



### CST8810B 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

#### CST8810B Product Summary



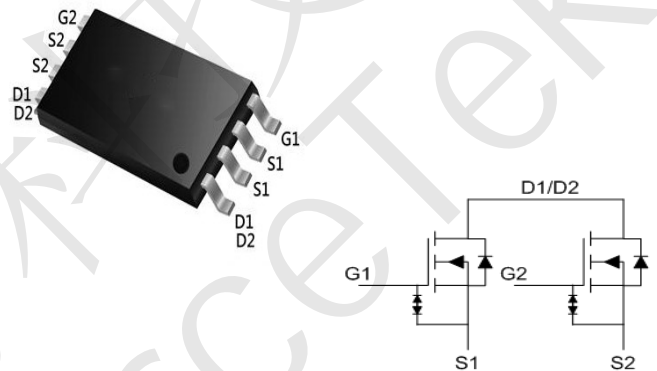
BVDSS	RDSON	ID
20V	13.5 mΩ	7A

#### CST8810B Description

The CST8810B is the low RDSON trenched N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion battery pack applications.

The CST8810B meet the RoHS and Green Product requirement with full function reliability approved.

#### CST8810B TSSOP8 Pin Configuration



#### CST8810B 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
		T <sub>A</sub> = 100°C	4.1
I <sub>DM</sub>	Pulsed Drain Current <sup>note1</sup>	19	A
P <sub>D</sub>	Power Dissipation	0.83	W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	151	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C



#### CST8810B Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V,	-	-	1	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±10V	-	-	±10	uA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.4	0.7	1	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance note2	V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A	-	13.5	18	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A	-	21	30	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1.0MHz	-	545	-	pF
C <sub>oss</sub>	Output Capacitance		-	103	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	90	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =10V, I <sub>D</sub> =4.8A, V <sub>GS</sub> =4.5V	-	8	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	2.5	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	3	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =10V, R <sub>L</sub> =1.5Ω, R <sub>GEN</sub> =3Ω, V <sub>GS</sub> =5V	-	0.5	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	1	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	12	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	4	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	7.0	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	19	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =4.8A	-	-	1.2	V

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



## CST8810B typical Performance Characteristics

Figure 1: Output Characteristics

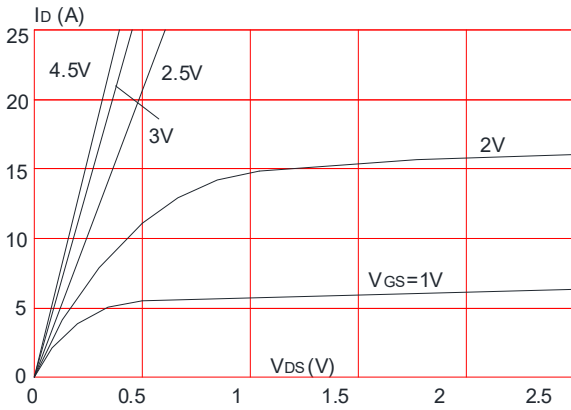


Figure 2: Typical Transfer Characteristics

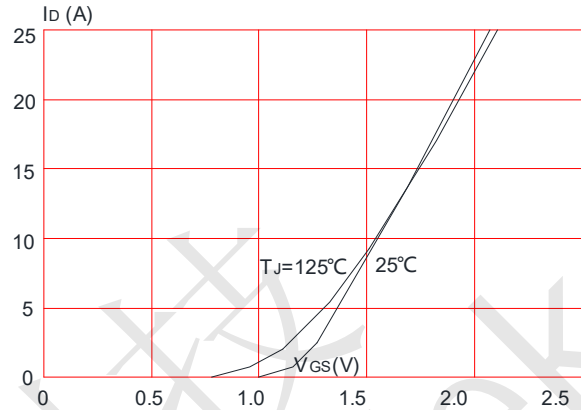


Figure 3: On-resistance vs. Drain Current

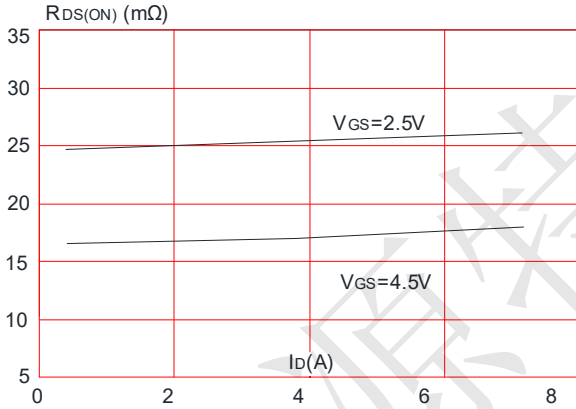


Figure 4: Body Diode Characteristics

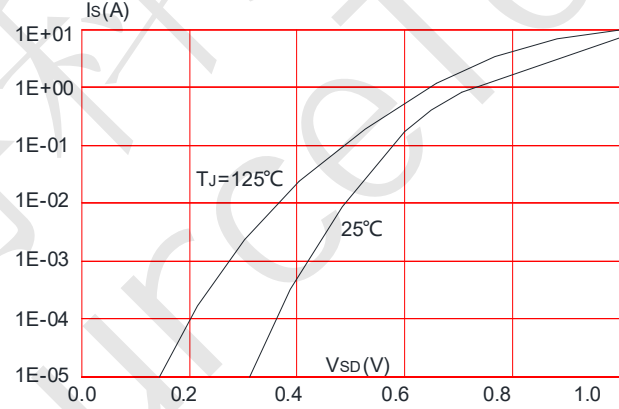


Figure 5: Gate Charge Characteristics

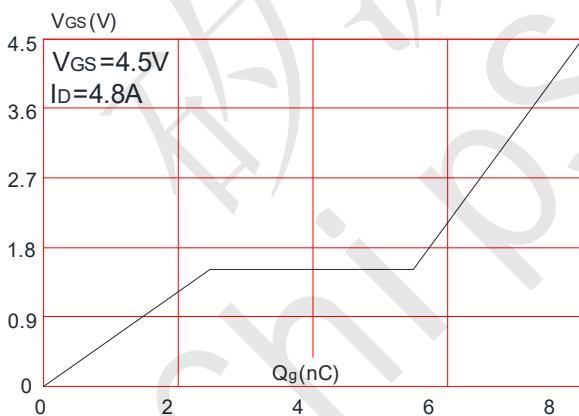
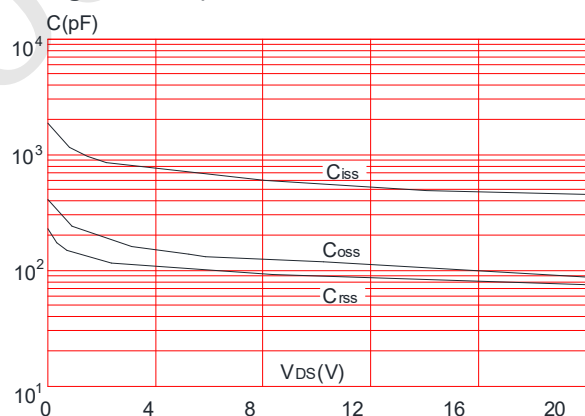


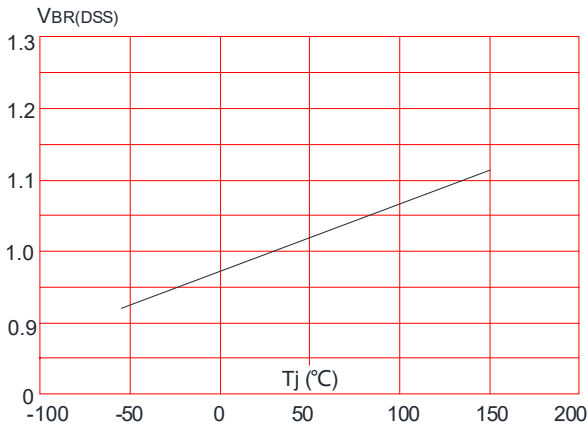
Figure 6: Capacitance Characteristics



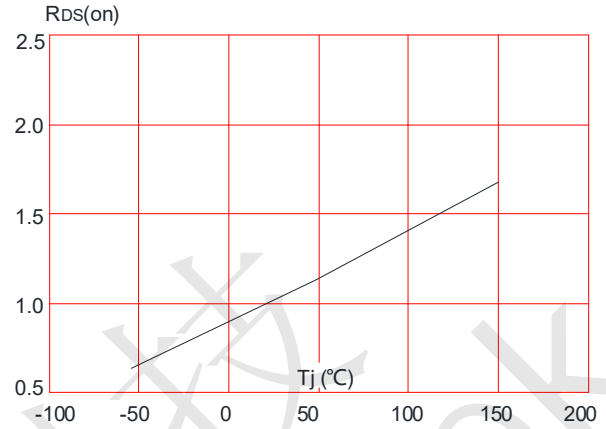


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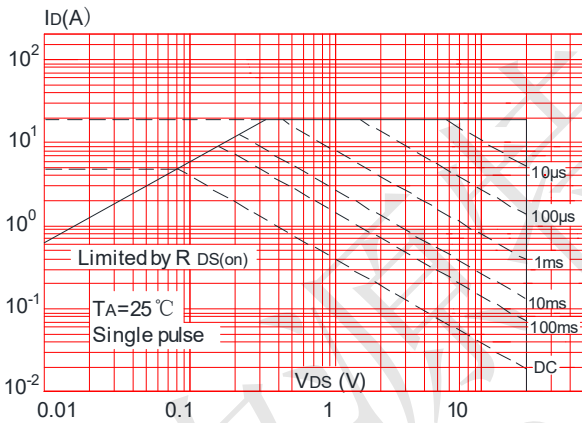
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



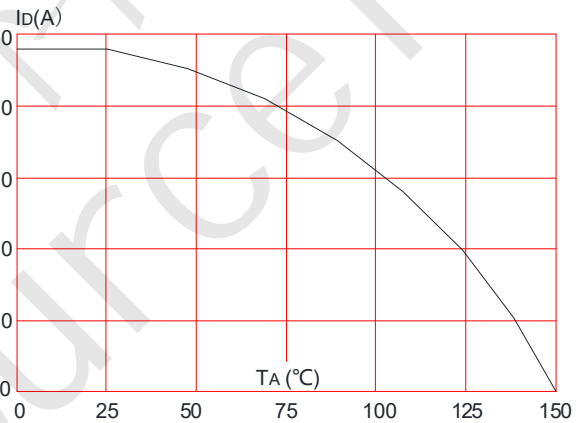
**Figure 8:** Normalized on Resistance vs. Junction Temperature



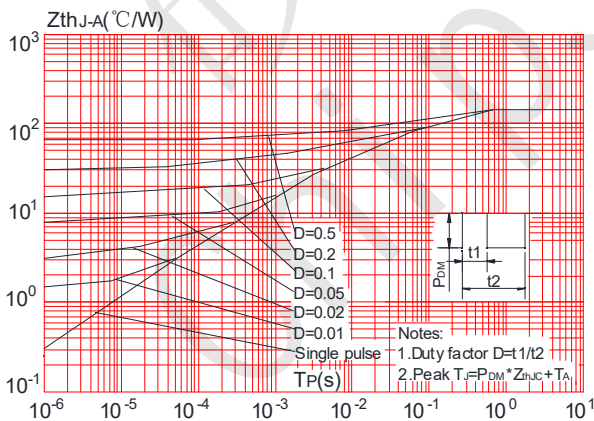
**Figure 9:** Maximum Safe Operating Area



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



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





## CST8810B Test Circuit

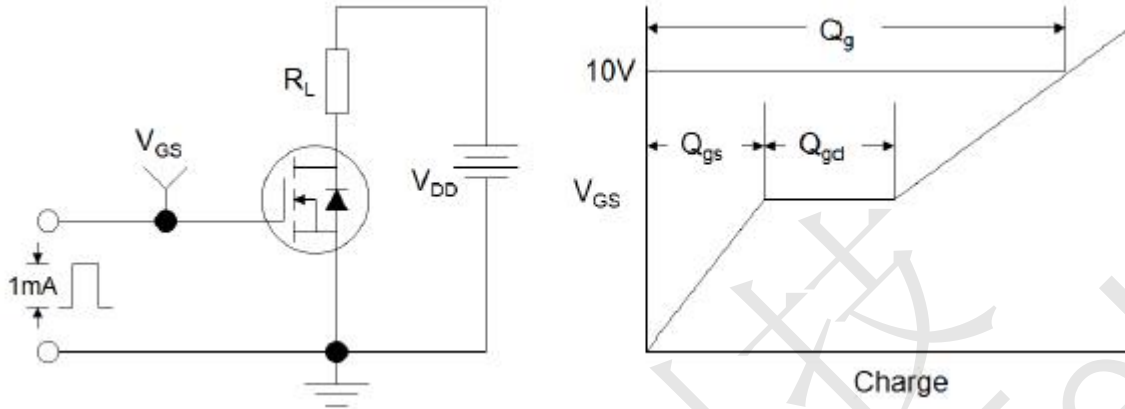


Figure1:Gate Charge Test Circuit & Waveform

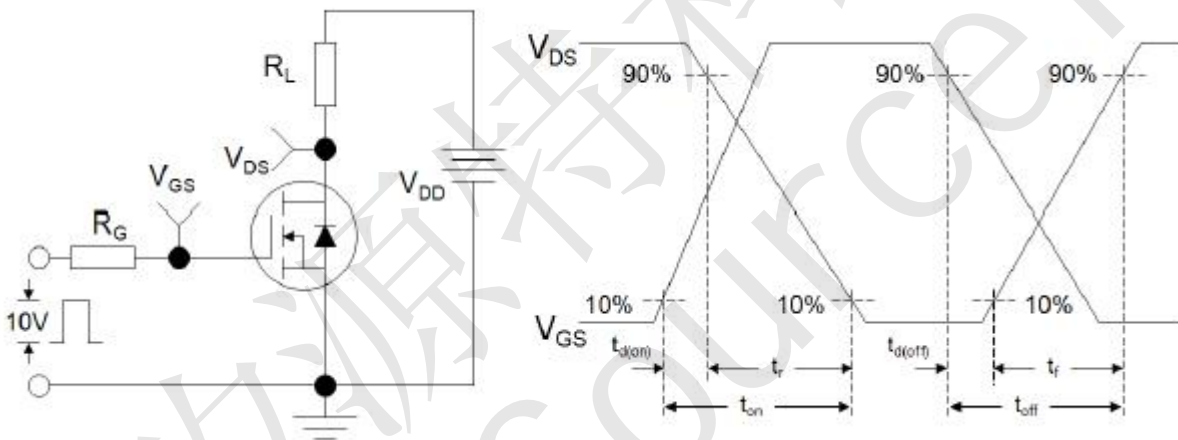


Figure 2: Resistive Switching Test Circuit & Waveforms

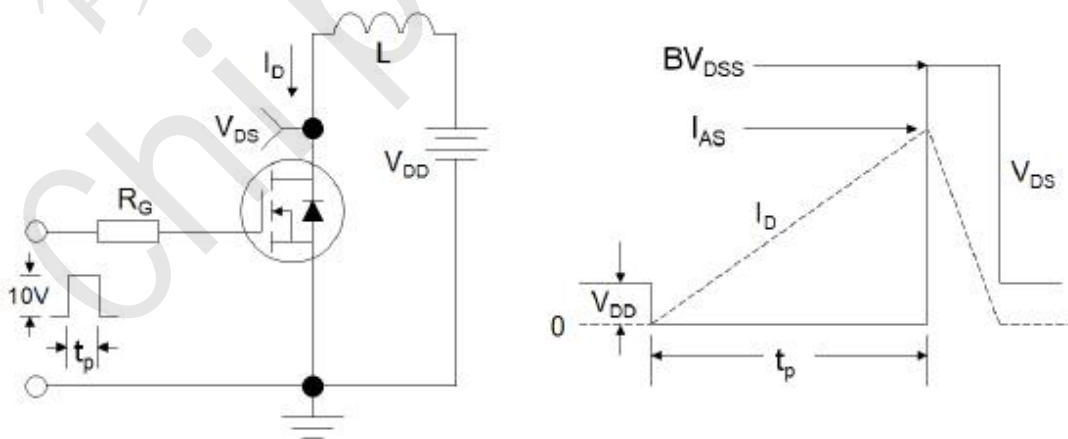
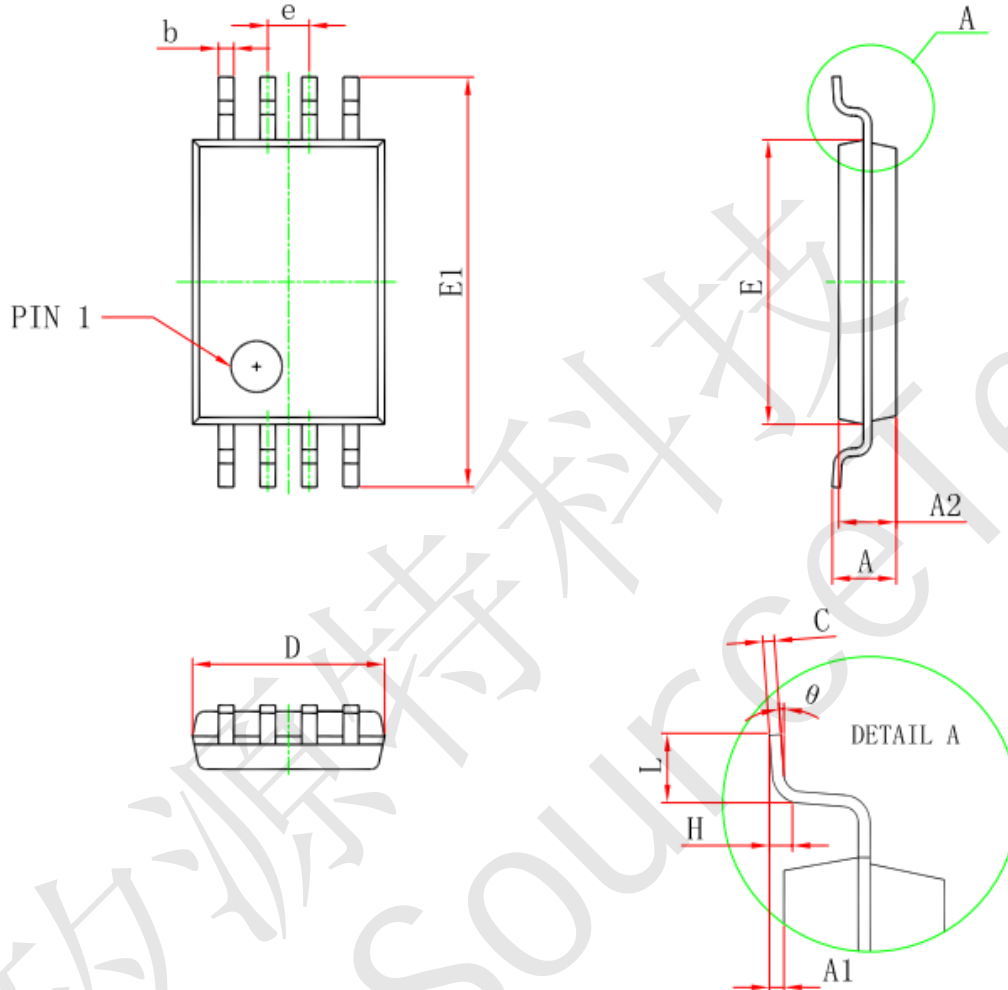


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



CST8810B 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°