



CST20P03 P-Ch 30V Fast Switching MOSFETs

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



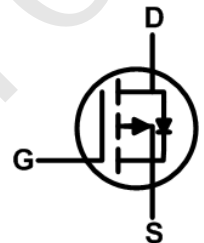
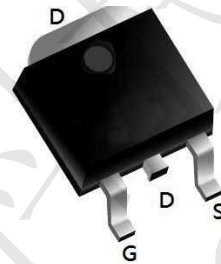
CST20P03 Product Summary

BVDSS	RDSON	ID
-30V	36mΩ	-20 A

CST20P03 TO252 Pin Configuration

CST20P03 Description

The CST20P03 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 CST20P03 meet the RoHS and Green Product requirement with full function reliability approved.



CST20P03 Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units	
V _{DSS}	Drain-Source Voltage	-30	V	
V _{GSS}	Gate-Source Voltage	±20	V	
I _D	Continuous Drain Current	T _C = 25°C	-20	A
		T _C = 100°C	-13	A
I _{DM}	Pulsed Drain Current ^{note1}	-30	A	
EAS	Single Pulsed Avalanche Energy ^{note2}	15	mJ	
P _D	Power Dissipation	19	W	
R _{θJA}	Thermal Resistance, Junction to Ambient	5.2	°C/W	
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +175	°C	



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CST20P03 Electrical Characteris ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30\text{V}, V_{GS}=0\text{V}$	-	-	-1	μA
Gate-Source Leakage	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$	-	-	± 100	nA
Gate-Source Threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-1	-1.5	-2.5	V
Drain-Source on-State Resistance ³	$R_{DS(on)}$	$V_{GS}=-10\text{V}, I_D=-4.1\text{A}$	-	36	50	m Ω
		$V_{GS}=-4.5\text{V}, I_D=-3\text{A}$	-	49	75	
Dynamic Characteristics⁴						
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}, V_{DS}=-15\text{V},$ $f=1.0\text{MHz}$	-	530	-	pF
Output Capacitance	C_{oss}		-	70	-	
Reverse Transfer Capacitance	C_{rss}		-	56	-	
Switching Characteristics⁴						
Total Gate Charge	Q_g	$V_{GS}=-10\text{V}, V_{DS}=-15\text{V},$ $I_D=-4.1\text{A}$	-	6.8	-	nC
Gate-Source Charge	Q_{gs}		-	1.0	-	
Gate-Drain Charge	Q_{gd}		-	1.4	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=-10\text{V}, V_{DS}=-15\text{V},$ $R_L=15\Omega, R_{GEN}=2.5\Omega$	-	14	-	ns
Rise Time	t_r		-	61	-	
Turn-off Delay time	$t_{d(off)}$		-	19	-	
Fall Time	t_f		-	10	-	
Source-Drain Body Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$I_S=-4.1\text{A}, V_{GS}=0\text{V}$	-	-	-1.2	V
Continuous Source Current	I_S		-	-	-20	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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
4. This value is guaranteed by design hence it is not included in the production test.



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CST20P03 Typical Characteristics

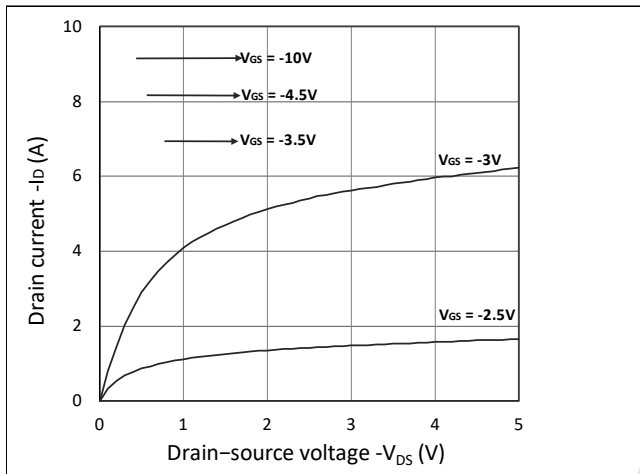


Figure 1. Output Characteristics

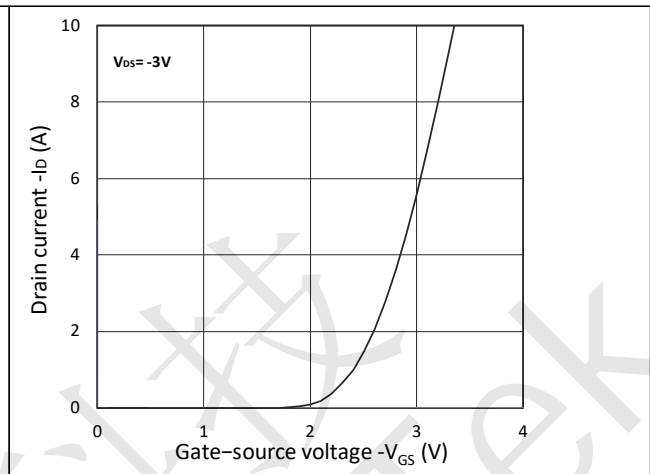


Figure 2. Transfer Characteristics

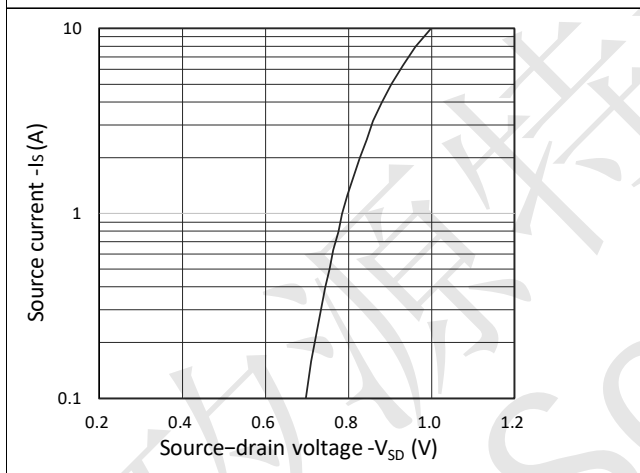


Figure 3. Forward Characteristics of Reverse

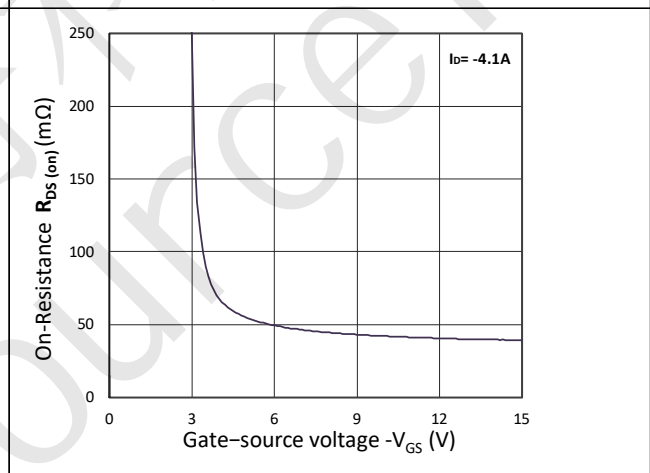


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

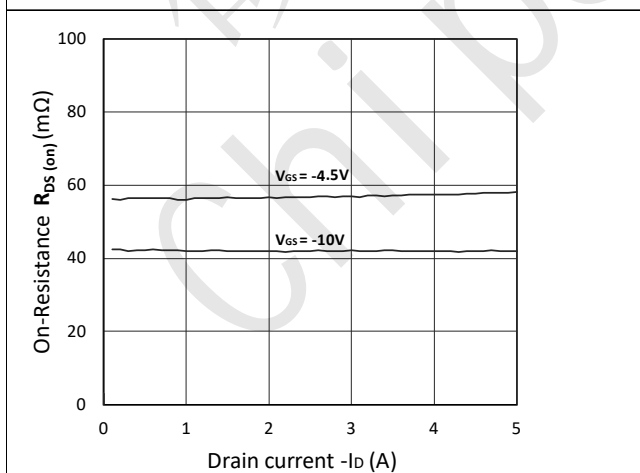


Figure 5. $R_{DS(ON)}$ vs. I_D

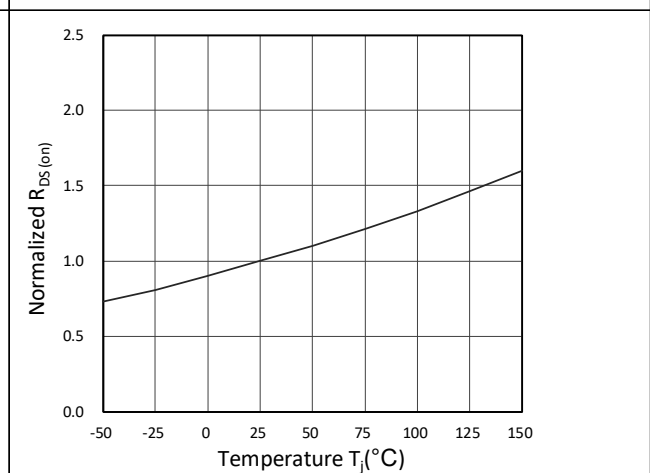


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature



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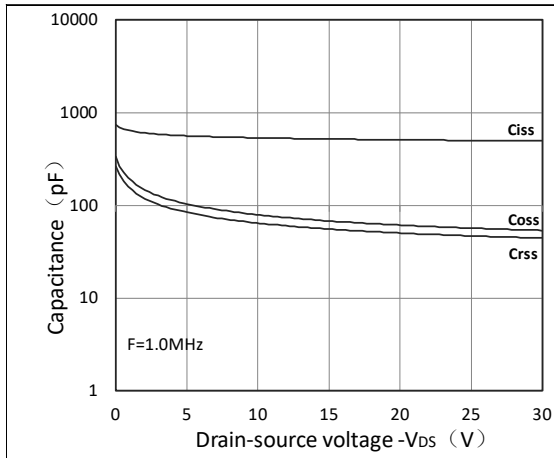


Figure 7. Capacitance Characteristics

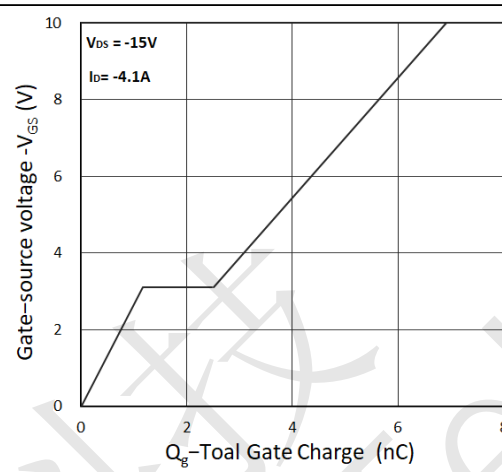
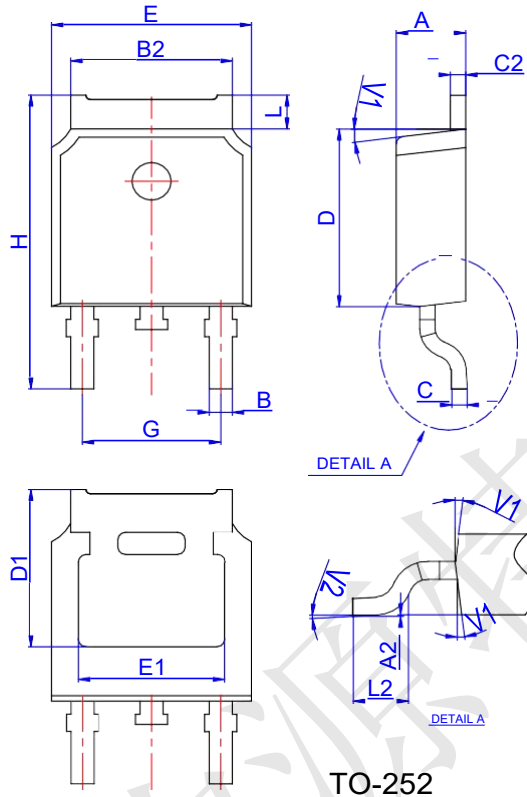


Figure 8. Gate Charge Characteristics



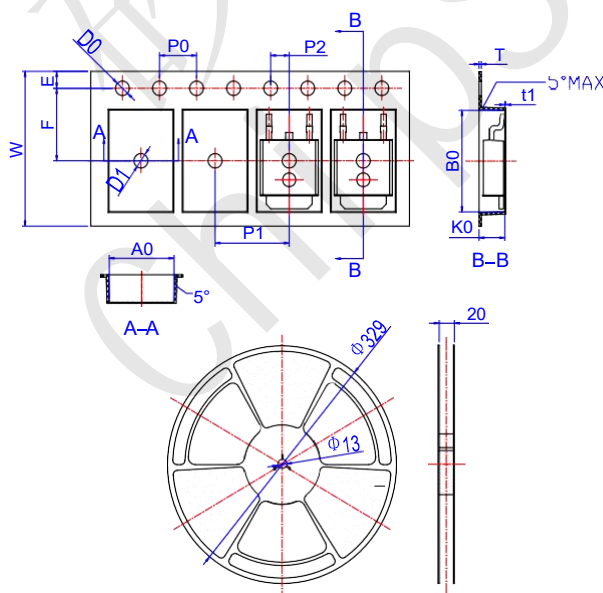
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CST20P03 Package Mechanical Data TO 252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

CST20P03 Reel Specification-TO-252-4R



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583