CMS11N10Q8-HF

N-Channel
RoHS Device
Halogen Free

Features

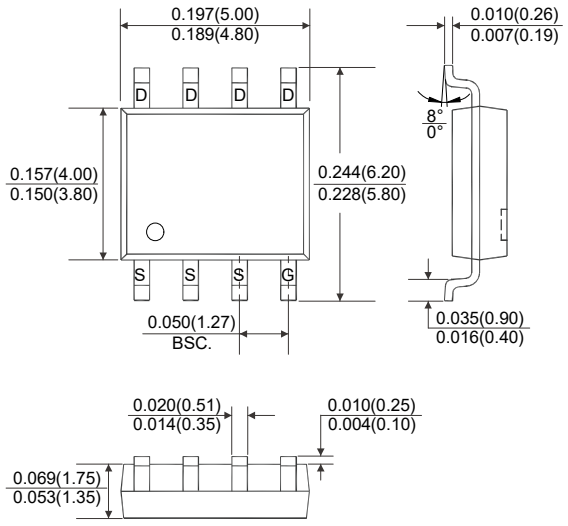
- Advanced high cell density Trench technology.
- Excellent CdV/dt effect decline.
- Green Device Available.
- Super Low Gate Charge.
- 100% EAS Guaranteed.

Description

The CMS11N10Q8 is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

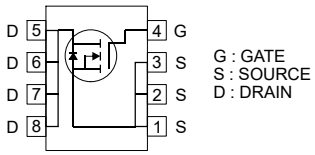
The CMS11N10Q8 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

SOP-8



Dimensions in inches and (millimeter)

Circuit diagram



Maximum Ratings (at T_C=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current [1]	I_D @T_A=25℃	11	A
	I_D @T_A=70℃	8	A
Pulsed Drain Current[1,2]	I_{DM}	50	A
Single Pulse Avalanche Energy, L=0.1mH[3]	E_{AS}	101	mJ
Single Pulse Avalanche Current, L=0.1mH[3]	I_{AS}	45	A
Total Power Dissipation[4]	P_D @T_A=25℃	3.1	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Max. Value	Unit
Thermal Resistance Junction-ambient[1]	$R_{\theta JA}$	40 (t ≦10s)	℃/W
		75	℃/W
Thermal Resistance Junction-case[1]	$R_{\theta JA}$	24	℃/W

Company reserves the right to improve product design , functions and reliability without notice.

Electrical Characteristics (at T_C=25°C unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	100	-	-	V	V_{GS}=0, I_D=250uA
Gate Threshold Voltage	$V_{GS(th)}$	1.2	-	2.4	V	V_{DS}=V_{GS}, I_D=250uA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current(T_J=25℃)	I_{DSS}	-	-	1	uA	V_{DS}=80V, V_{GS}=0
Drain-Source Leakage Current(T_J=55℃)		-	-	5		V_{DS}=80V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	14	mΩ	V_{GS}=10V, I_D=10A
		-	-	17		V_{GS}=4.5V, I_D=8A
Total Gate Charge[2]	Q_g	-	75	-	nC	I_D=10A V_{DS}=80V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	15.5	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	20.3	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	18.5	-	ns	V_{DD}=40V I_D=10A V_{GS}=10V R_G=3.3Ω
Rise Time	T_r	-	8.8	-		
Turn-off Delay Time	$T_{d(off)}$	-	58.8	-		
Fall Time	T_f	-	15.8	-		
Input Capacitance	C_{iss}	-	4708	-	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	326	-		
Reverse Transfer Capacitance	C_{rss}	-	247	-		

Guaranteed Avalanche Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Single Pulse Avalanche Energy[5]	EAS	26	-	-	mJ	V_{DD}=25V, L=0.1mH, I_{AS}=23A

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Diode Forward Voltage[2]	V_{SD}	-	-	1.2	V	I_S=10A, V_{GS}=0V, T_J=25℃
Continuous Source Current[1,6]	I_S	-	-	11	A	V_G=V_D=0V, Force Current
Pulsed Source Current[2,6]	I_{SM}	-	-	50	A	
Reverse Recovery Time	t_{rr}	-	28	-	ns	I_F=10A, dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge	Q_{rr}		50	-	nC	

Notes: 1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2. The data tested by pulsed, pulse width ≦ 300us, duty cycle ≦ 2%.

3. The EAS data shows Max. rating. The test condition is VDD=25V, VGS=10V, L=0.1mH, IAS=45A.

4. The power dissipation is limited by 150℃ junction temperature. .

5. The Min. value is 100% EAS tested guarantee.

6. The data is theoretically the same as ID and IDM , in real applications, should be limited by total power dissipation.

TYPICAL RATING AND CHARACTERISTIC CURVES

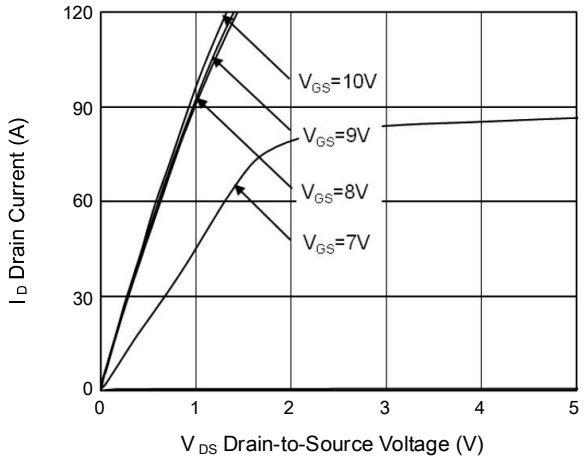


Fig.1 Typical Output Characteristics

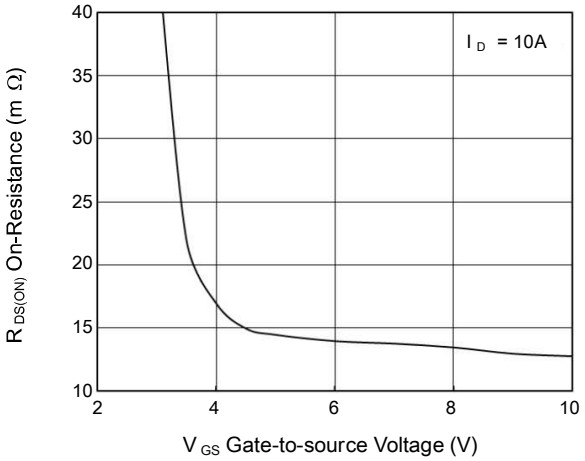


Fig.2 On-Resistance vs. G-S Voltage

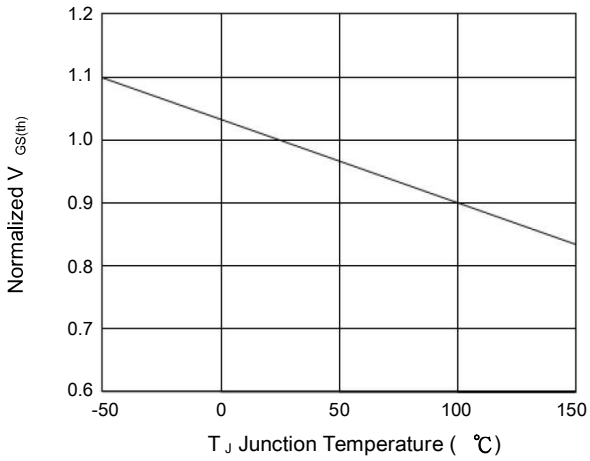


Fig.3 Normalized $V_{GS(th)}$ vs. T_J

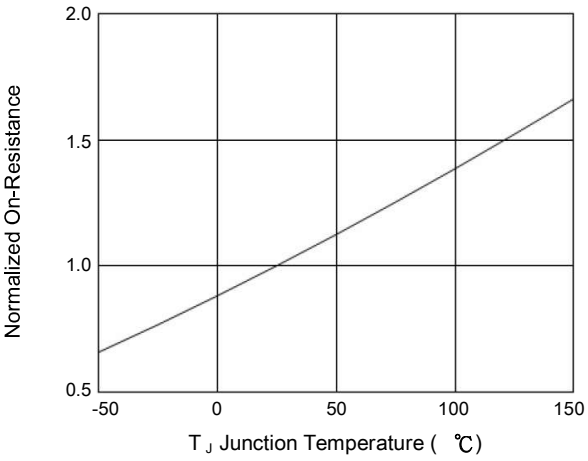


Fig.4 Normalized R_{DSON} vs. T_J

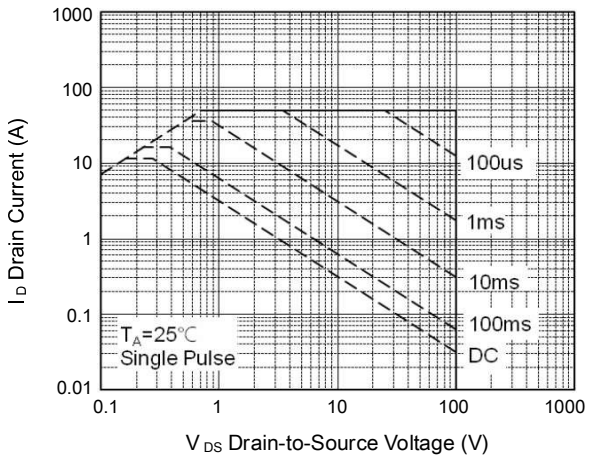


Fig.5 Safe Operating Area

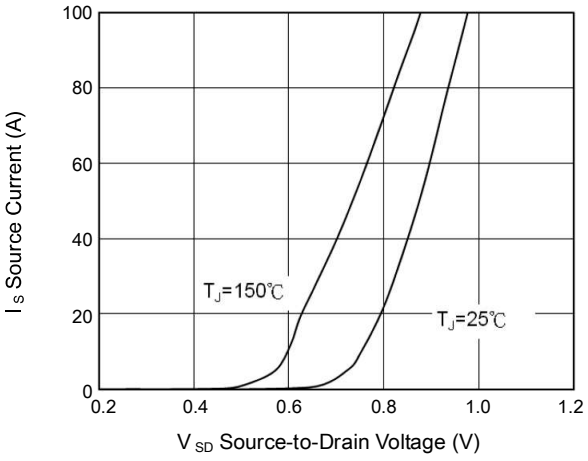


Fig.6 Forward Characteristics of Reverse

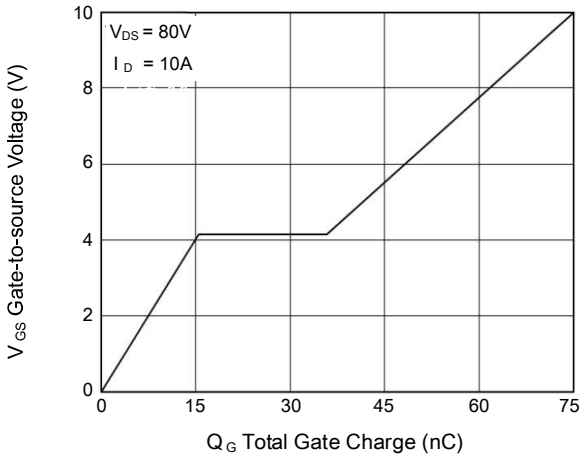


Fig.7 Gate Charge Characteristics

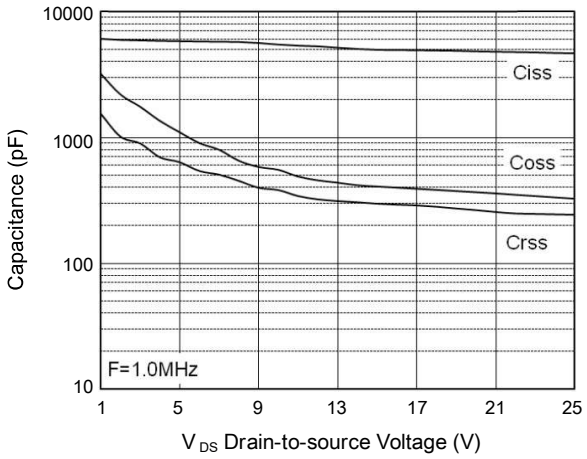


Fig.8 Capacitance Characteristics

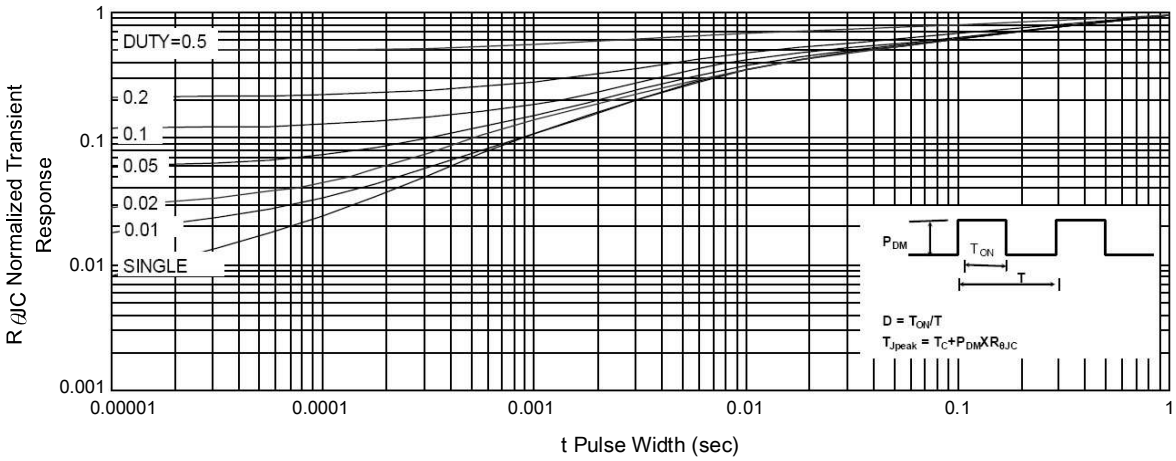


Fig.9 Normalized Maximum Transient Thermal Impedance

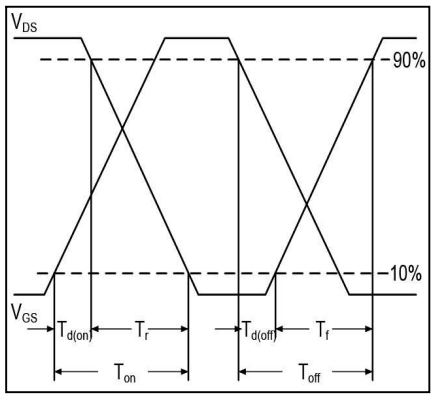


Fig.10 Switching Time Waveform

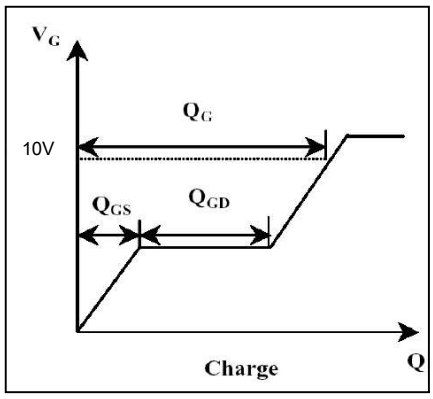
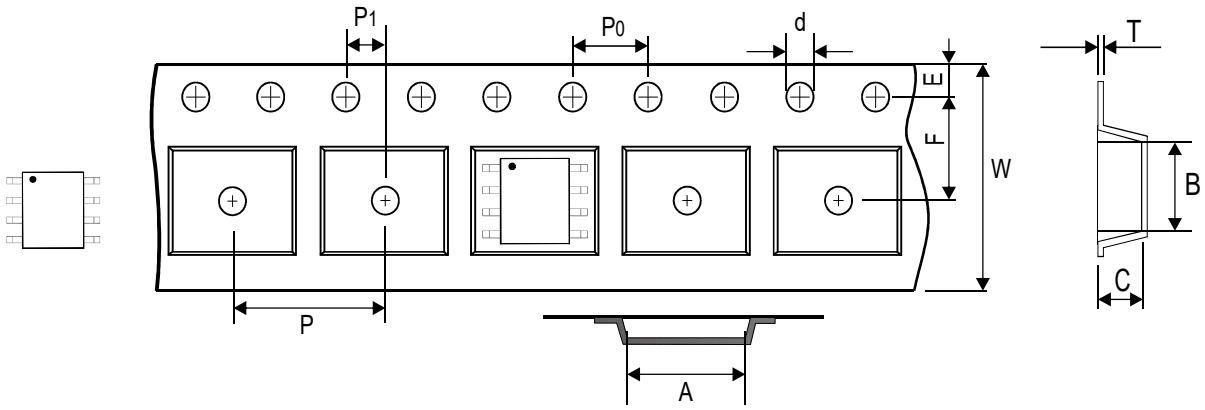
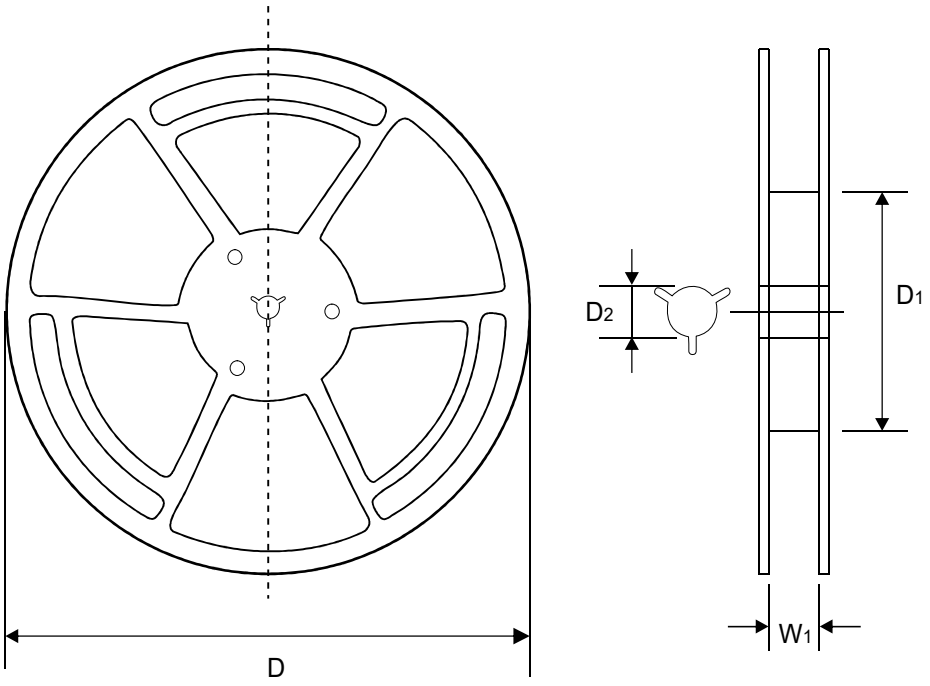


Fig.11 Gate Charge Waveform

Reel Taping Specification



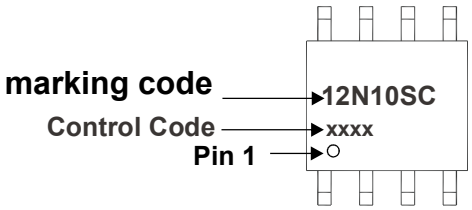


	SYMBOL	A	B	C	d	D	D1	D2
SOP-8	(mm)	6.40 ± 0.10	5.20 ± 0.10	2.10 ± 0.10	1.50 + 0.10 - 0.00	330.00 ± 1.00	100.00 ± 0.50	13.00 ± 0.20
	(inch)	0.252 ± 0.004	0.205 ± 0.004	0.083 ± 0.004	0.059 + 0.004 - 0.000	12.992 ± 0.039	3.937 ± 0.020	0.512 ± 0.008

	SYMBOL	E	F	P	P0	P1	T	W	W1
SOP-8	(mm)	1.75 ± 0.10	5.50 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.25 ± 0.02	12.00 + 0.30 - 0.10	17.60 + 1.00 - 0.00
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.010 ± 0.001	0.472 + 0.012 - 0.004	0.693 + 0.039 - 0.000

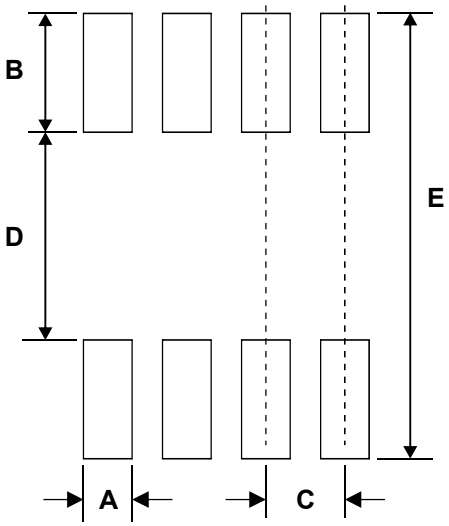
Marking Code

Part Number	Marking Code
CMS11N10Q8-HF	12N10SC



Suggested PAD Layout

SIZE	SOP-8	
	(mm)	(inch)
A	0.60	0.024
B	1.52	0.060
C	1.27	0.050
D	4.00	0.157
E	7.00	0.275



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOP-8	3,000	13