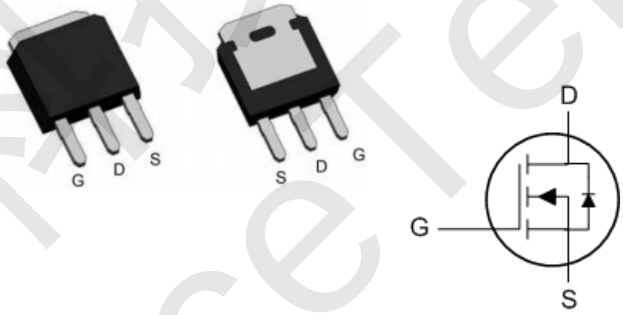
CST20N06Z N-Ch 60V Fast Switching MOSFETs

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

CST20N06Z Product Summary

BVDSS	RDSON	ID
60V	25mΩ	20A

CST20N06Z TO251 Pin Configuration



CST20N06Z Description

The CST20N06Z is the high cell density trenchedN-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The CST20N06Z meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

CST20N06Z Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±30	V
I_D	Continuous Drain Current	T_C = 25℃	20	A
		T_C = 100℃	10	A
I_{DM}	Pulsed Drain Current note1		80	A
EAS	Single Pulsed Avalanche Energy note2		39	mJ
P_D	Power Dissipation	T_C = 25℃	41.7	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		50	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

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CST20N06Z Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60	-	-	V
Gate-Body Leakage Current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25°C	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	-	-	1	μA
	T_J=100°C			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.7	2.5	V
Drain-Source on-Resistance[4]		$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A	-	25	32	mΩ
			V_{GS} = 4.5V, I_D = 5A	-	31.5	40	
Forward Transconductance[4]		g_{fs}	V_{DS} = 5V, I_D = 10A	-	15.5	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = 30V, V_{GS} =0V, f =1MHz	-	1355	-	pF
Output Capacitance		C_{oss}		-	60	-	
Reverse Transfer Capacitance		C_{rss}		-	49	-	
Gate Resistance		R_G	f =1MHz	-	1.2	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = 10V, V_{DD} = 30V, I_D= 10A	-	22	-	nC
Gate-Source Charge		Q_{gs}		-	4.2	-	
Gate-Drain Charge		Q_{gd}		-	6.9	-	
Turn-on Delay Time		$t_{d(on)}$	V_{GS} =10V, V_{DD} = 30V, R_G = 3Ω, I_D= 10A	-	6.4	-	ns
Rise Time		t_r		-	15.3	-	
Turn-off Delay Time		$t_{d(off)}$		-	25	-	
Fall Time		t_f		-	7.6	-	
Body Diode Reverse Recovery Time		t_{rr}	I_F=10A, dI_F/dt=100A/μs	-	26	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	45	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = 10A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	T_C=25°C	I_S	-	-	-	20	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C
2. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=14A
3. 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.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

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CST20N06Z Typical Characteristics

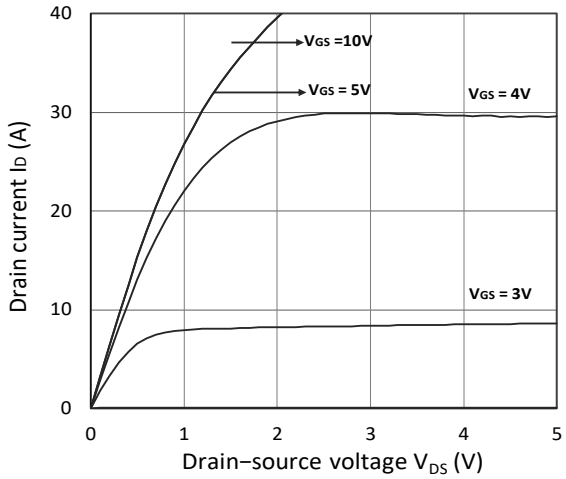

Figure 1. Output Characteristics

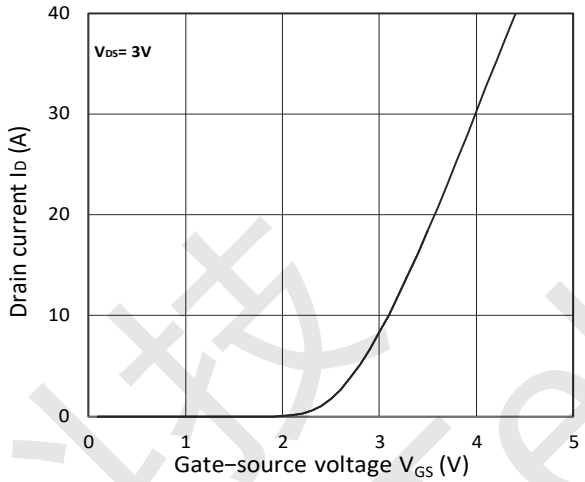

Figure 2. Transfer Characteristics

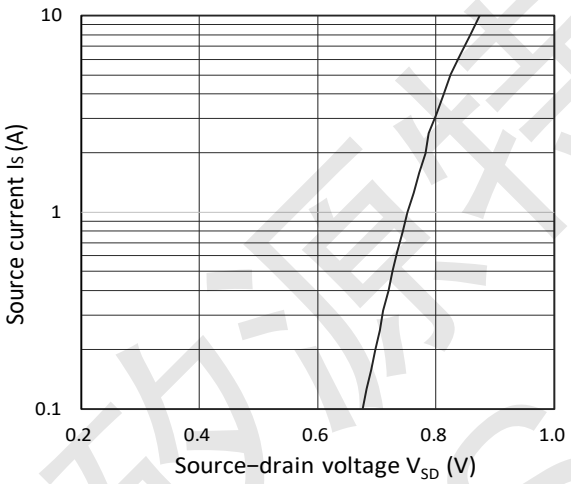

Figure 3. Forward Characteristics of Reverse

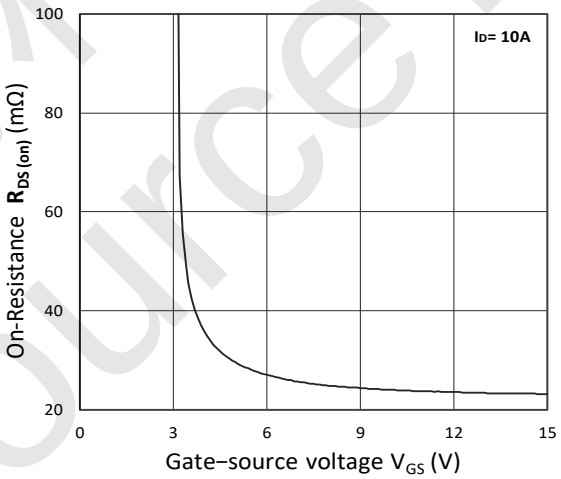

Figure 4. $R_{DS(ON)}$ vs. V_{GS}

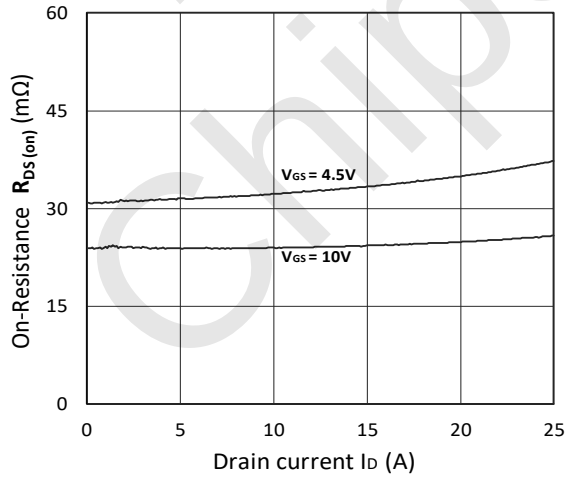

Figure 5. $R_{DS(ON)}$ vs. I_D

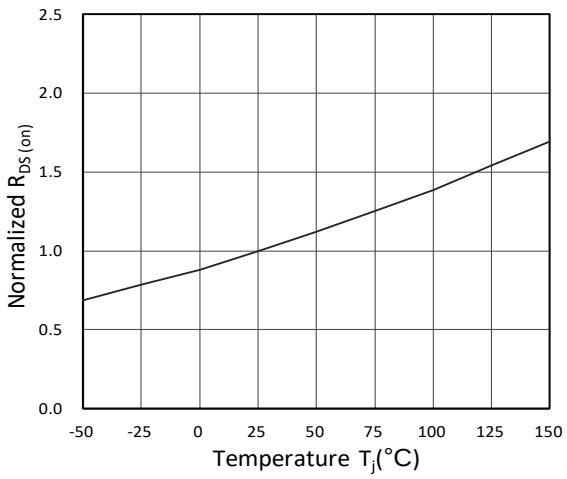

Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

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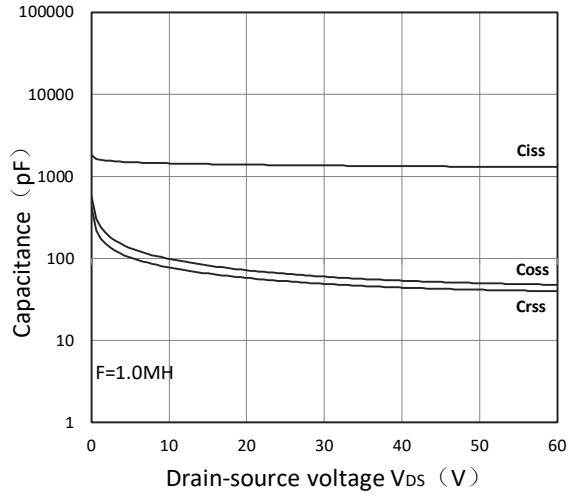


Figure 7. Capacitance Characteristics

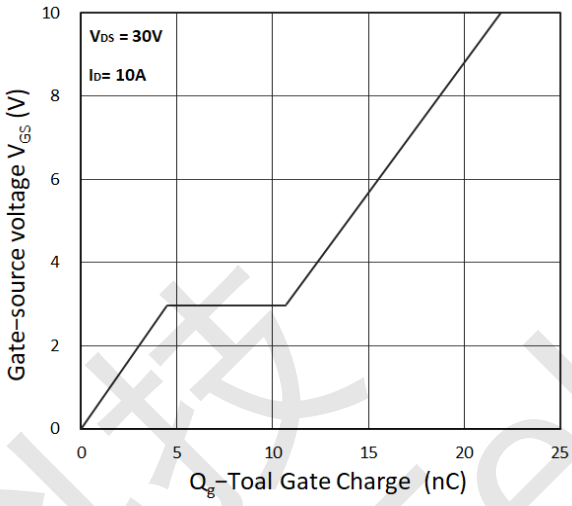


Figure 8. Gate Charge Characteristics

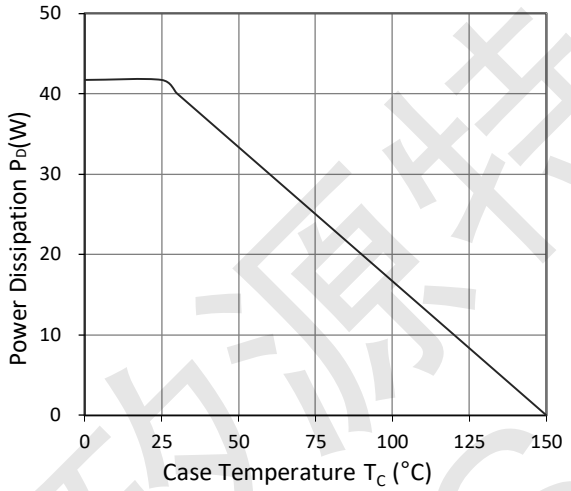


Figure 9. Power Dissipation

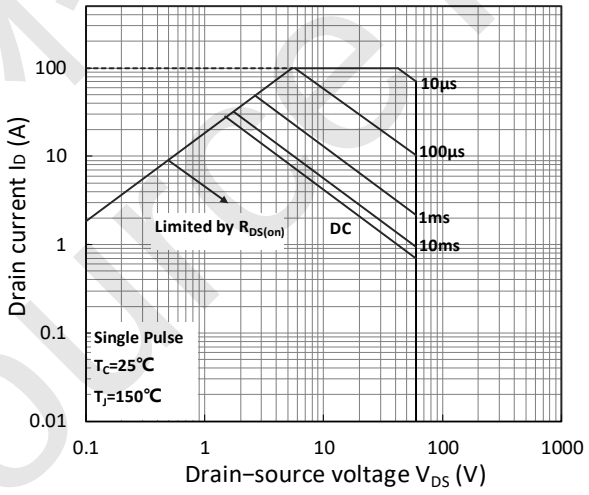


Figure10. Safe Operating Area

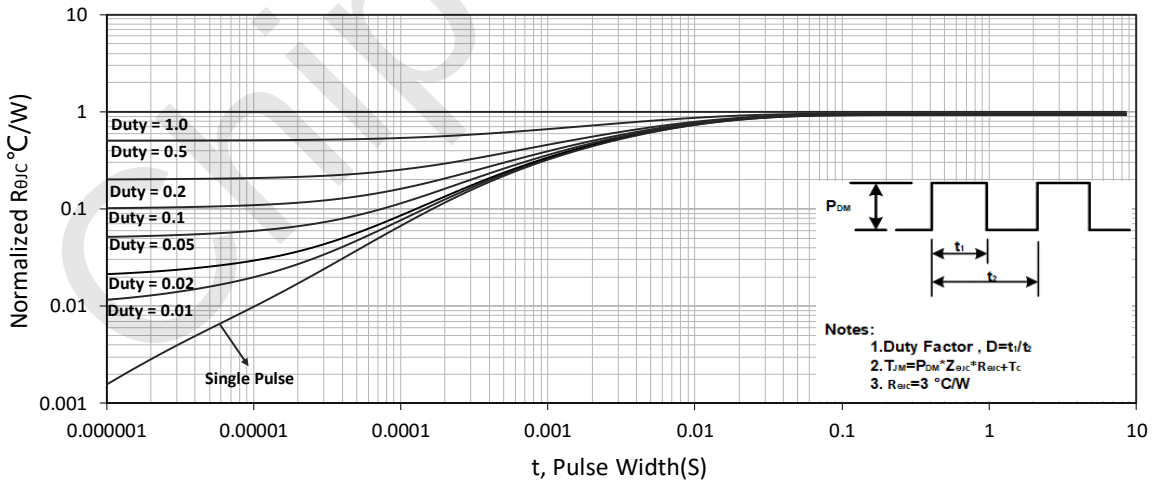
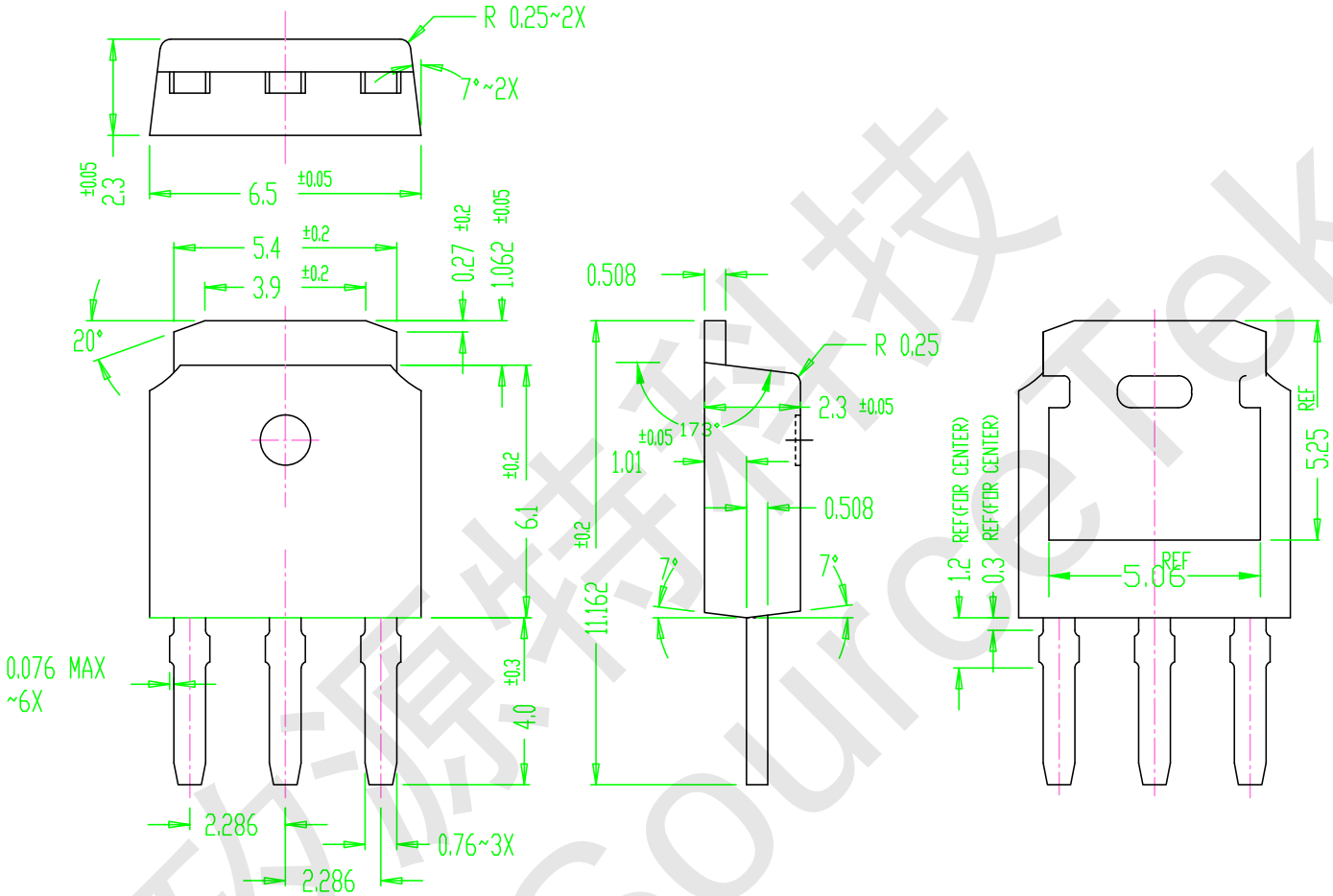


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data TO 251



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