



CSTS1005 N-Ch 100V Fast Switching MOSFETs

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

CSTS1005 Product Summary



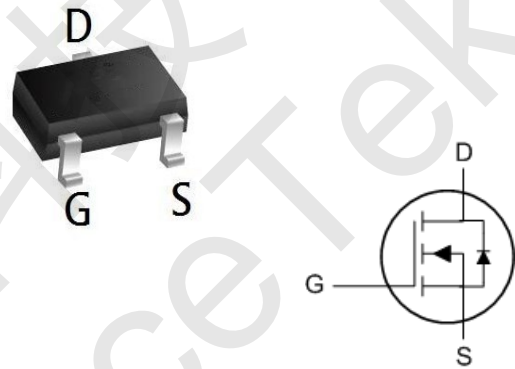
BVDSS	RDSON	ID
100V	91 mΩ	4.5A

CSTS1005 SOT23 Pin Configuration

CSTS1005 Description

The CSTS1005 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The CSTS1005 meet the RoHS and Green Product requirement with full function reliability approved.



CSTS1005 Absolute Maximum Rating ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	4.5	A
	$T_A = 25^\circ\text{C}$		
Pulsed Drain Current ¹	I_{DM}	13.2	A
Power Dissipation	P_D	1.5	W
	$T_A = 25^\circ\text{C}$		
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	83.3	$^\circ\text{C/W}$



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CSTS1005 Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
Gate-body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.65	2.5	V
Drain-Source On-state Resistance ³	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3A$	-	91	130	m Ω
		$V_{GS} = 6V, I_D = 2A$	-	105	160	
		$V_{GS} = 4.5V, I_D = 1A$	-	120	190	
Dynamic Characteristics⁴						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 50V,$ $f = 1MHz$	-	200	-	pF
Output Capacitance	C_{oss}		-	35	-	
Reverse Transfer Capacitance	C_{rss}		-	2.5	-	
Switching Characteristics⁴						
Total Gate Charge	Q_g	$V_{DS} = 50V, V_{GS} = 10V,$ $I_D = 3A$	-	4	-	nC
Gate-Source Charge	Q_{gs}		-	0.6	-	
Gate-Drain Charge	Q_{gd}		-	1.4	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 50V, V_{GS} = 10V,$ $I_D = 3A, R_G = 3\Omega$	-	12.5	-	ns
Turn-on Rise Time	t_r		-	19.5	-	
Turn-off Delay Time	$t_{d(off)}$		-	20	-	
Turn-off Fall Time	t_f		-	29	-	
Source-Drain Diode characteristics						
Body Diode Voltage ³	V_{SD}	$I_S = 3A, V_{GS} = 0V$	-	-	1.2	V
Continuous Source Current	I_S		-	-	4.5	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 $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. This value is guaranteed by design hence it is not included in the production test.



CSTS1005 Typical Characteristics

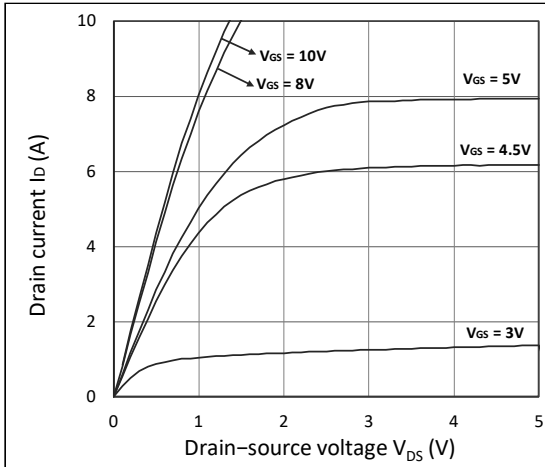


Figure 1. Output Characteristics

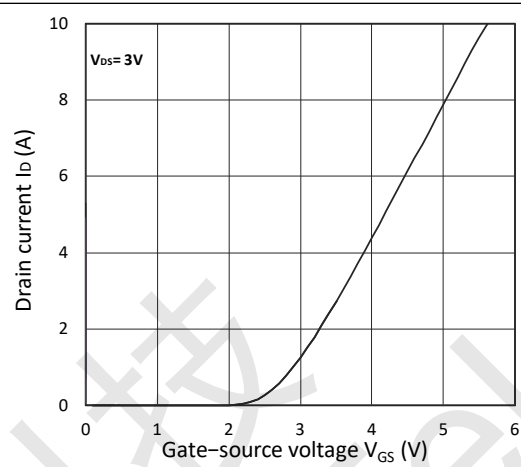


Figure 2. Transfer Characteristics

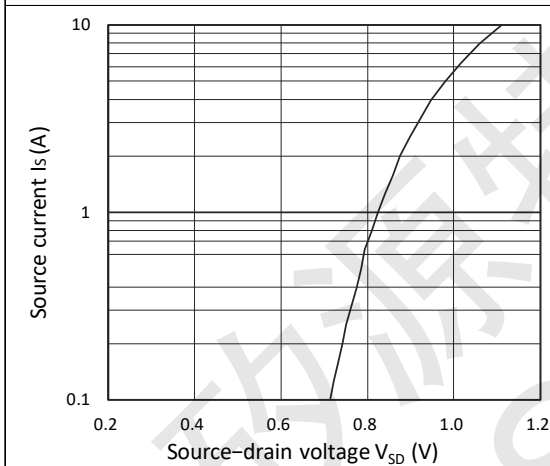


Figure 3. Forward Characteristics of Reverse

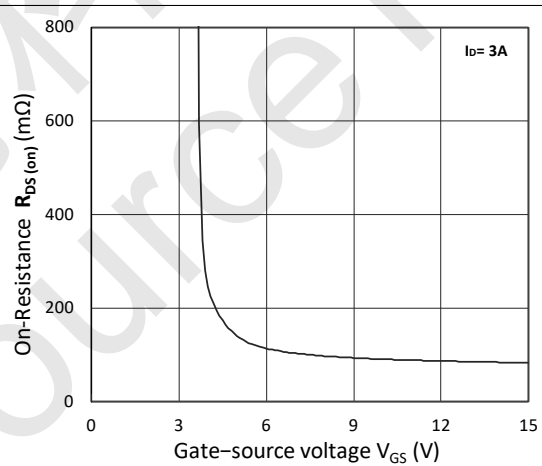


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

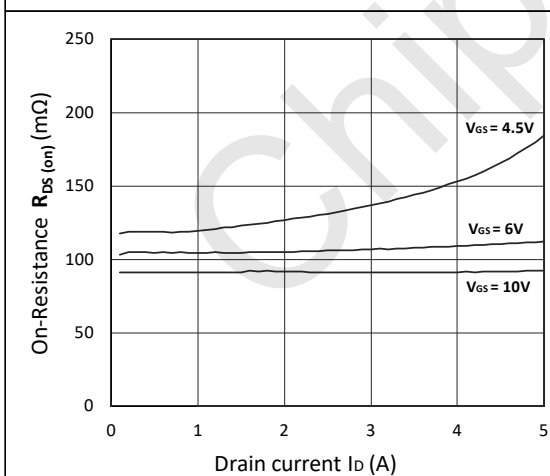


Figure 5. $R_{DS(ON)}$ vs. I_D

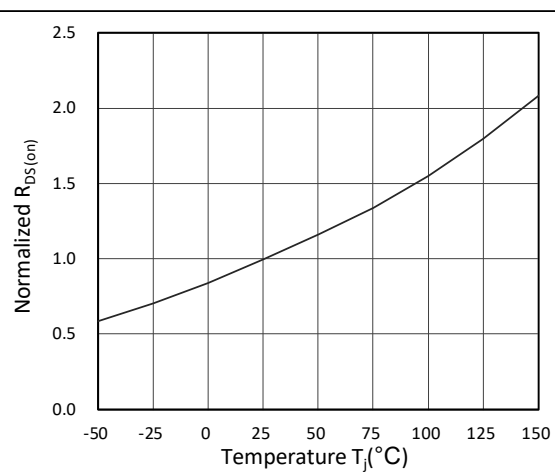


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

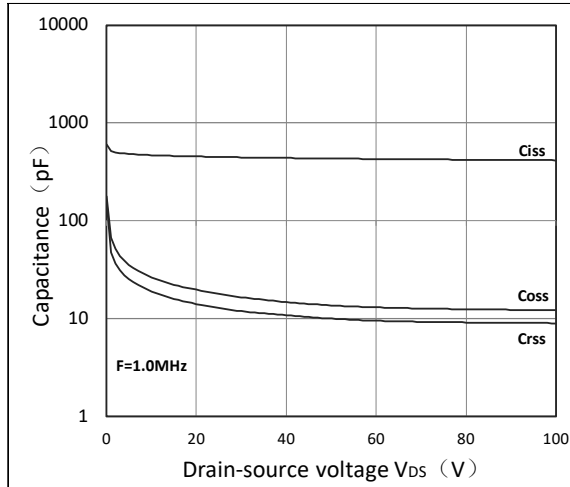


Figure 7. Capacitance Characteristics

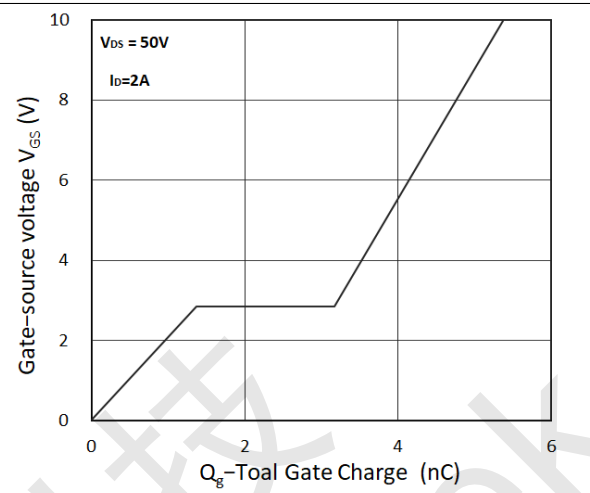
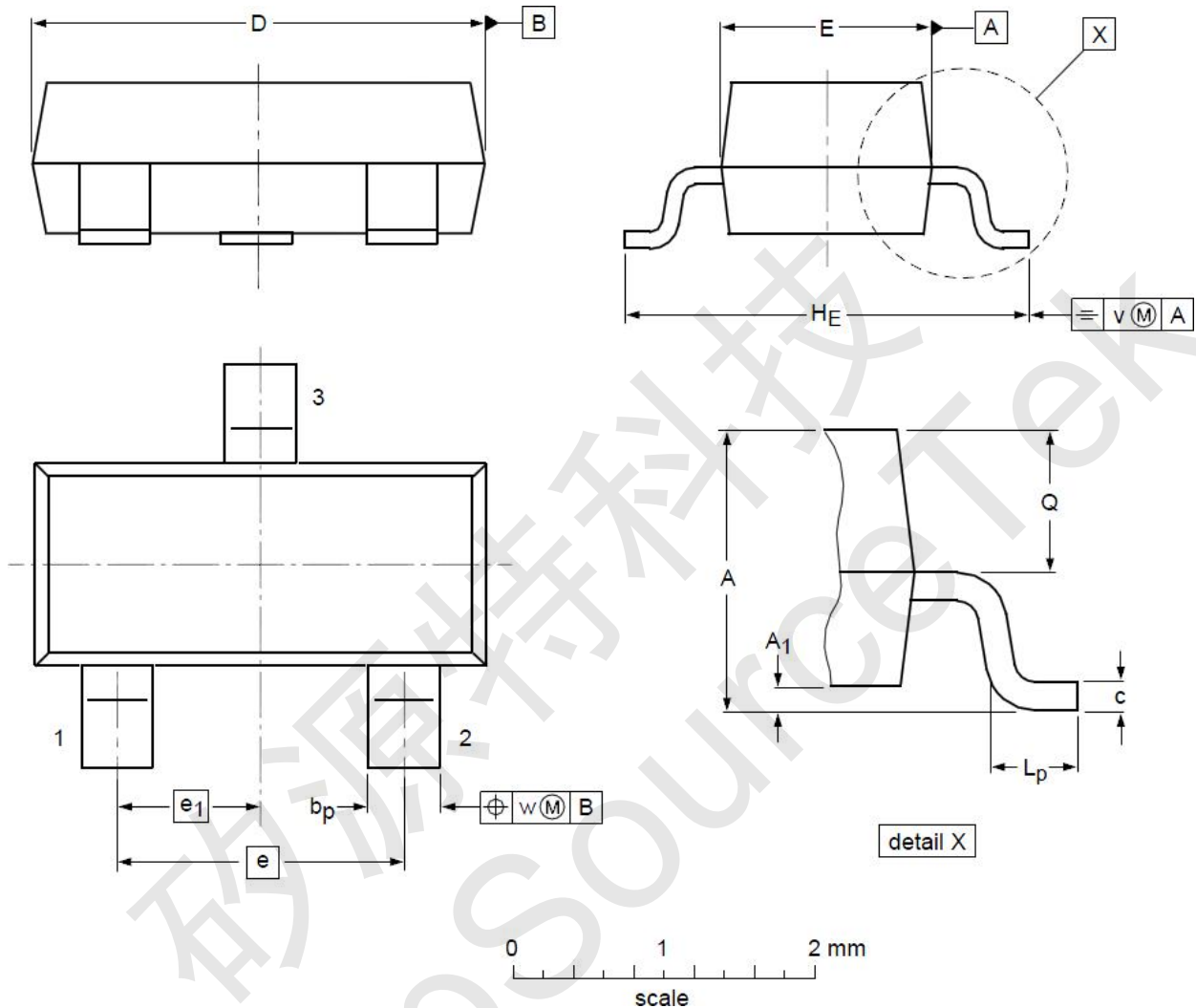


Figure 8. Gate Charge Characteristics



CSTS1005 SOT23 Mechanical Data



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	--				