



**CST3402B N-Ch 30V Fast Switching MOSFETs**

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

**CST3402B Product Summary**



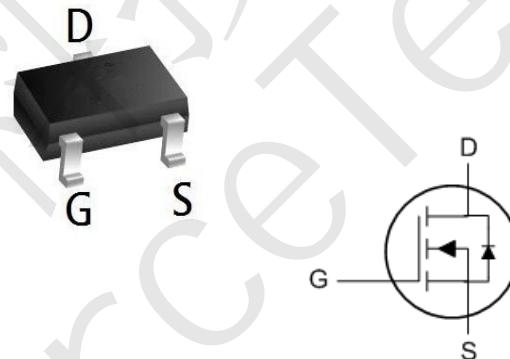
BVDSS	RDS(on)	ID
30V	86 mΩ	2.0A

**CST3402B Description**

The CST3402B is the high cell density trenched N-ch MOSFETs, which provides excellent RDS(on) and efficiency for most of the small power switching and load switch applications.

The CST3402B meet the RoHS and Green Product requirement with full function reliability approved.

**CST3402B SOT23 Pin Configuration**



**CST3402B Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±12	V
I <sub>D</sub> @T <sub>A</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ 10V <sup>1</sup>	2.0	A
I <sub>D</sub> @T <sub>A</sub> =70°C	Continuous Drain Current, V <sub>GS</sub> @ 10V <sup>1</sup>	1.2	A
I <sub>DM</sub>	Pulsed Drain Current <sup>2</sup>	12	A
P <sub>D</sub> @T <sub>A</sub> =25°C	Total Power Dissipation <sup>3</sup>	0.85	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

**CST3402B Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient <sup>1</sup>	---	162	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-Case <sup>1</sup>	---	---	°C/W



**CST3402B N-Ch 30V Fast Switching MOSFETs**

**CST3402B Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristics</b>						
$V_{(\text{BR})\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}, I_D=250\mu\text{A}$	30	-	-	V
$I_{\text{DSS}}$	Zero Gate Voltage Drain Current	$V_{\text{DS}}=20\text{V}, V_{\text{GS}}=0\text{V}$ ,	-	-	1.0	$\mu\text{A}$
$I_{\text{GSS}}$	Gate to Body Leakage Current	$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=\pm 12\text{V}$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$V_{\text{DS}}=V_{\text{GS}}, I_D=250\mu\text{A}$	0.4	0.7	1.0	V
$R_{\text{DS}(\text{on})}$ <small>note2</small>	Static Drain-Source on-Resistance	$V_{\text{GS}}=10\text{V}, I_D=3\text{A}$	-	86	98	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_D=2\text{A}$	-	90	110	
<b>Dynamic Characteristics</b>						
$C_{\text{iss}}$	Input Capacitance	$V_{\text{DS}}=10\text{V}, V_{\text{GS}}=0\text{V}, f=1.0\text{MHz}$	-	184	-	pF
$C_{\text{oss}}$	Output Capacitance		-	38	-	pF
$C_{\text{rss}}$	Reverse Transfer Capacitance		-	28	-	pF
$Q_g$	Total Gate Charge	$V_{\text{DS}}=10\text{V}, I_D=3\text{A}, V_{\text{GS}}=4.5\text{V}$	-	2.7	-	nC
$Q_{\text{gs}}$	Gate-Source Charge		-	0.4	-	nC
$Q_{\text{gd}}$	Gate-Drain("Miller") Charge		-	0.5	-	nC
<b>Switching Characteristics</b>						
$t_{\text{d}(\text{on})}$	Turn-on Delay Time	$V_{\text{DS}}=10\text{V}, I_D=3\text{A}, R_{\text{GEN}}=3\Omega, V_{\text{GS}}=4.5\text{V}$	-	8	-	ns
$t_r$	Turn-on Rise Time		-	27	-	ns
$t_{\text{d}(\text{off})}$	Turn-off Delay Time		-	26	-	ns
$t_f$	Turn-off Fall Time		-	33	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_s$	Maximum Continuous Drain to Source Diode Forward Current	-	-	3	A	
$I_{\text{SM}}$	Maximum Pulsed Drain to Source Diode Forward Current	-	-	12	A	
$V_{\text{SD}}$	Drain to Source Diode Forward Voltage	$V_{\text{GS}}=0\text{V}, I_s=3\text{A}$	-	-	2.0	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

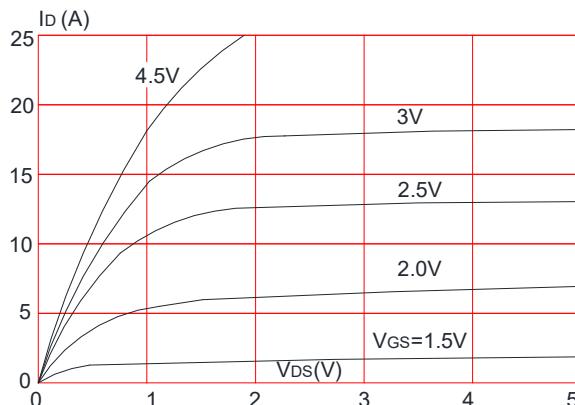
2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 0.5\%$



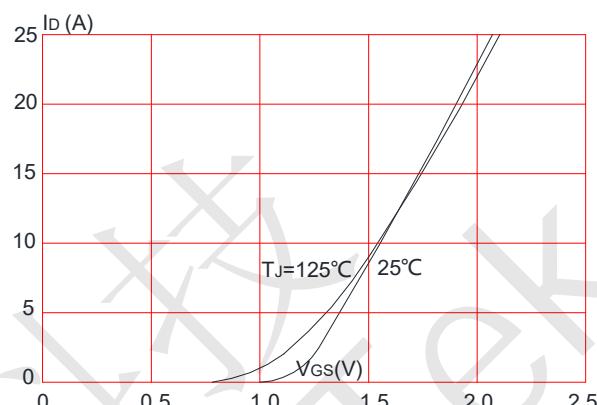
CST3402B N-Ch 30V Fast Switching MOSFETs

**CST3402B Typical Performance Characteristics**

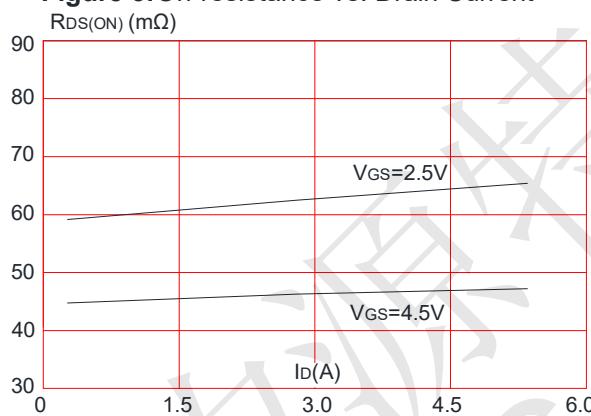
**Figure1:** Output Characteristics



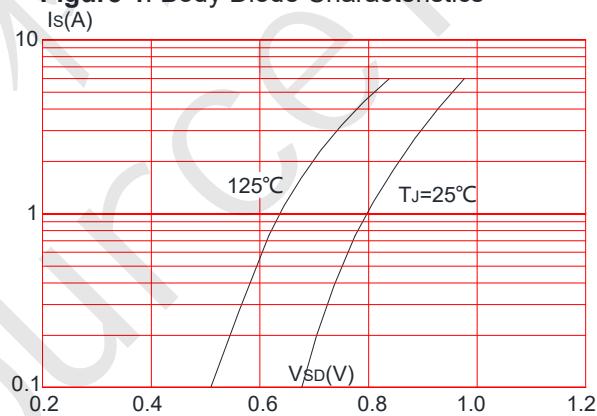
**Figure 2:** Typical Transfer Characteristics



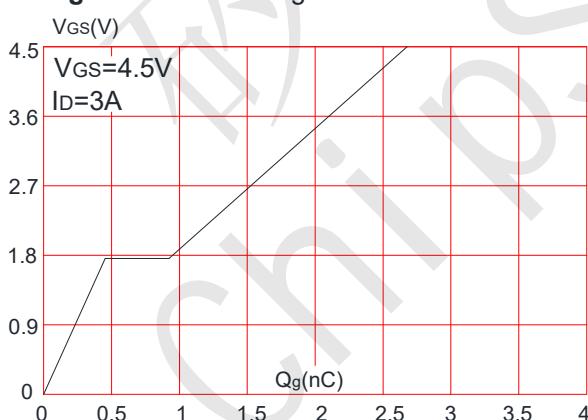
**Figure 3:** On-resistance vs. Drain Current



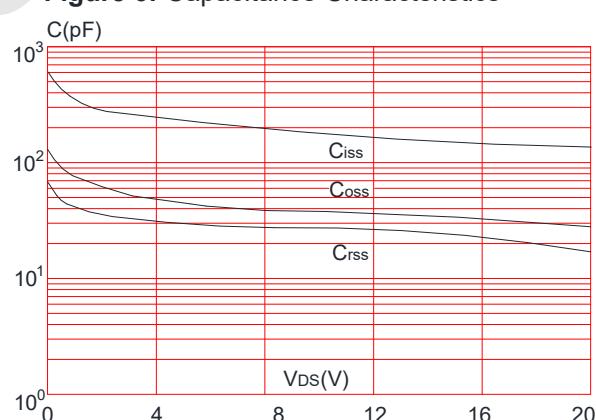
**Figure 4:** Body Diode Characteristics



**Figure 5:** Gate Charge Characteristics



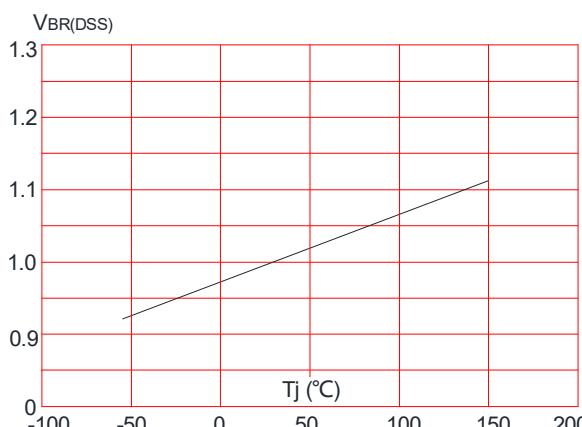
**Figure 6:** Capacitance Characteristics



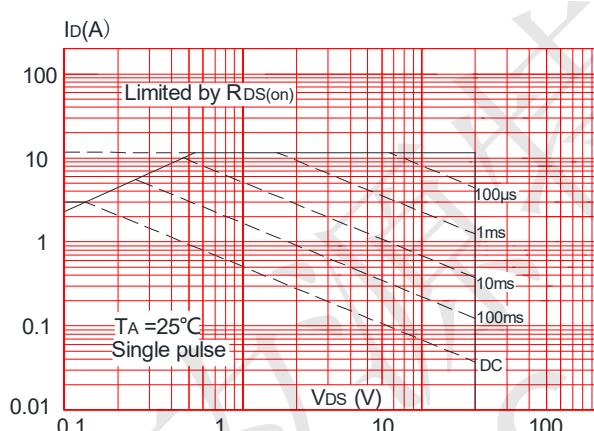


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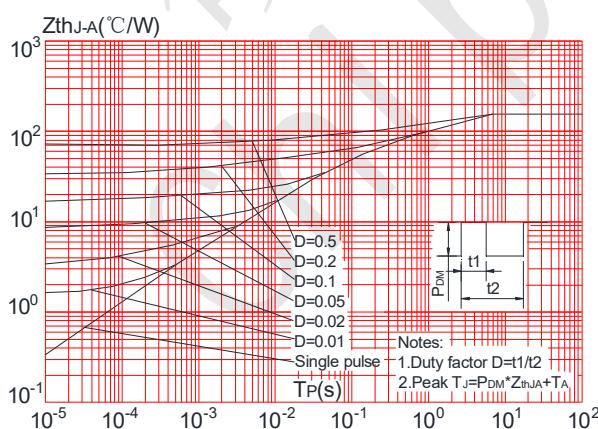
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



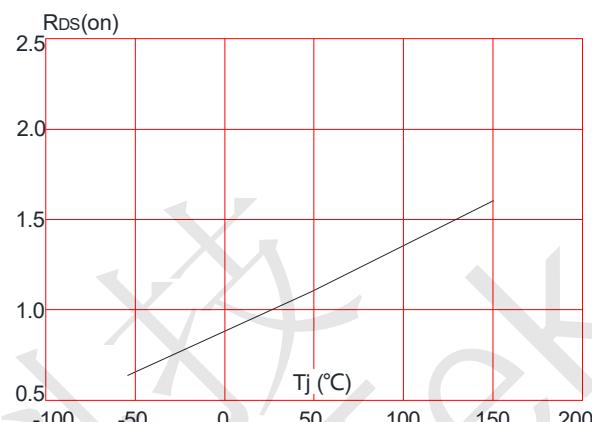
**Figure 9: Maximum Safe Operating Area**



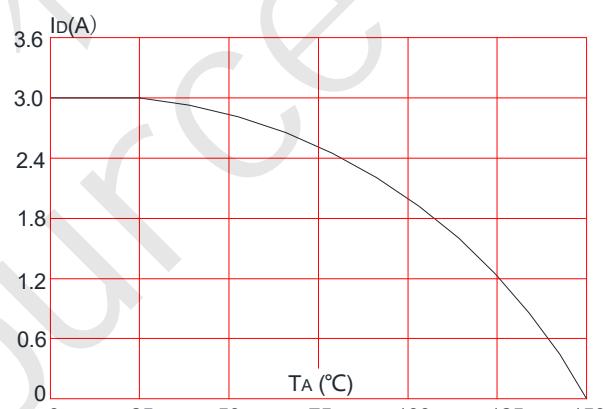
**Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient**



**Figure 8:** Normalized on Resistance vs. Junction Temperature



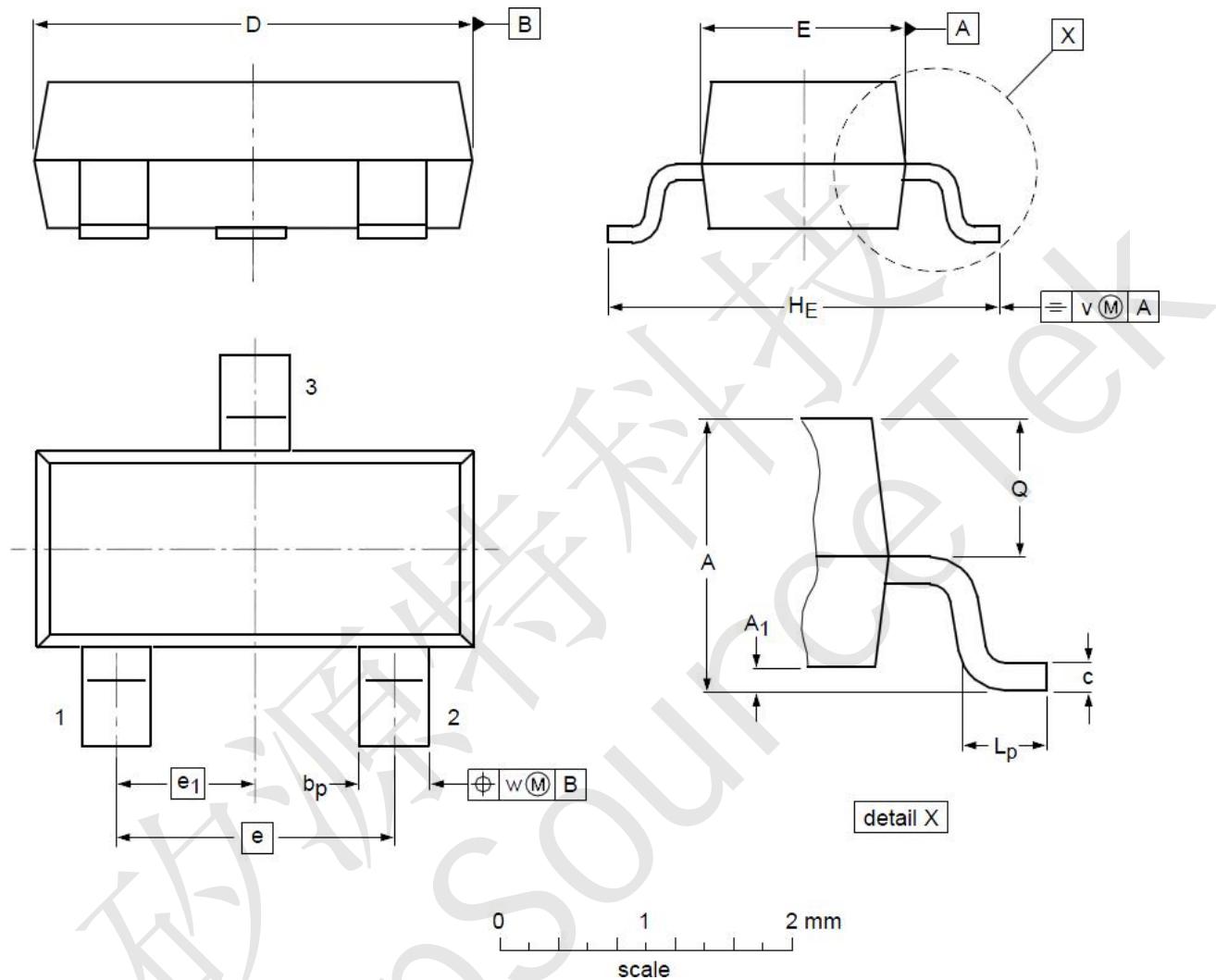
**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**





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CST3402B SOT23 Mechanical Data



DIMENSIONS ( unit : mm )

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	A <sub>1</sub>	0.01	0.05	0.10
b <sub>p</sub>	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 <sub>1</sub>	--	0.95	--
H <sub>E</sub>	2.25	2.40	2.55	L <sub>p</sub>	0.30	0.42	0.50
Q	0.45	0.49	0.55	v	--	0.20	--
w	--	0.10	--				