



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



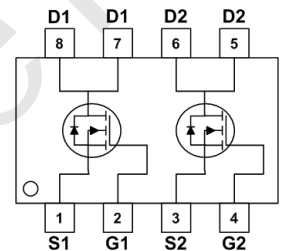
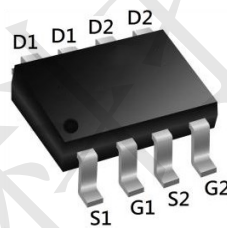
#### CST10V03S Product Summary

BVDSS	RDSON	ID
30V	10mΩ	11.5 A

#### CST10V03S Description

The CST10V03S 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 CST10V03S meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.



#### CST10V03S SOP8 Pin Configuration

#### CST10V03S Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	11.5	A
$I_D@T_A=70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	7.8	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	42	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	15.1	mJ
$I_{AS}$	Avalanche Current	--	A
$P_D@T_A=25^\circ C$	Total Power Dissipation <sup>4</sup>	3.2	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

#### CST10V03S Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient <sup>1</sup>	---	---	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	46	$^\circ C/W$



### CST10V03S Dual N-Ch 30V Fast Switching MOSFETs

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V,$	-	-	1.0	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
$R_{DS(on)}$ <small>note3</small>	Static Drain-Source on-Resistance	$V_{GS}=10V, I_D=10A$	-	10	13	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$	-	16	22.5	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	633	-	pF
$C_{oss}$	Output Capacitance		-	120	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	99	-	pF
$Q_g$	Total Gate Charge	$V_{DS}=15V, I_D=10A,$ $V_{GS}=10V$	-	15	-	nC
$Q_{gs}$	Gate-Source Charge		-	4.7	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	3.6	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=30V, I_D=18A,$ $R_{GEN}=3\Omega, V_{GS}=10V$	-	5	-	ns
$t_r$	Turn-on Rise Time		-	8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	21	-	ns
$t_f$	Turn-off Fall Time		-	7	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	11.5	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	72	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=18A$	-	-	1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=18A, di/dt=100A/\mu s$	-	7	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	5.9	-	nC

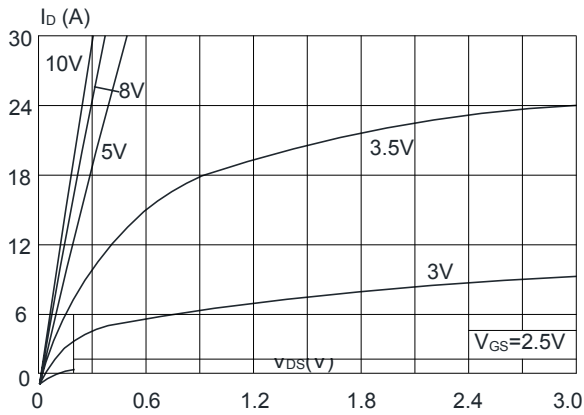
**Note :**

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 20Z copper.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is  $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=20A$
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as  $I_D$  and  $I_{DM}$  , in real applications , should be limited by total power dissipation.

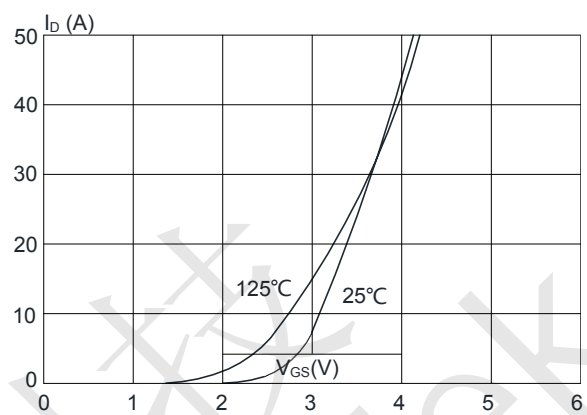


## CST10V03S Typical Performance Characteristics

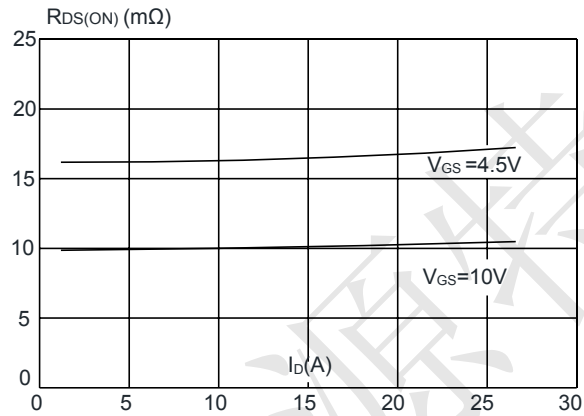
**Figure 1: Output Characteristics**



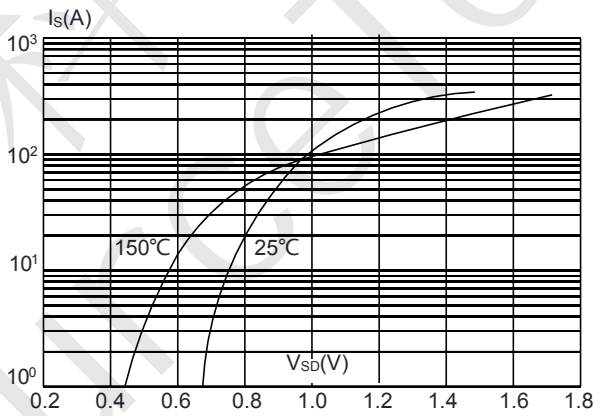
**Figure 2: Typical Transfer Characteristics**



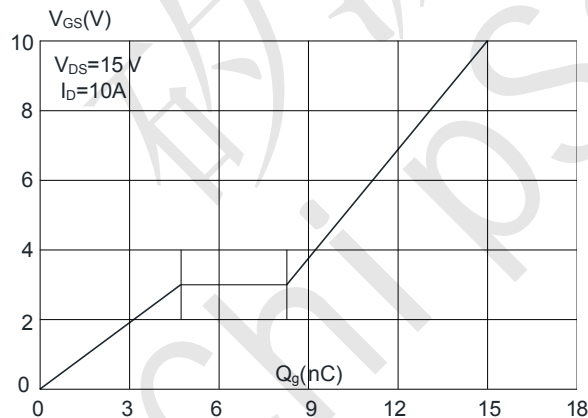
**Figure 3: On-resistance vs. Drain Current**



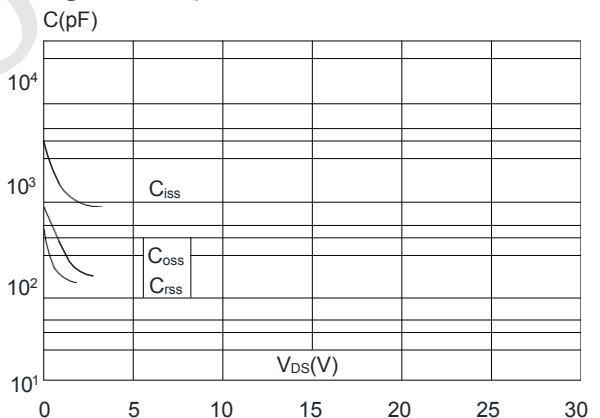
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**



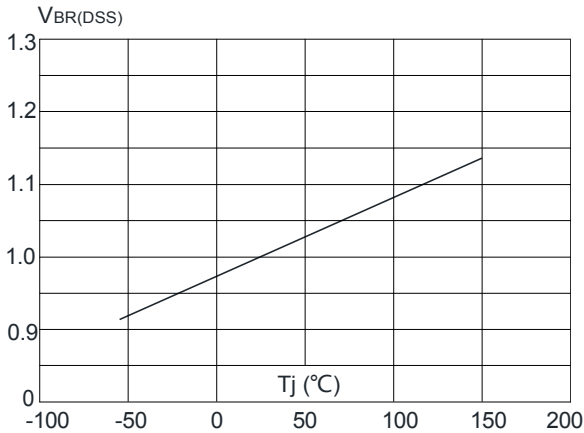
**Figure 6: Capacitance Characteristics**



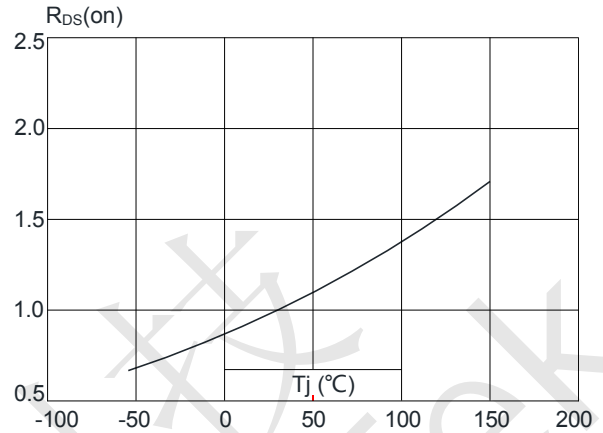


### CST10V03S Dual N-Ch 30V Fast Switching MOSFETs

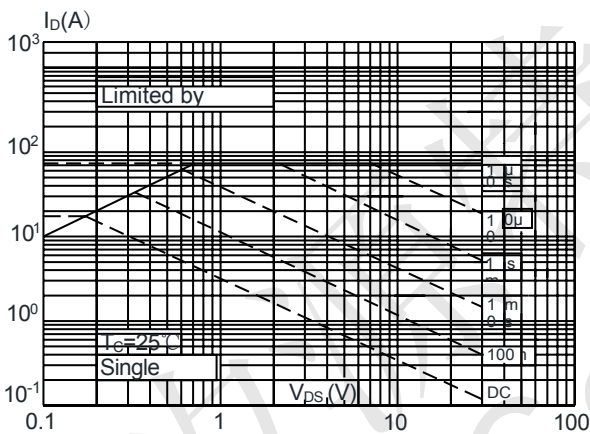
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



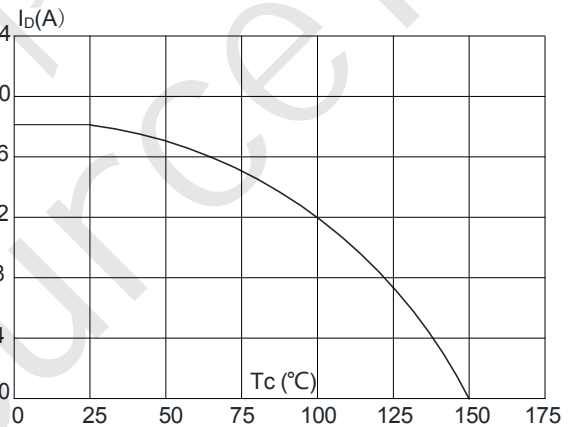
**Figure 8:** Normalized on Resistance vs. Junction Temperature



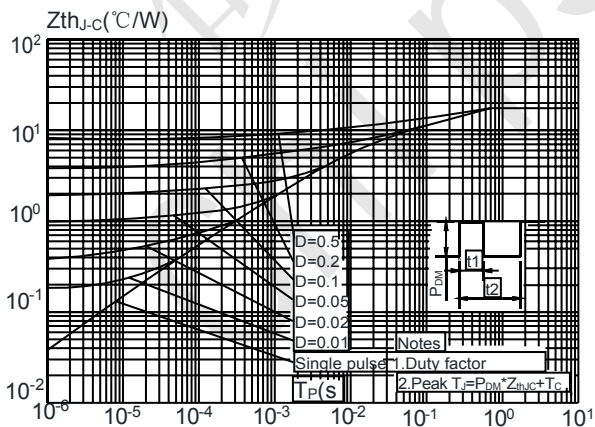
**Figure 9:** Maximum Safe Operating Area



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

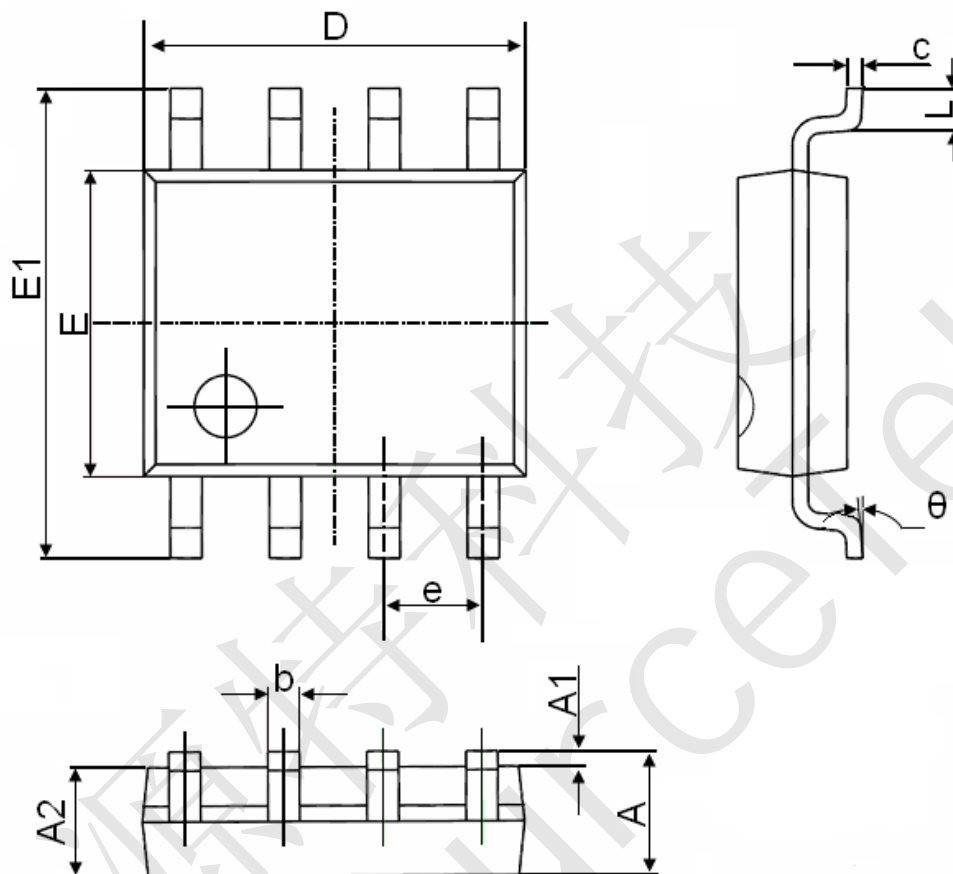


**Figure 11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case





CST10V03S 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°