



CST3401A P-Ch 30V Fast Switching MOSFETs

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

CST3401A Product Summary

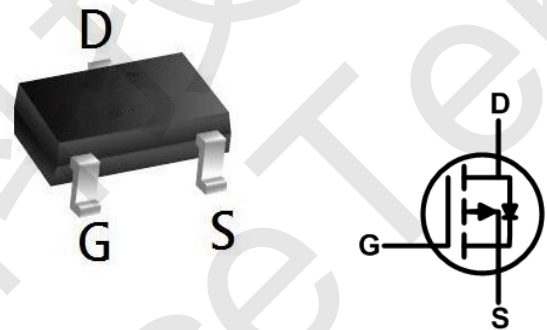


BVDSS	RDSON	ID
-30V	42mΩ	-4.5A

CST3401A Description

The CST3401A 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 CST3401A meet the RoHS and Green Product requirement with full function reliability approved.

CST3401A SOT23 Pin Configurations



CST3401A Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_{D@T_A=25^\circ C}$	Continuous Drain Current	-4.5	A
$I_{D@T_A=70^\circ C}$	Continuous Drain Current	-3.6	A
I_{DM}	Pulsed Drain Current ²	-16	A
$P_{D@T_A=25^\circ C}$	Total Power Dissipation ³	1.4	W
$P_{D@T_A=70^\circ C}$	Total Power Dissipation ³	0.9	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

CST3401A Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	105	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹ (t ≤ 10s)	---	---	$^\circ C/W$



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CST3401A 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	-30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -30V, V _{GS} = 0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±12V	-	-	±100	nA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.7	-1	-1.3	V
Drain-Source on-Resistance ³	R _{DS(on)}	V _{GS} = -10V, I _D = -4.2A	-	42	60	mΩ
		V _{GS} = -4.5V, I _D = -4A	-	52	75	
		V _{GS} = -2.5V, I _D = -1A	-	60	90	
Dynamic Characteristics⁴						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	-	745	-	pF
Output Capacitance	C _{oss}		-	70	-	
Reverse Transfer Capacitance	C _{rss}		-	57	-	
Switching Characteristics⁴						
Total Gate Charge	Q _g	V _{GS} = -4.5V, V _{DS} = -15V, I _D = -4.2A	-	8	-	nC
Gate-Source Charge	Q _{gs}		-	1.8	-	
Gate-Drain Charge	Q _{gd}		-	2.7	-	
Turn-on Delay Time	t _{d(on)}	V _{GS} = -10V, V _{DD} = -15V, I _D = -4.2A, R _{GEN} = 6Ω	-	7	-	ns
Rise Time	t _r		-	3	-	
Turn-off Delay Time	t _{d(off)}		-	30	-	
Fall Time	t _f		-	12	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	I _S = -4.2A, V _{GS} = 0V	-	-	-1.2	V
Continuous Source Current	I _S		-	-	-4.2	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 20Z 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.



CST3401A Typical Characteristics

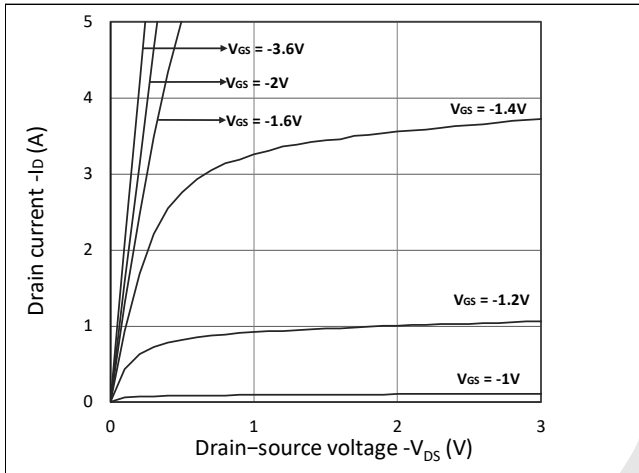


Figure 1. Output Characteristics

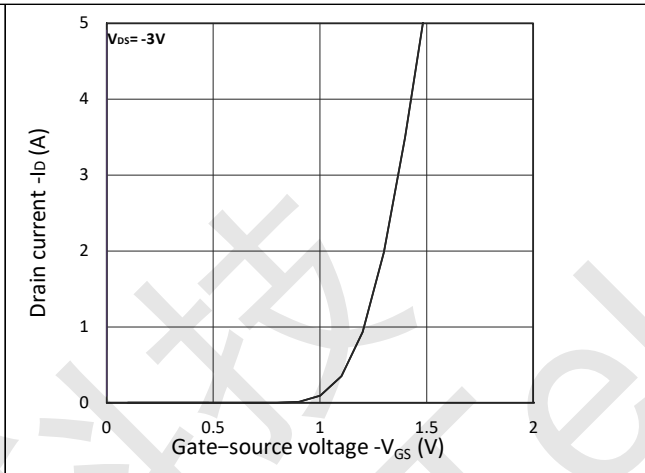


Figure 2. Transfer Characteristics

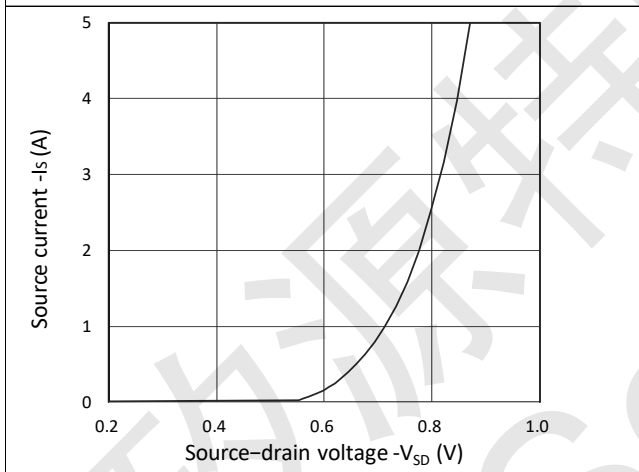


Figure 3. Forward Characteristics of Reverse

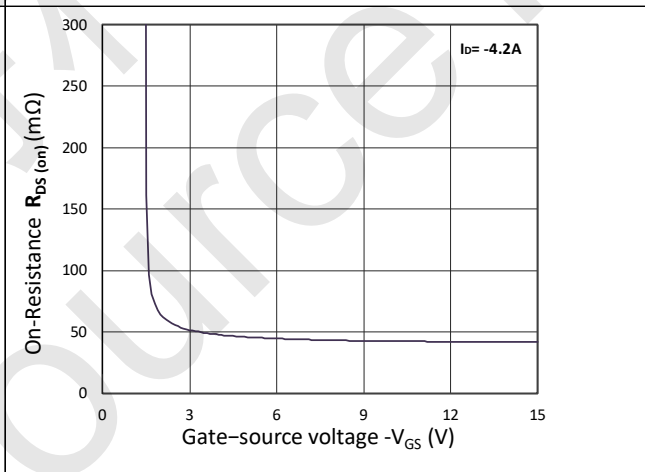


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

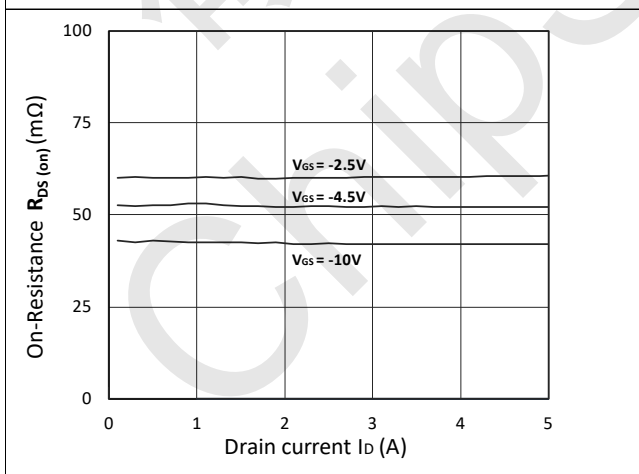


Figure 5. $R_{DS(ON)}$ vs. I_D

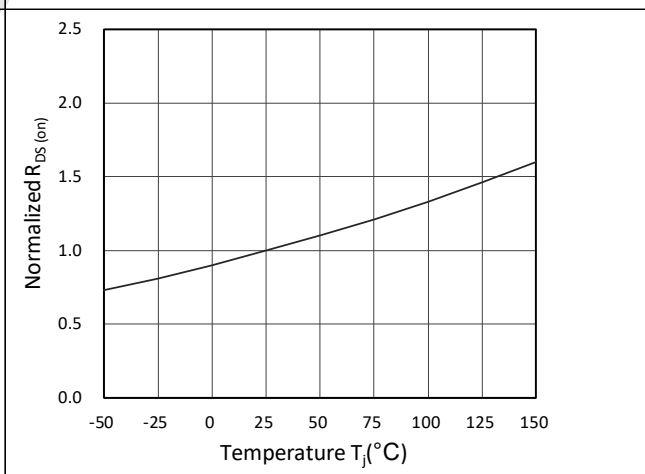


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature



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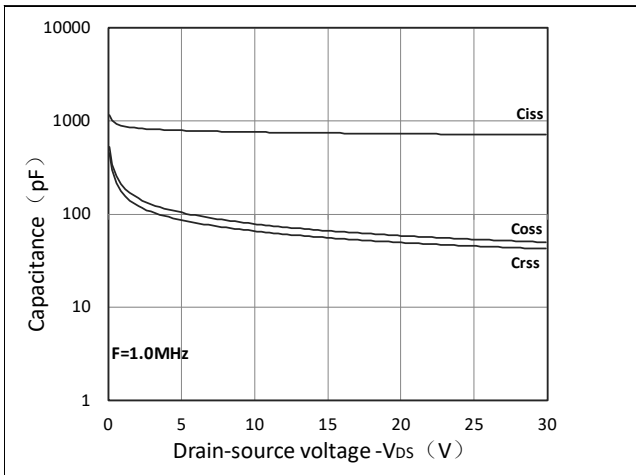


Figure 7. Capacitance Characteristics

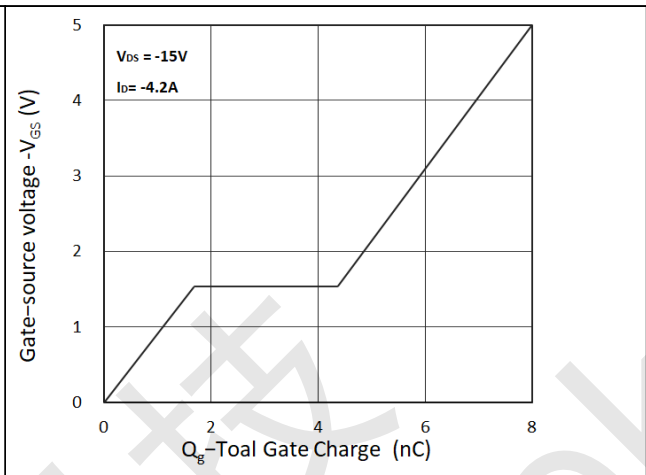


Figure 8. Gate Charge Characteristics

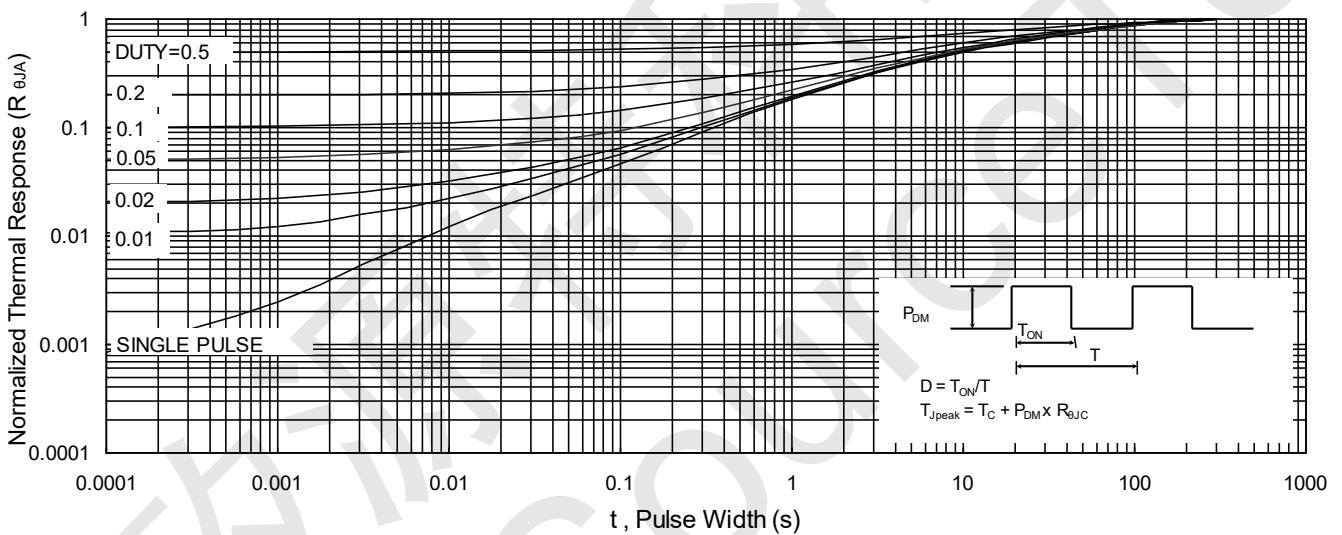


Fig.9 Normalized Maximum Transient Thermal Impedance

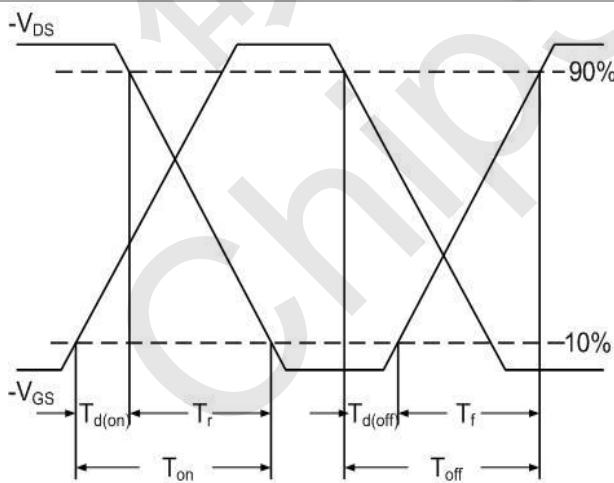


Fig.10 Switching Time Waveform

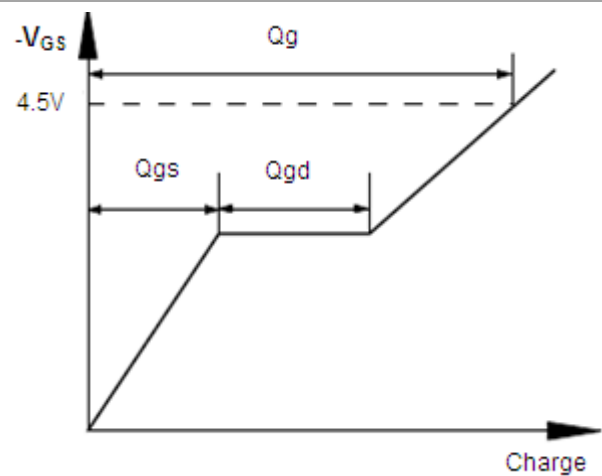
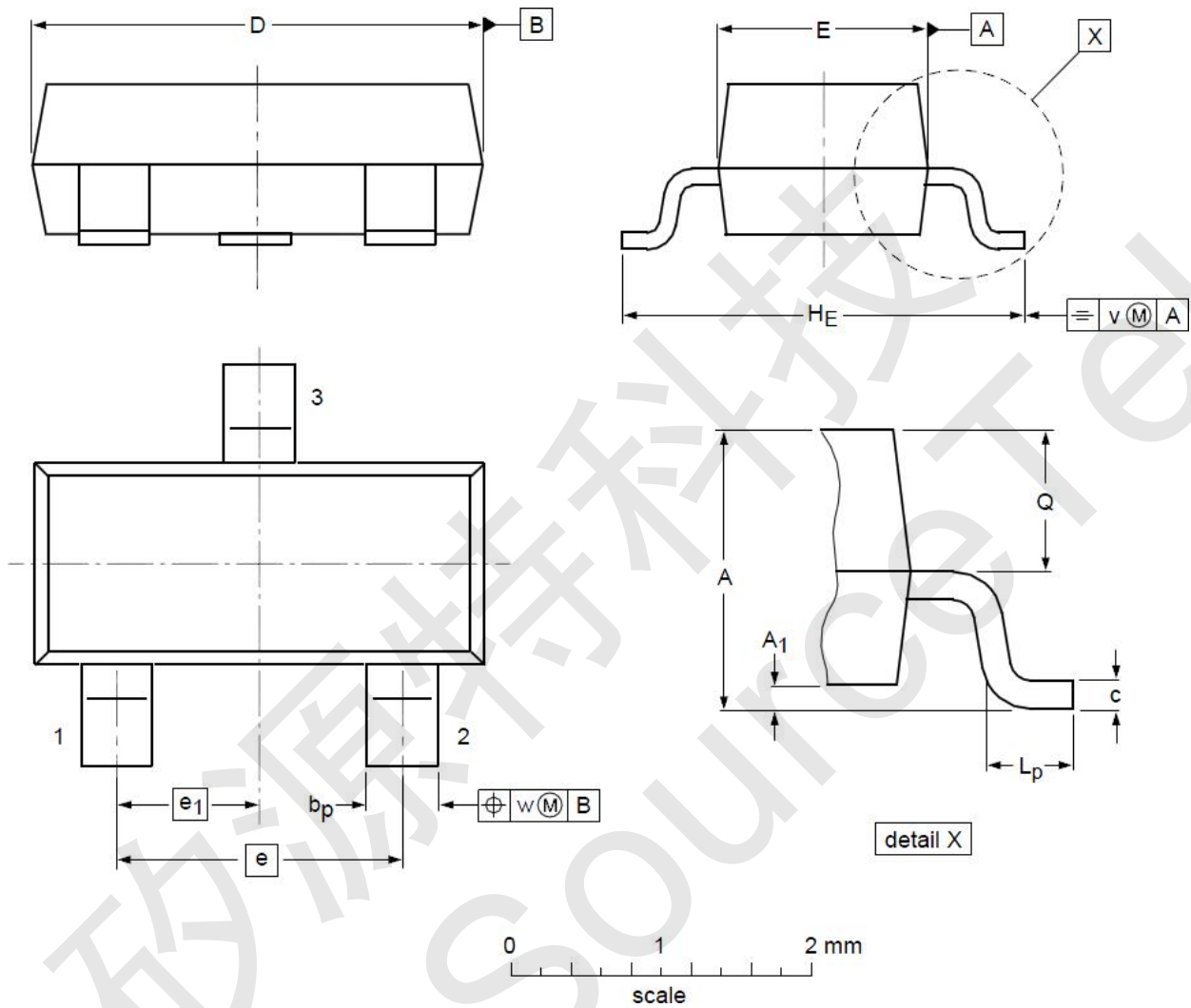


Fig.11 Gate Charge Waveform



CST3401A Package Mechanical Data-SOT-23



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	A ₁	0.01	0.05	0.10
b _p	0.30	0.42	0.50	c	0.08	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	--	1.90	--	e ₁	--	0.95	--
H _E	2.25	2.40	2.55	L _p	0.30	0.42	0.50
Q	0.45	0.49	0.55	v	--	0.20	--
w	--	0.10	--				