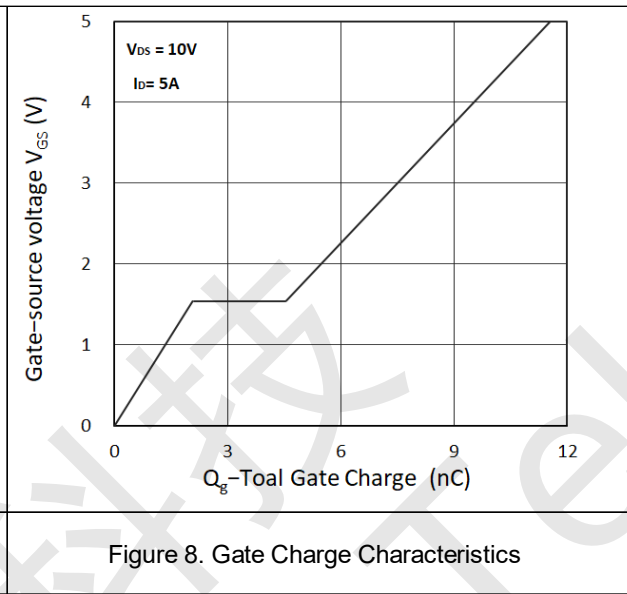
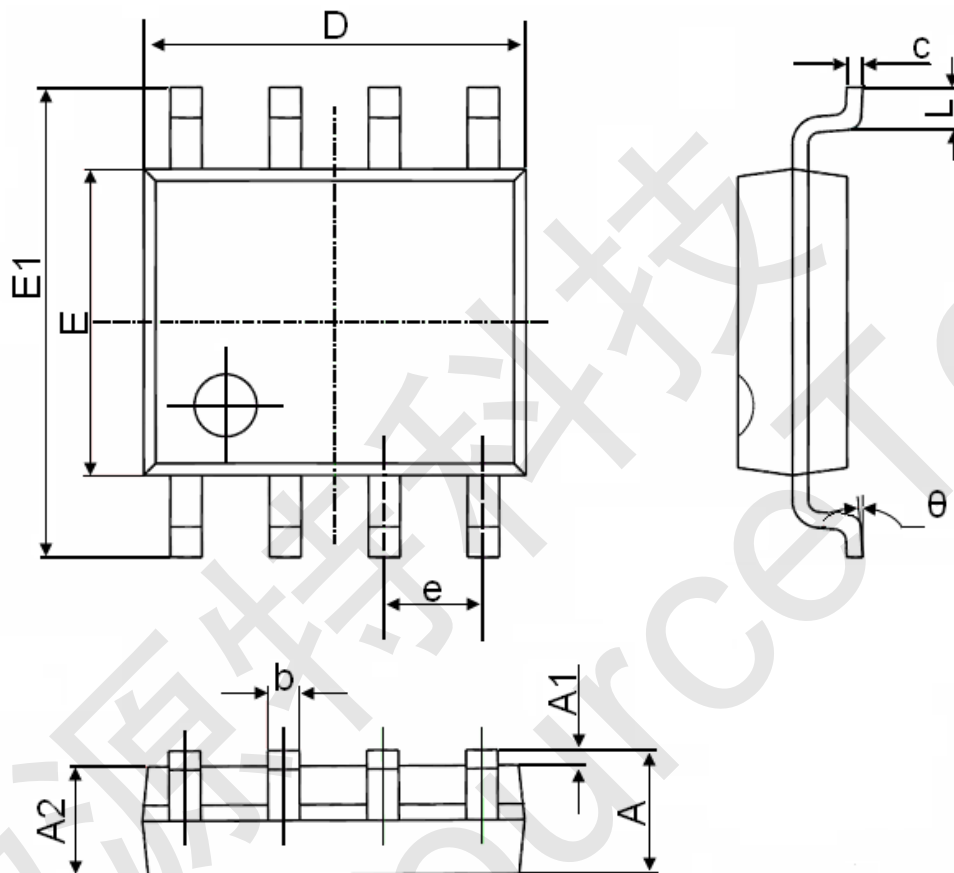


Figure 8. Gate Charge Characteristics



CST2010S Package Mechanical Data-SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
theta	0°	8°	0°	8°