



### CST8810A Dual N-ch 20V Fast Switching MOSFETs

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

#### CST8810A Product Summary



BVDSS	RDSON	ID
20V	11.5 mΩ	7A

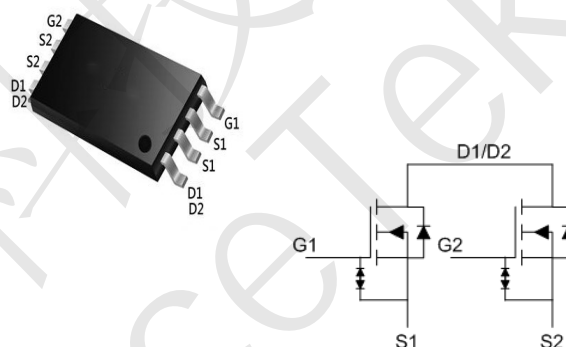
#### CST8810A Description

The CST8810A is the low RDSON trenched N-CH MOSFETs with robust ESD protection.

This product is suitable for Lithium-ion battery pack applications.

The CST8810A meet the RoHS and Green Product requirement with full function reliability approved.

#### CST8810A TSSOP8 Pin Configuration



#### CST8810A Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units	
V <sub>DSS</sub>	Drain-Source Voltage	20	V	
V <sub>GSS</sub>	Gate-Source Voltage	±10	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>A</sub> = 25°C	7.0	A
		T <sub>A</sub> = 100°C	4.5	A
I <sub>DM</sub>	Pulsed Drain Current <sup>note1</sup>	24	A	
P <sub>D</sub>	Power Dissipation	1.23	W	
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	111	°C/W	
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C	



### CST8810A Dual N-ch 20V Fast Switching MOSFETs

#### CST8810A Electrical Characteristics ( $T_J=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=4.5V, I_D=3.5A$		11.5	15	m $\Omega$
		$V_{GS}=2.5V, I_D=3.5A$		15	18	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.5	---	1.2	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 8V, V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=3.5A$	---	20	---	S
$Q_g$	Total Gate Charge (4.5V)	$V_{DS}=15V, V_{GS}=4.5V, I_D=7A$	---	11.3	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.89	---	
$Q_{gd}$	Gate-Drain Charge		---	3.56	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=10V, V_{GS}=4.5V, R_G=3.3\Omega$ $I_D=3.5A$	---	8	---	ns
$T_r$	Rise Time		---	17	---	
$T_{d(off)}$	Turn-Off Delay Time		---	27	---	
$T_f$	Fall Time		---	8.8	---	
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	955	---	pF
$C_{oss}$	Output Capacitance		---	200	---	
$C_{rss}$	Reverse Transfer Capacitance		---	150	---	

#### CST8810A Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V$ , Force Current	---	---	7	A
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

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



### CST8810A typical Performance Characteristics

Figure 1: Output Characteristics

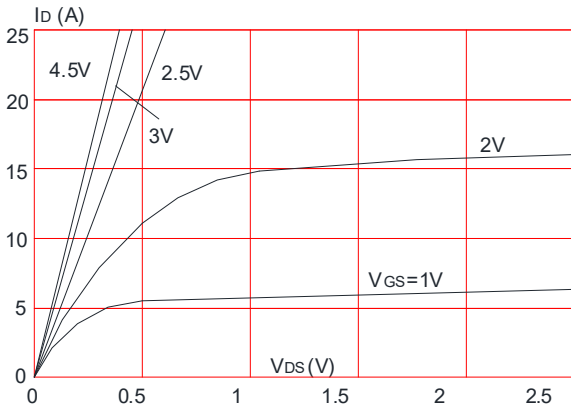


Figure 2: Typical Transfer Characteristics

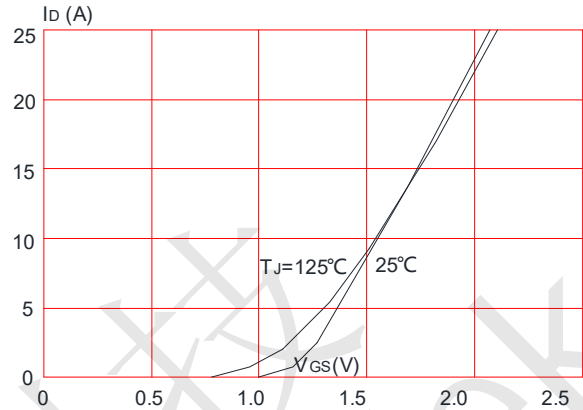


Figure 3: On-resistance vs. Drain Current

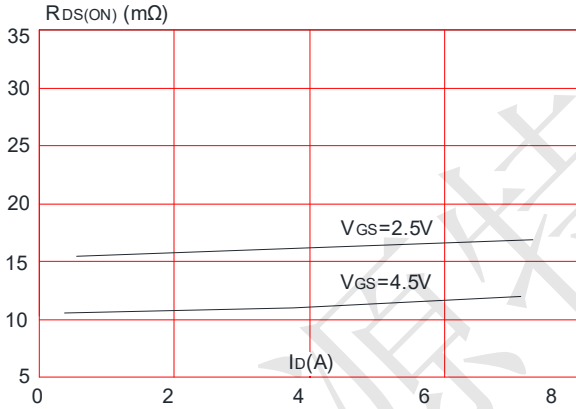


Figure 4: Body Diode Characteristics

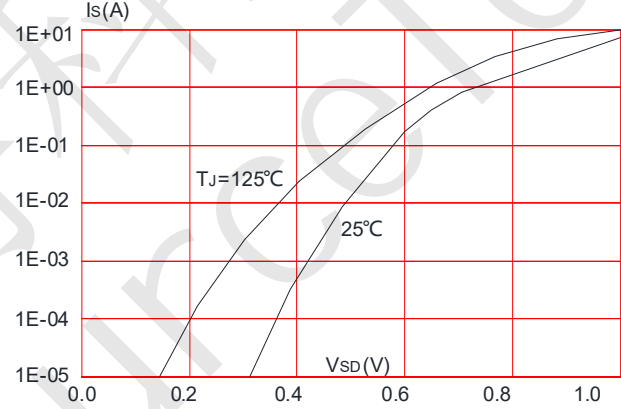


Figure 5: Gate Charge Characteristics

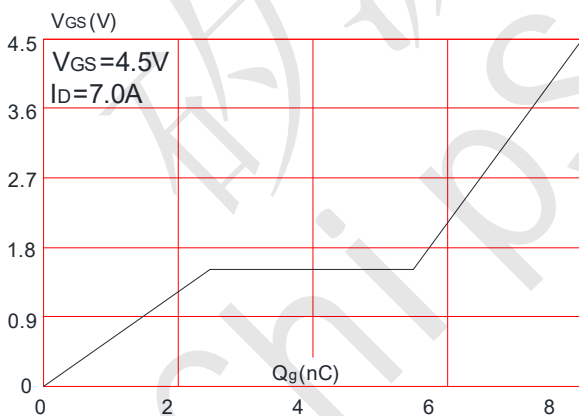
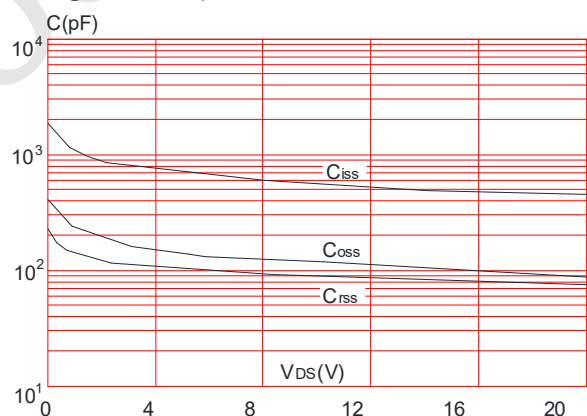


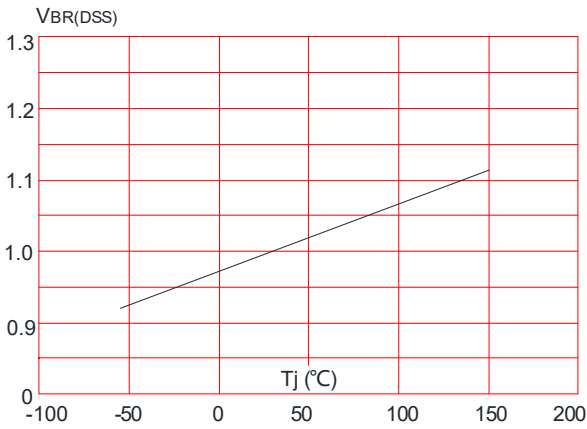
Figure 6: Capacitance Characteristics



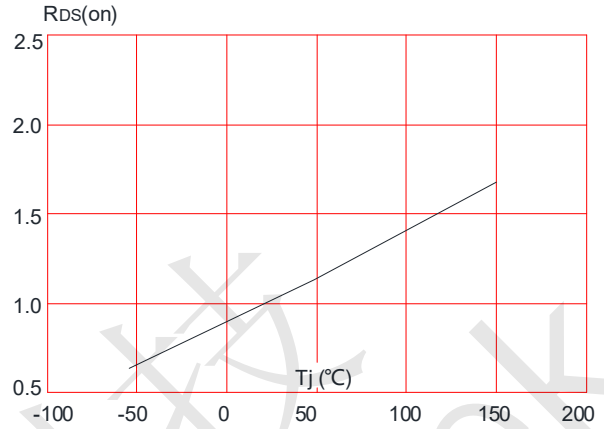


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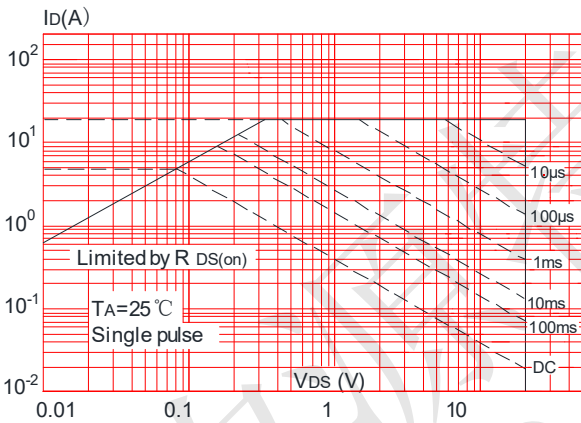
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



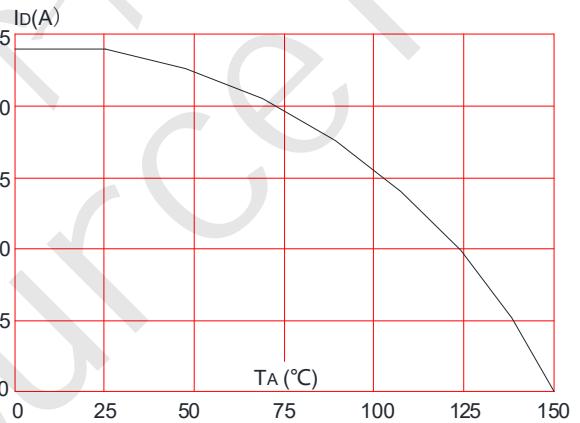
**Figure 8:** Normalized on Resistance vs. Junction Temperature



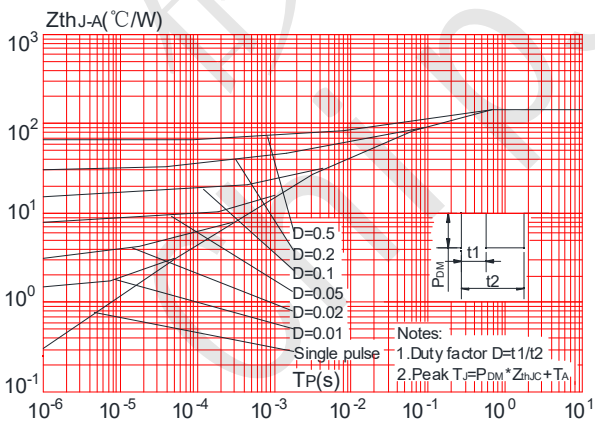
**Figure 9:** Maximum Safe Operating Area



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

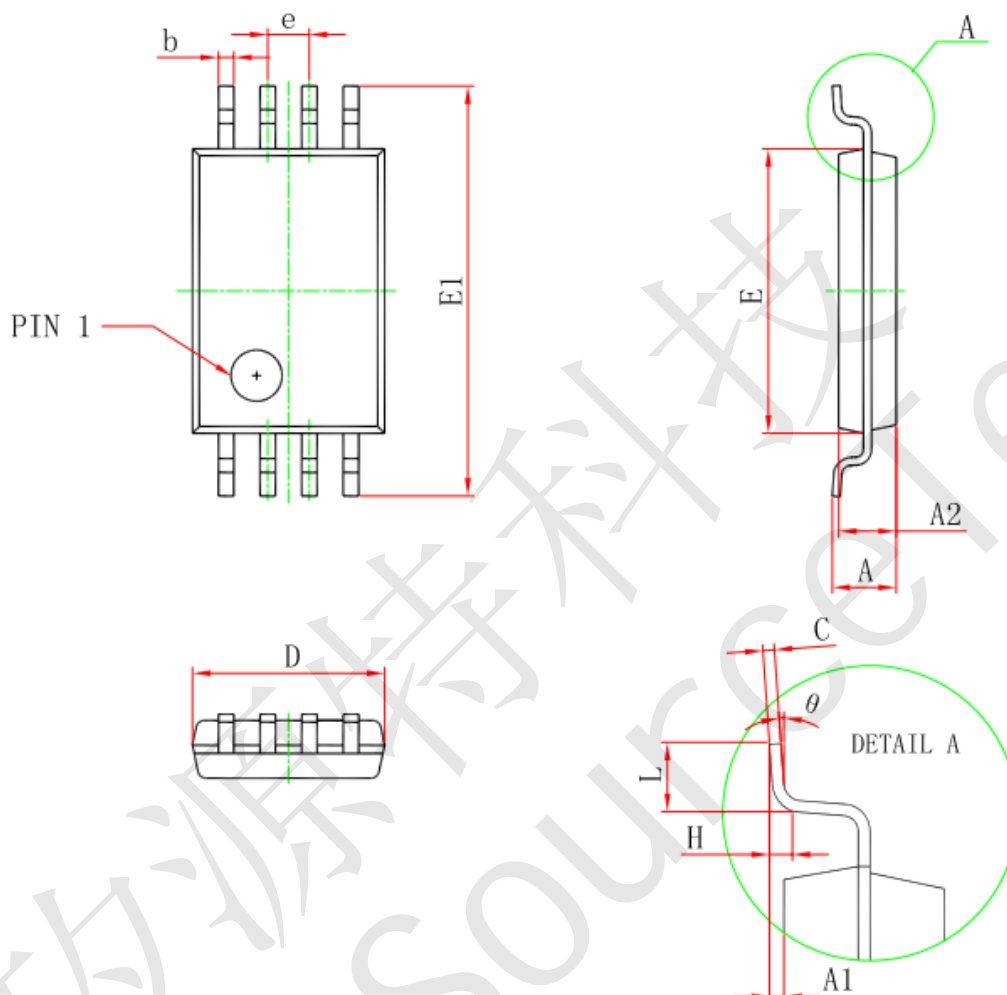


**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





CST8810A TSSOP8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
e	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.200		0.047
A2	0.800	1.000	0.031	0.039
A1	0.050	0.150	0.002	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25(TYP)		0.01(TYP)	
θ	1°	7°	1°	7°