



CST120P03 P-Ch 30V Fast Switching MOSFETs

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

CST120P03 Product Summary



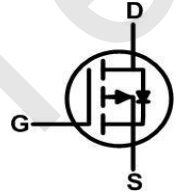
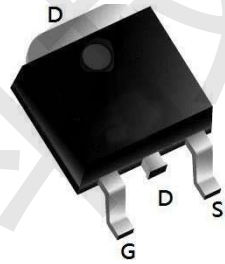
BVDSS	RDSON	ID
-30V	2.5mΩ	-120A

CST120P03 Description

The CST120P03 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The CST120P03 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

CST120P03 TO252 Pin Configuration



CST120P03 Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V^{1,6}$	-120	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V^{1,6}$	-80	A
I_{DM}	Pulsed Drain Current ²	-470	A
EAS	Single Pulse Avalanche Energy ³	580	mJ
I_{AS}	Avalanche Current	-80	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ⁴	100	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

CST120P03 Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹ ($t \leq 10S$)	---	20	°C/W
	Thermal Resistance Junction-ambient ¹ (Steady State)	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case ¹	---	3.6	°C/W



CST120P03 P-Ch 30V Fast Switching MOSFETs

CST120P03 Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
On/Off States							
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =-250μA	-30			V	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V			-1	μA	
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.7	-2.5	V	
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-20A		65		S	
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-20A		2.5	3.1	mΩ	
		V _{GS} =-4.5V, I _D =-20A		4	5.2	mΩ	
Dynamic Characteristics							
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1.0MHz		7000		pF	
C _{oss}	Output Capacitance				820		pF
C _{rss}	Reverse Transfer Capacitance				540		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		2.2		Ω	
Switching Parameters							
t _{d(on)}	Turn-on Delay Time	V _{GS} =-10V, V _{DS} =-15V, R _L =0.75Ω, R _{GEN} =3Ω		14		nS	
t _r	Turn-on Rise Time				13		nS
t _{d(off)}	Turn-Off Delay Time				65		nS
t _f	Turn-Off Fall Time				37		nS
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-20A		130		nC	
Q _{gs}	Gate-Source Charge				12		nC
Q _{gd}	Gate-Drain Charge				31		nC
Source-Drain Diode Characteristics							
I _{SD}	Source-Drain Current (Body Diode)				-108	A	
V _{SD}	Forward on Voltage ^(Note 3)	V _{GS} =0V, I _S =-20A			-1.2	V	
t _{rr}	Reverse Recovery Time	I _F =-20A, di/dt=100A/μs		30		ns	
Q _{rr}	Reverse Recovery Charge	I _F =-20A, di/dt=100A/μs		40		nC	

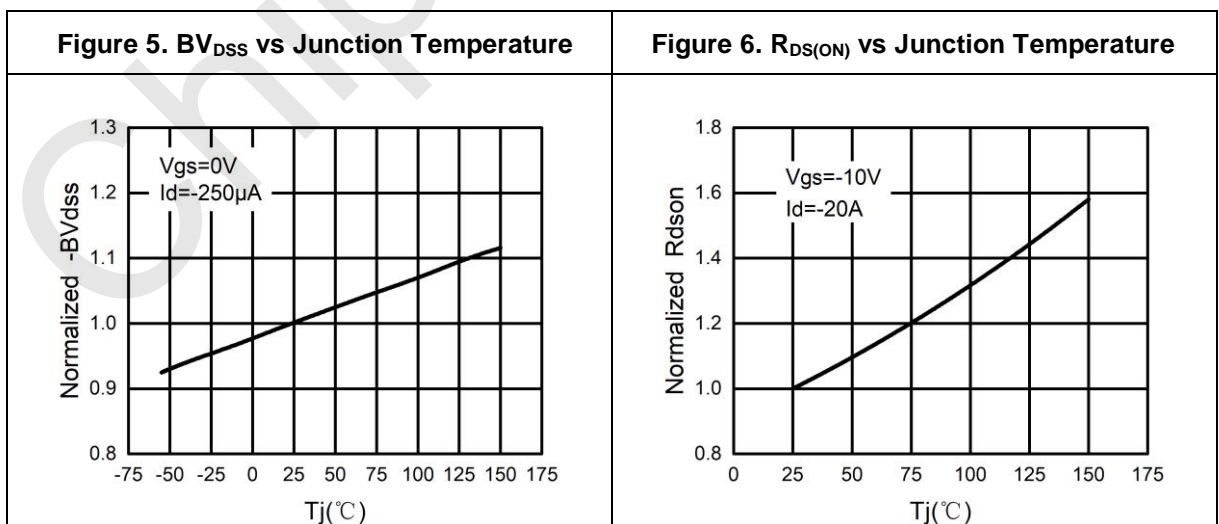
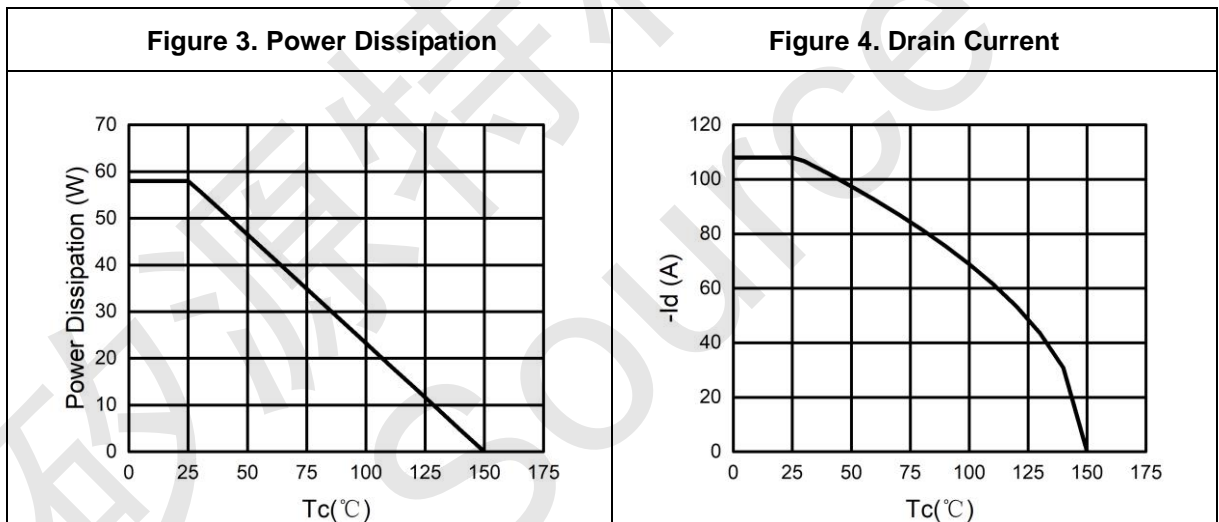
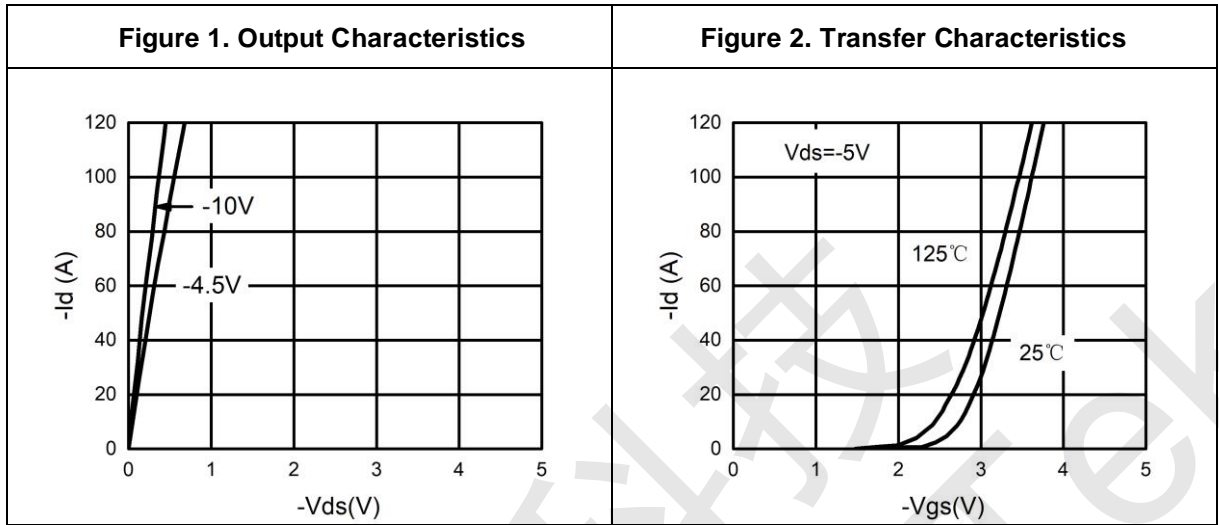
Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

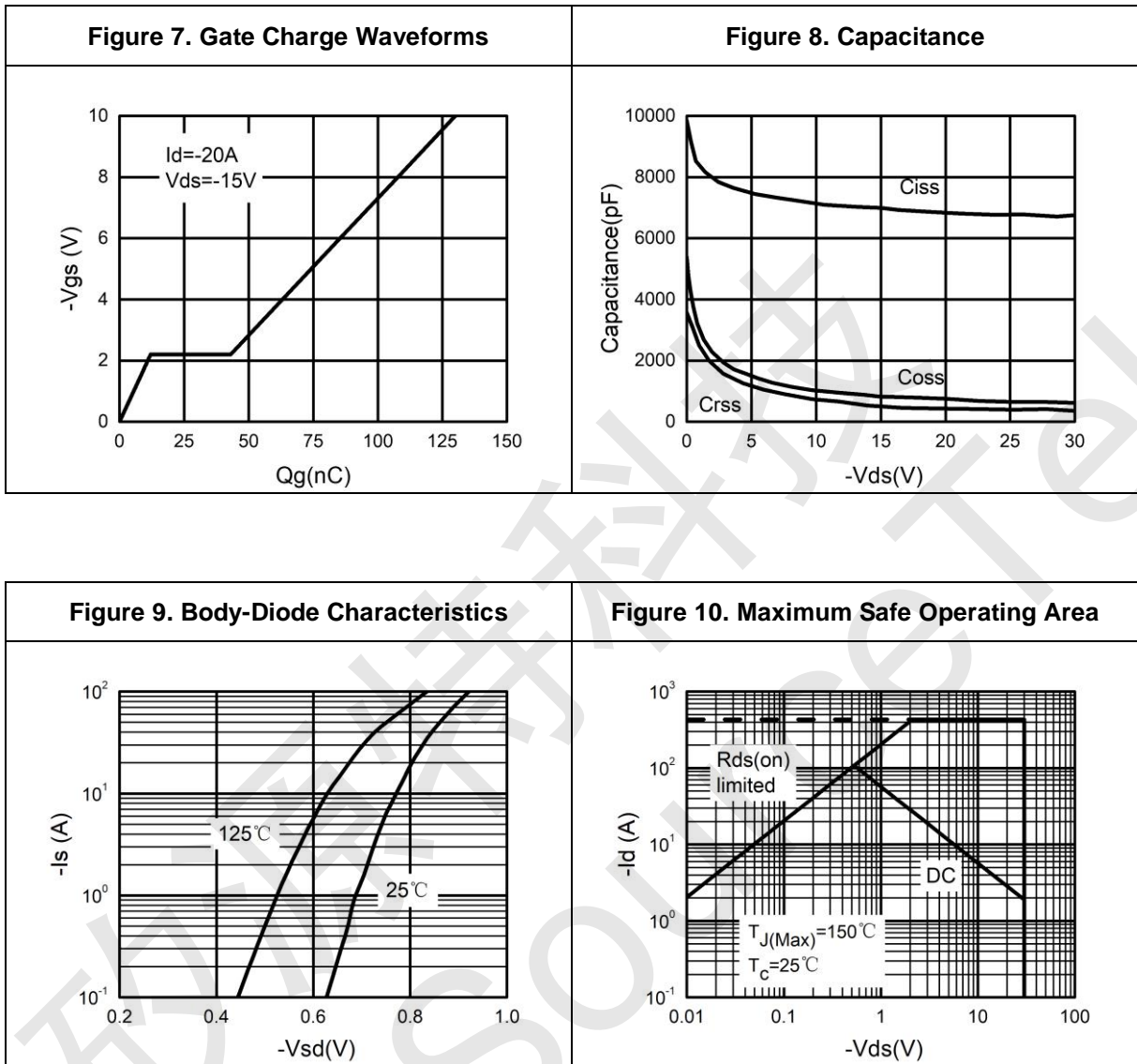
Notes 2.E_{AS} condition: T_J=25°C, V_{DD}=15V, V_G=-10V, R_g=25Ω, L=0.5mH.

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.



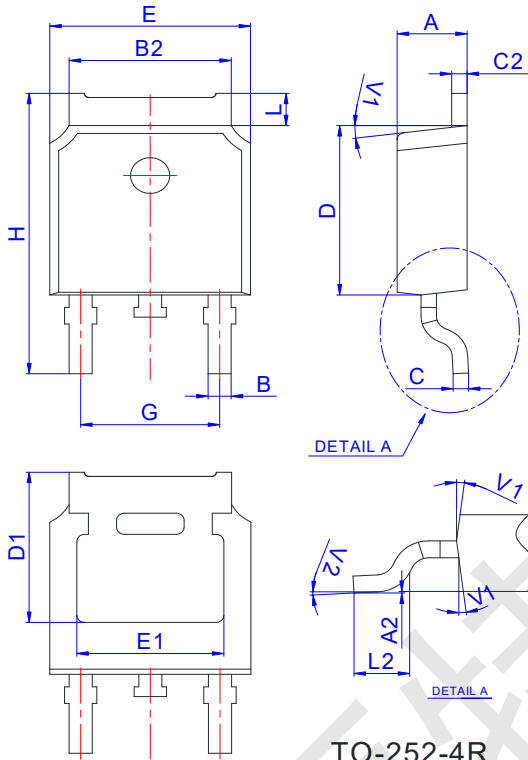
CST120P03 Typical Electrical And Thermal Characteristics (Curves)







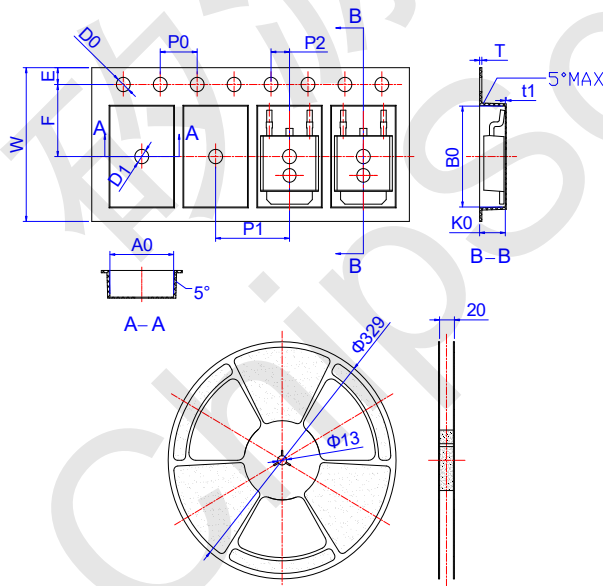
CST120P03 Package Mechanical Data-TO-252



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°

TO-252-4R

CST120P03 Reel Specification-TO-252



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