



### CST4886D Dual N-Ch 40V Fast Switching MOSFETs

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

#### CST4886D Product Summary

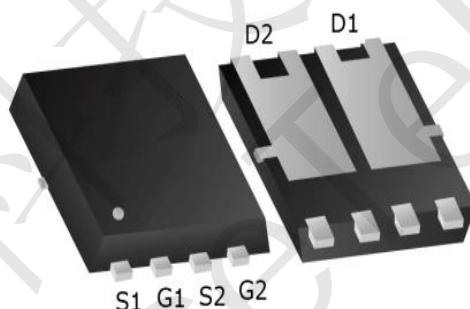


BVDSS	RDS(on)	ID
40V	17mΩ	20A

#### CST4886D Description

The CST4886D is the high cell density trench N-ch MOSFETs, which provide excellent  $R_{DS(on)}$  and gate charge for most of the synchronous buck converter applications. The CST4886D meet the RoHS and Green Product requirement with full function reliability approved.

#### CST4886D PDFN3333-8L Pin Configuration



#### CST4886D Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_A=25^{\circ}C$	Continuous Drain Current <sup>1</sup>	20	A
$I_D@T_A=70^{\circ}C$	Continuous Drain Current <sup>1</sup>	13	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	43	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	13	mJ
$I_{AS}$	Avalanche Current	20	A
$P_D@T_A=25^{\circ}C$	Total Power Dissipation <sup>4</sup>	3.0	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^{\circ}C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$

#### CST4886D Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient <sup>1</sup> ( $t \leq 10s$ )	---	62.5	$^{\circ}C/W$
	Thermal Resistance Junction-ambient <sup>1</sup>	---	65	$^{\circ}C/W$



### CST4886D Dual N-Ch 40V Fast Switching MOSFETs

#### CST4886D N-Channel Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	40	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V	-	-	1.0	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	-	-	±100	nA
On Characteristics						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance note3	V <sub>GS</sub> =10V, I <sub>D</sub> =8A	-	17	22	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A	-	25	35	mΩ
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1.0MHz	-	633	-	pF
C <sub>oss</sub>	Output Capacitance		-	67	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	58	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =20V, I <sub>D</sub> =8A, V <sub>GS</sub> =10V	-	12	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	3.2	-	nC
Q <sub>gd</sub>	Gate-Drain(“Miller”) Charge		-	3.1	-	nC
Switching Characteristics						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> = 20V, R <sub>L</sub> =2.5Ω V <sub>GS</sub> =10V,R <sub>REN</sub> =3Ω	-	4	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	3	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	15	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	2	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I <sub>s</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	8	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	32	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>s</sub> = 8A	-	-	1.2	V

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

2. EAS condition : T<sub>J</sub>=25°C, V<sub>DD</sub>=20V, V<sub>G</sub>=10V, L=0.5mH, R<sub>g</sub>=25Ω, I<sub>AS</sub>=7.2A

T<sub>J</sub>=25°C, V<sub>DD</sub>=-20V, V<sub>G</sub>= -10V, L=0.5mH, R<sub>g</sub>=25Ω, I<sub>AS</sub>=-8.4A

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



## CST4886D Typical Performance Characteristics-N

Figure1: Output Characteristics

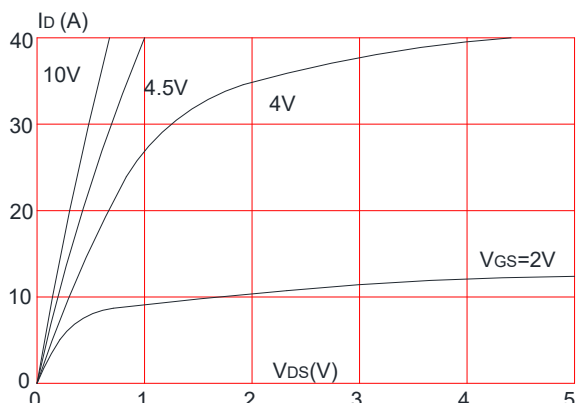


Figure 2: Typical Transfer Characteristics

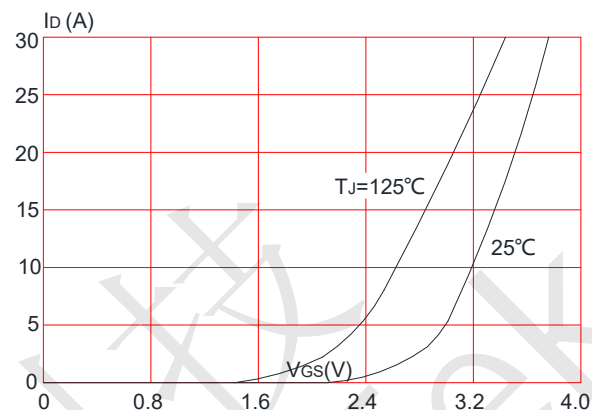


Figure 3: On-resistance vs. Drain Current

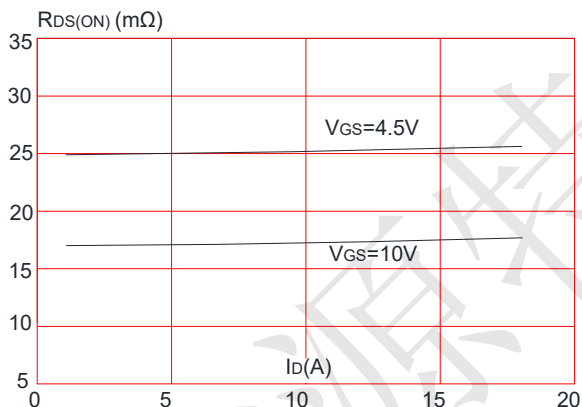


Figure 4: Body Diode Characteristics

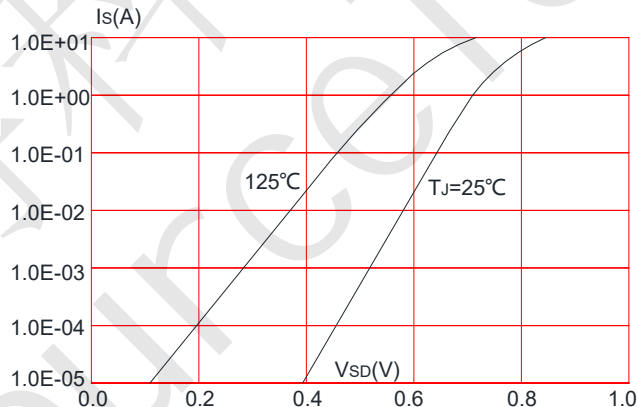


Figure 5: Gate Charge Characteristics

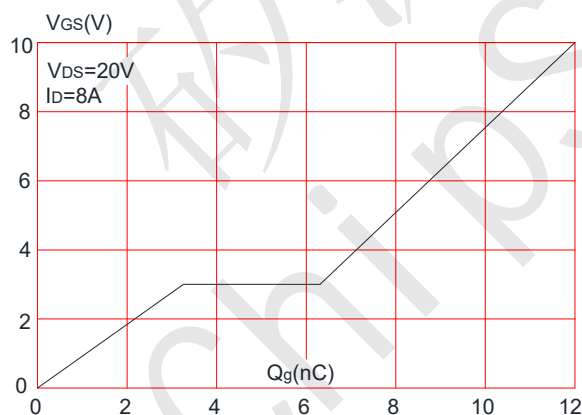
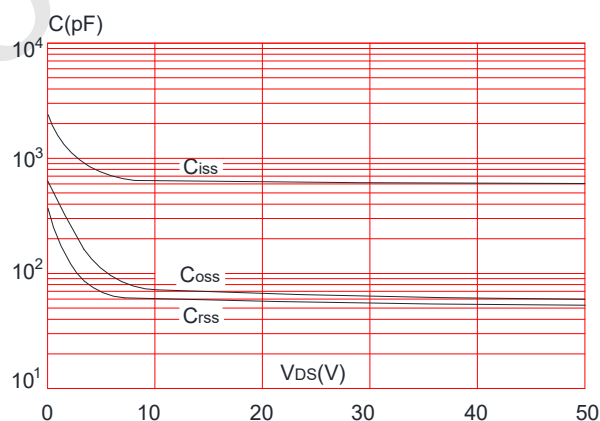


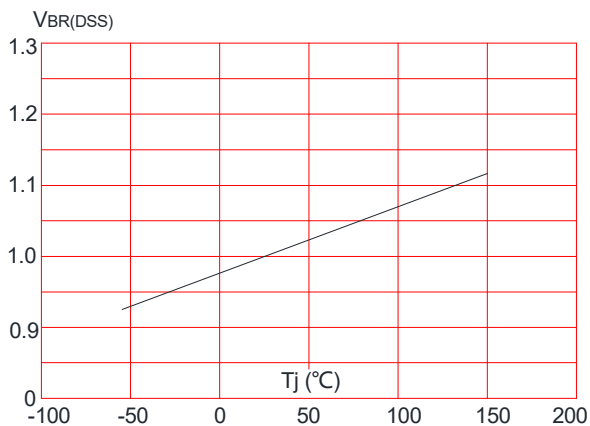
Figure 6: Capacitance Characteristics



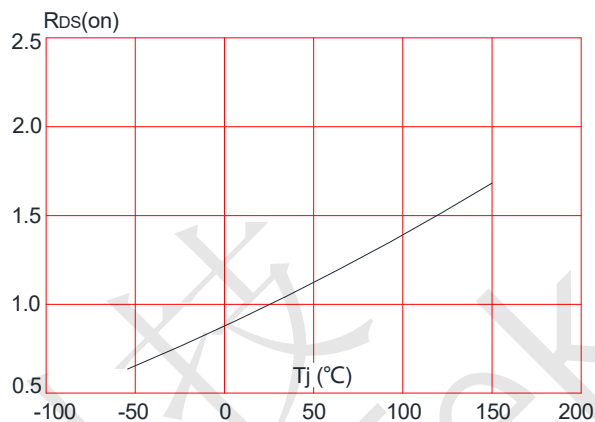


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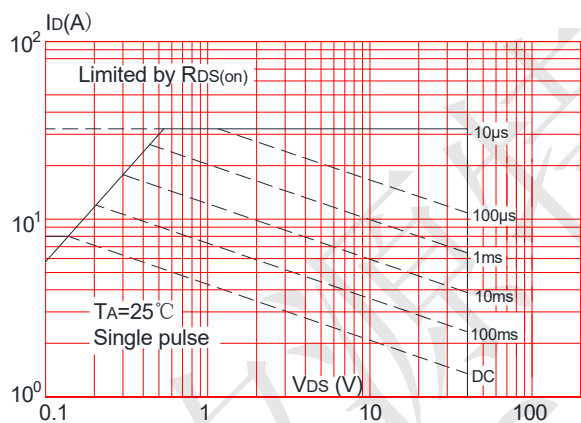
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



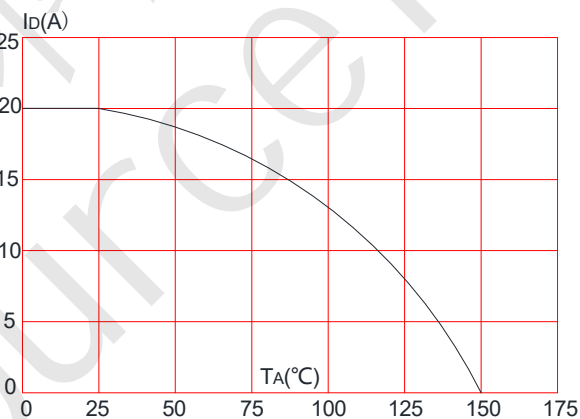
**Figure 8:** Normalized on Resistance vs. Junction Temperature



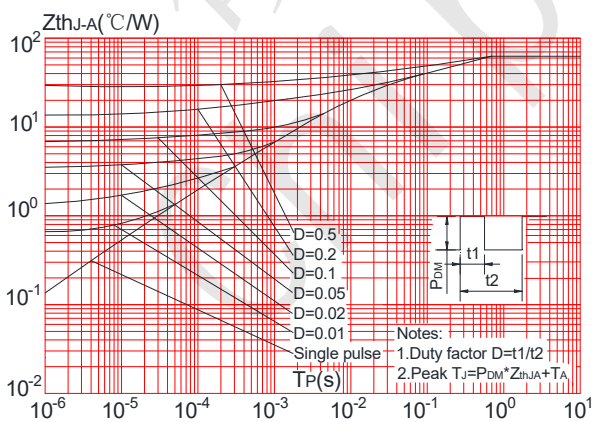
**Figure 9:** Maximum Safe Operating Area



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

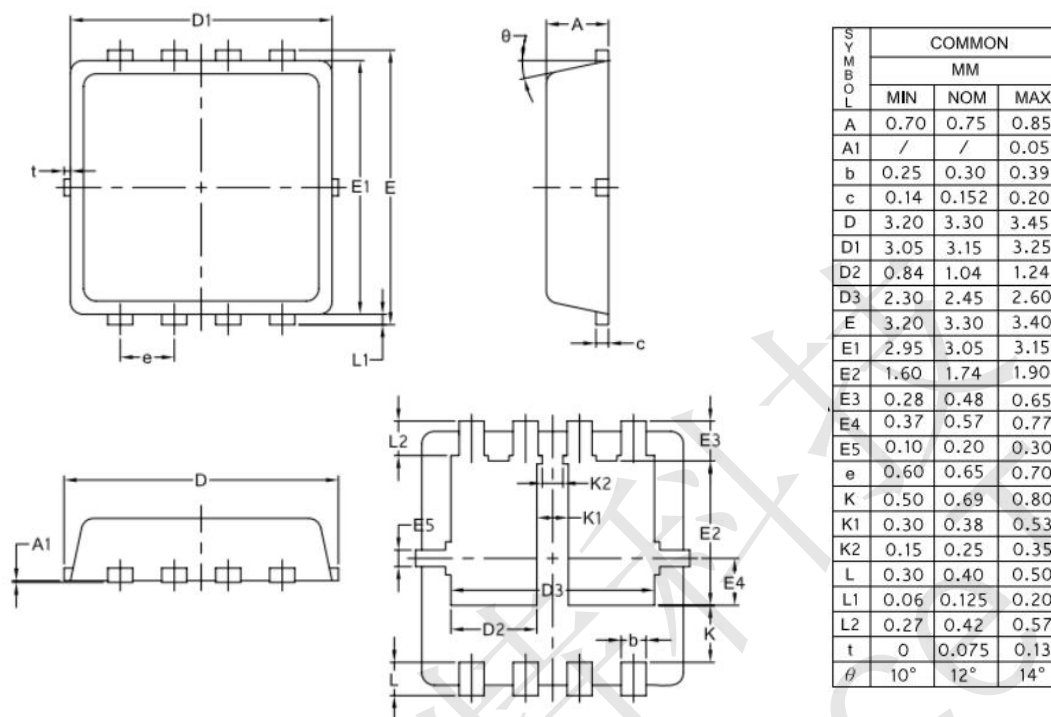


**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





#### CST4886D Package Mechanical Data-PDFN3333-8L-D-Type A



#### CST4886D Package Mechanical Data-PDFN3333-8L-D-Type B

