

**CST9926A**

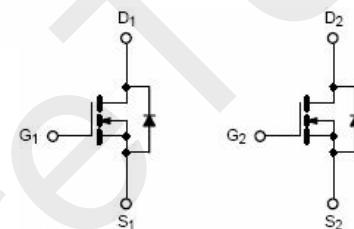
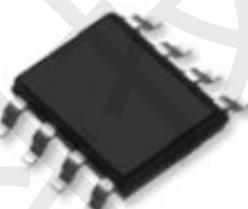
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

N-Ch 20V Fast Switching MOSFETs**CST9926A Product Summary**

BVDSS	RDS(ON)	ID
20V	20mΩ	6.0A

CST9926A Description

The CST9926A uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications.

CST9926A SOP8 Pin Configuration**CST9926AAbsolute Maximum Ratings**

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	20	V
V _{GS}	Gate-Source Voltage	±10	V
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ 4.5V ¹	6.0	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ 4.5V ¹	4.8	A
I _{DM}	Pulsed Drain Current ²	35	A
P _D @T _A =25°C	Total Power Dissipation ³	1.25	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

CST9926A Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ¹	---	125	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	80	°C/W



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CST9926A Electrical Characteristics ($T_J=25\text{ }^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_D=250\mu\text{A}$	20	22	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$\text{V}_{\text{DS}}=20\text{V}, \text{V}_{\text{GS}}=0\text{V}$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$\text{V}_{\text{GS}}=\pm 10\text{V}, \text{V}_{\text{DS}}=0\text{V}$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$\text{V}_{\text{GS}(\text{th})}$	$\text{V}_{\text{DS}}=\text{V}_{\text{GS}}, \text{I}_D=250\mu\text{A}$	0.5	0.7	1.2	V
Drain-Source On-State Resistance	$\text{R}_{\text{DS}(\text{ON})}$	$\text{V}_{\text{GS}}=4.5\text{V}, \text{I}_D=6\text{A}$	-	20	30	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=2.5\text{V}, \text{I}_D=5\text{A}$	-	25	35	
Forward Transconductance	g_{FS}	$\text{V}_{\text{DS}}=5\text{V}, \text{I}_D=6\text{A}$	20	-	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$\text{V}_{\text{DS}}=10\text{V}, \text{V}_{\text{GS}}=0\text{V}, \text{F}=1.0\text{MHz}$	-	290	-	PF
Output Capacitance	C_{oss}		-	60	-	PF
Reverse Transfer Capacitance	C_{rss}		-	30	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{\text{d}(\text{on})}$	$\text{V}_{\text{DD}}=10\text{V}, \text{I}_D=1\text{A}$ $\text{V}_{\text{GEN}}=4.5\text{V}, \text{R}_G=6\Omega$	-	8	-	nS
Turn-on Rise Time	t_r		-	9	-	nS
Turn-Off Delay Time	$t_{\text{d}(\text{off})}$		-	15	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	$\text{V}_{\text{DS}}=10\text{V}, \text{I}_D=3\text{A}, \text{V}_{\text{GS}}=4.5\text{V}$	-	10	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	nC
Gate-Drain Charge	Q_{gd}		-	1.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_s=1.7\text{A}$	-	-	1.2	V
Diode Forward Current (Note 2)	I_s		-	-	6	A

CST9926A Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_s	Continuous Source Current ^{1,4}	$\text{V}_G=\text{V}_D=0\text{V}$, Force Current	---	---	6.0	A
V_{SD}	Diode Forward Voltage ²	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_s=1\text{A}, \text{T}_J=25\text{ }^\circ\text{C}$	---	---	1.2	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\text{us}$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by $150\text{ }^\circ\text{C}$ junctiontemperature
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.



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CST9926A Typical Characteristics

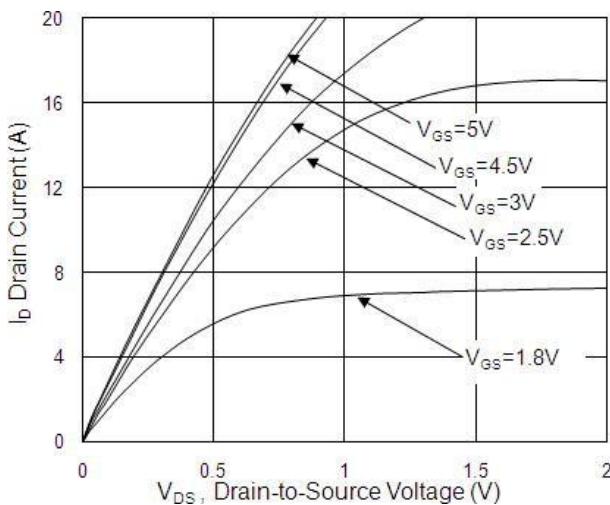


Fig.1 Typical Output Characteristics

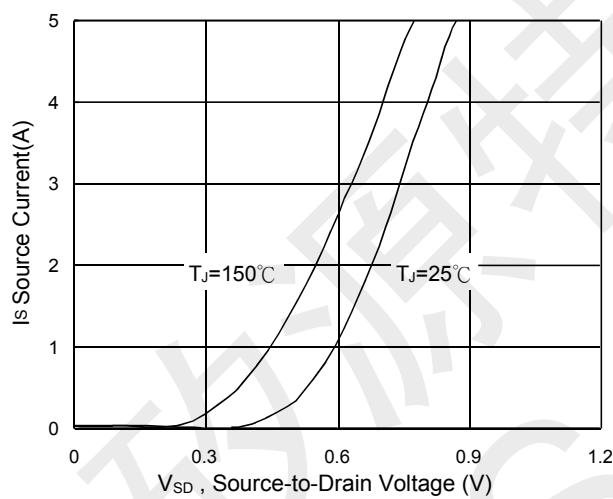


Fig.3 Forward Characteristics of Reverse

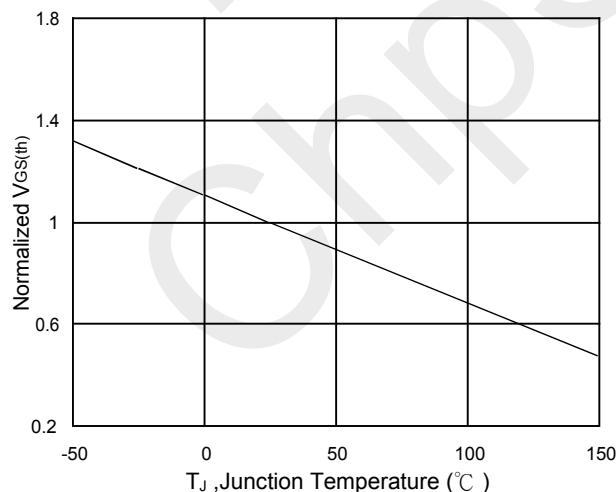


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

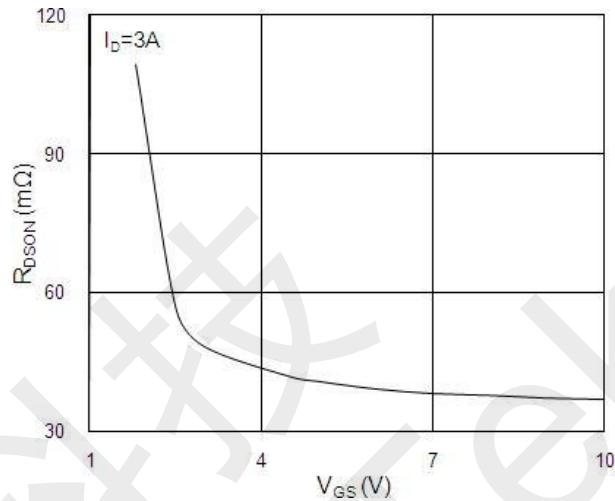


Fig.2 On-Resistance vs. Gate-Source Voltage

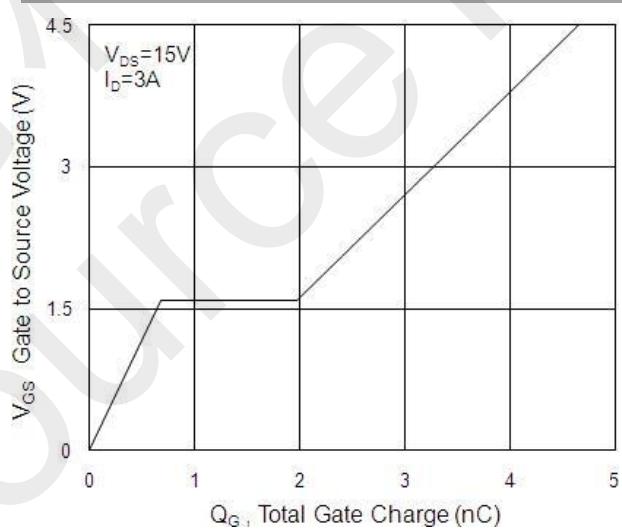


Fig.4 Gate-Charge Characteristics

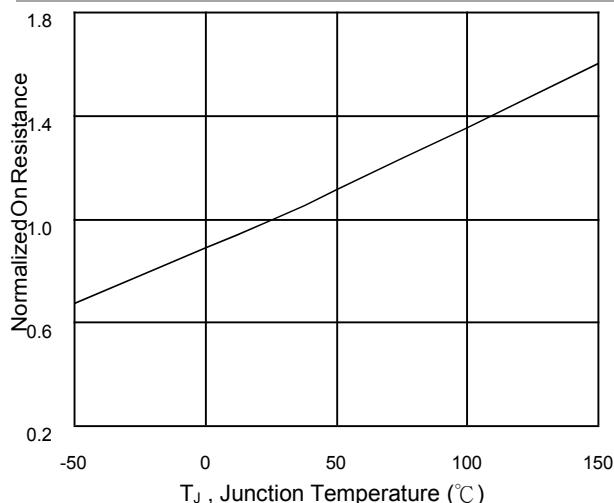


Fig.6 Normalized $R_{DS(on)}$ vs. T_J



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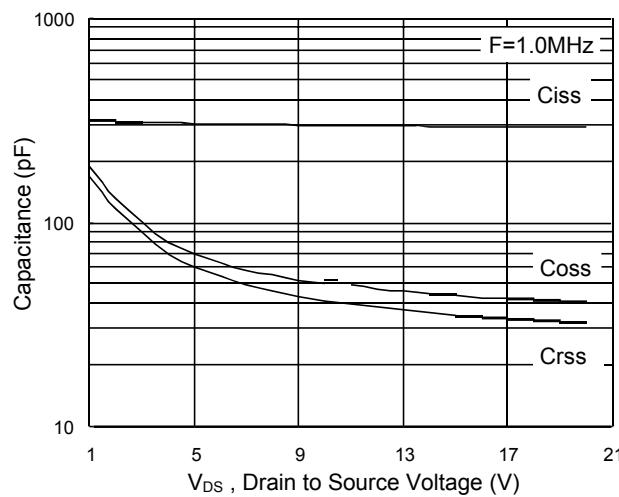


Fig.7 Capacitance

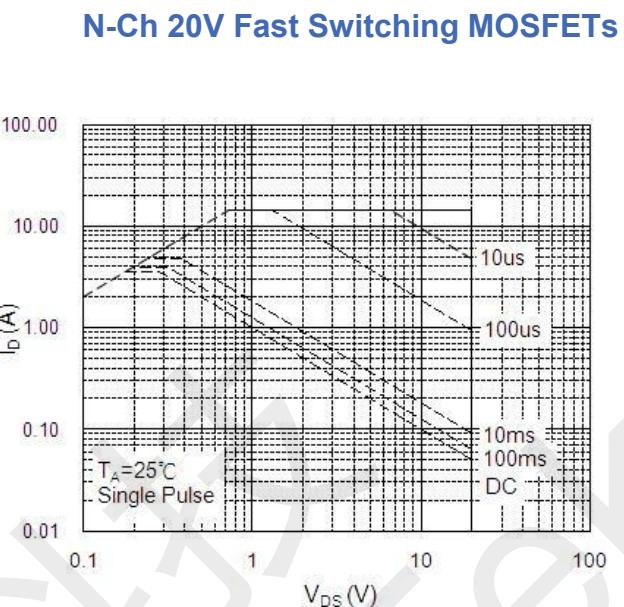


Fig.8 Safe Operating Area

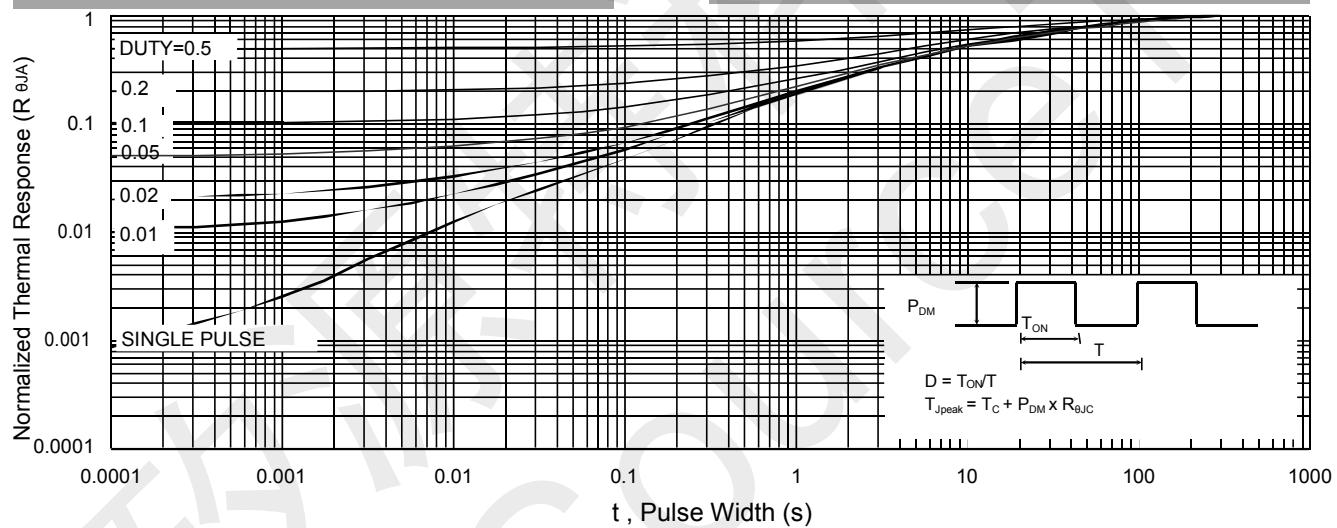


Fig.9 Normalized Maximum Transient Thermal Impedance

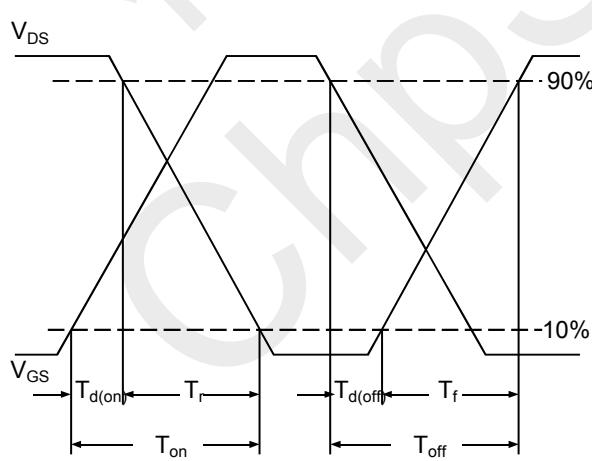


Fig.10 Switching Time Waveform

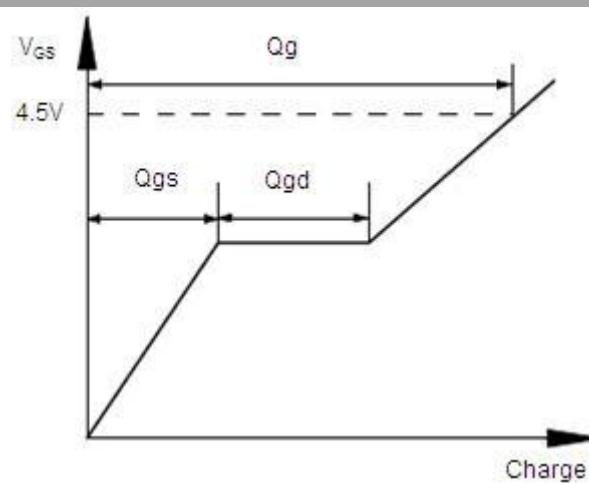


Fig.11 Gate Charge Waveform