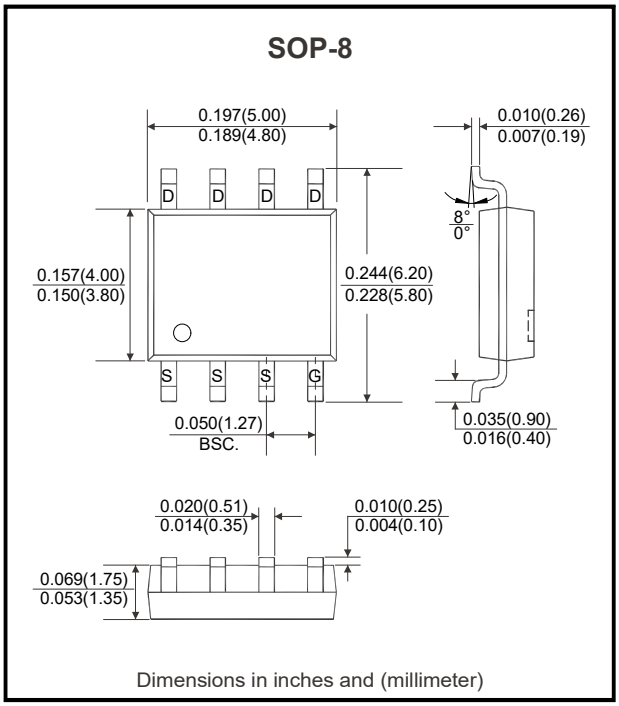
CMS10N10Q8-HF

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.

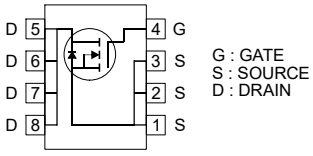


Description

The CMS10N10Q8 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 CMS10N10Q8 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

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℃	10	A
	I_D @T_A=70℃	8	A
Pulsed Drain Current[2,6]	I_{DM}	28	A
Single Pulse Avalanche Energy, L=3mH[3]	E_{AS}	63	mJ
Single Pulse Avalanche Current, L=3mH[3]	I_{AS}	6.5	A
Total Power Dissipation[4]	P_D @T_A=25℃	2.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Conditions	Max. Value	Unit
Thermal Resistance Junction-ambient[1]	$R_{\theta JA}$	t≦10s	50	℃/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	1.8	2.5	V	V_{DS}=V_{GS}, I_D=250uA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	uA	V_{DS}=80V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	25.5	mΩ	V_{GS}=10V, I_D=10A
		-	-	28.5		V_{GS}=4.5V, I_D=8A
Total Gate Charge[2]	Q_g	-	31	-	nC	I_D=7A V_{DS}=50V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	5.1	-		
Gate-Drain ("Miller") Change	Q_{gd}	-	7.3	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	11	-	ns	V_{DS}=50V I_D=7A V_{GS}=10V R_G=3Ω
Rise Time	T_r	-	42	-		
Turn-off Delay Time	$T_{d(off)}$	-	40	-		
Fall Time	T_f	-	19	-		
Input Capacitance	C_{iss}	-	1519	-	pF	V_{GS}=0V V_{DS}=30V f=1.0MHz
Output Capacitance	C_{oss}	-	132	-		
Reverse Transfer Capacitance	C_{rss}	-	66	-		

Guaranteed Avalanche Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Single Pulse Avalanche Energy[5]	EAS	34.5	-	-	mJ	V_{DD}=50V, L=3mH, I_{AS}=4.8A

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	0.78	1.3	V	I_S=10A, V_{GS}=0V, T_J=25℃
Reverse Recovery Time	T_{rr}	-	32	-	ns	I_F=10A, dI/dt=500A/μs, T_J=25℃
Reverse Recovery Charge	Q_{rr}	-	200	-	nC	

Notes: 1. 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=50V, VGS=10V, L=3mH, IAS=6.5A.

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

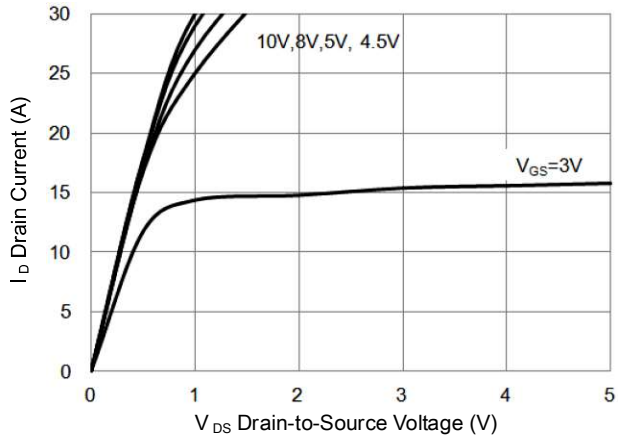


Fig.1 Typical Output Characteristics

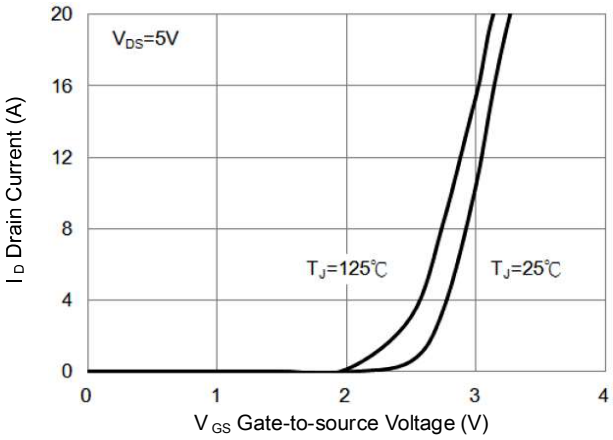


Fig.2 Transfer Characteristics

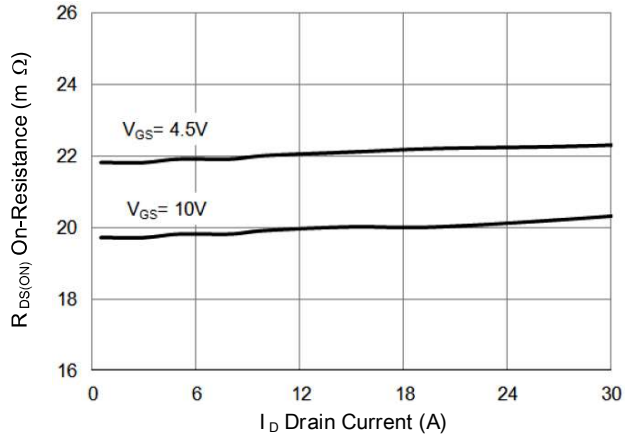


Fig.3 On-Resistance vs. Drain Current

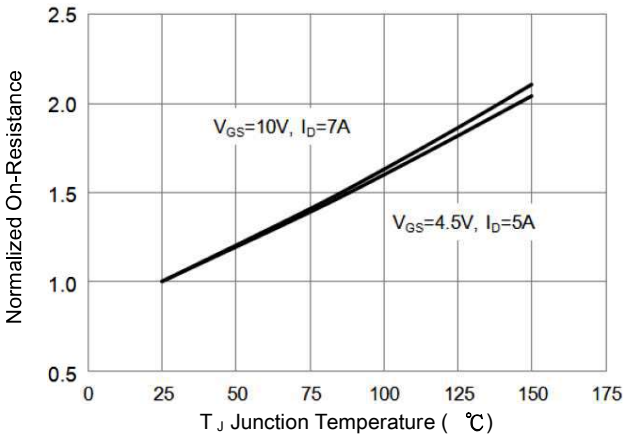


Fig.4 Normalized R_{DSON} vs. T_J

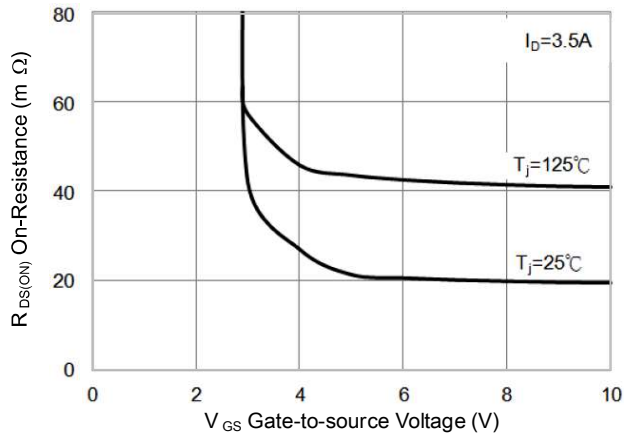


Fig.5 On-Resistance vs. G-S Voltage

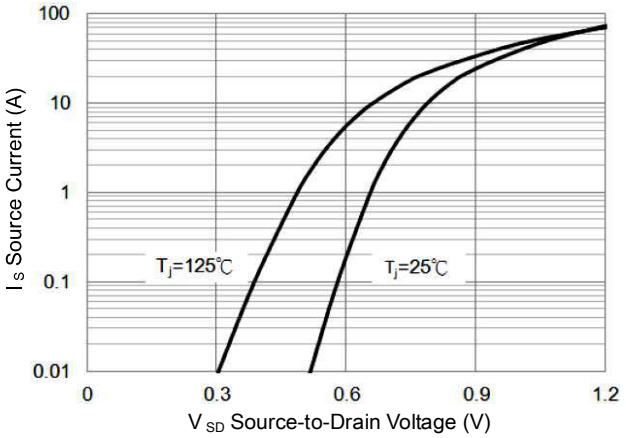


Fig.6 Forward Characteristics of Reverse

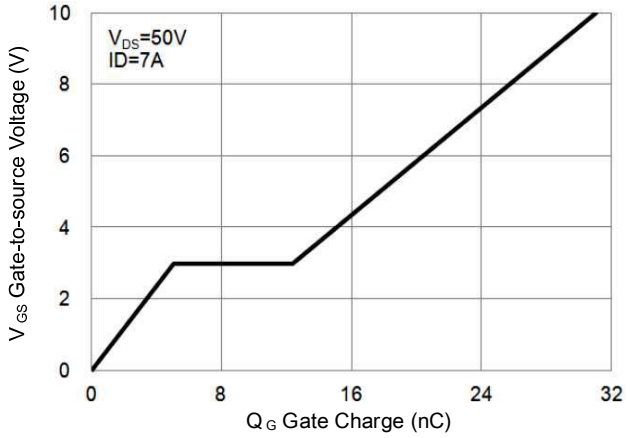


Fig.7 Gate Charge Characteristics

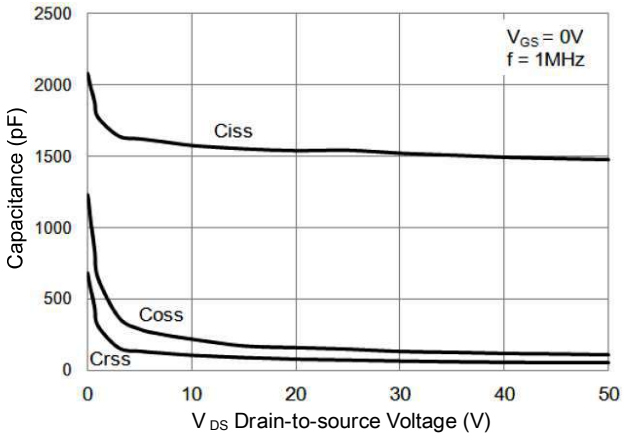


Fig.8 Capacitance Characteristics

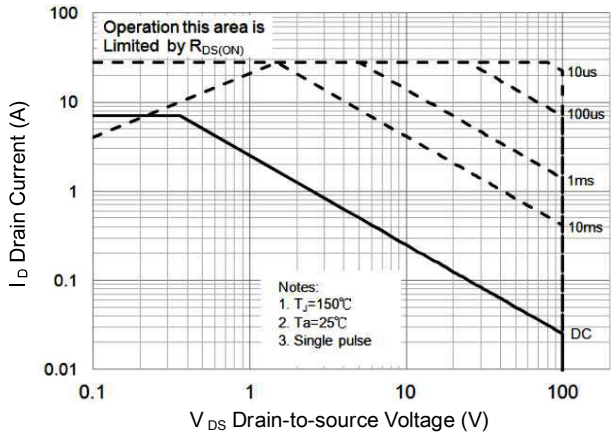


Fig.9 Safe Operating Area

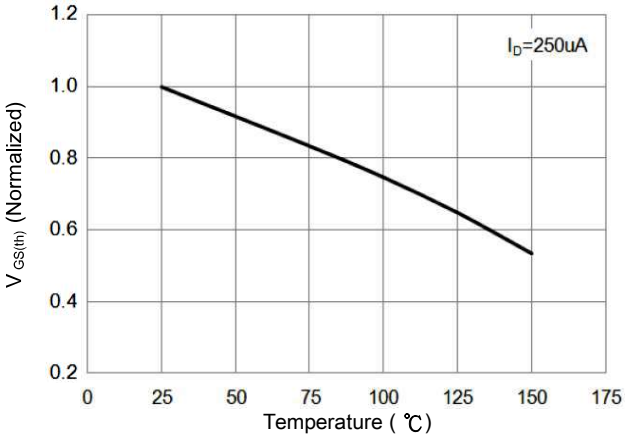


Fig.10 Normalized $V_{GS(th)}$ vs. Temperature

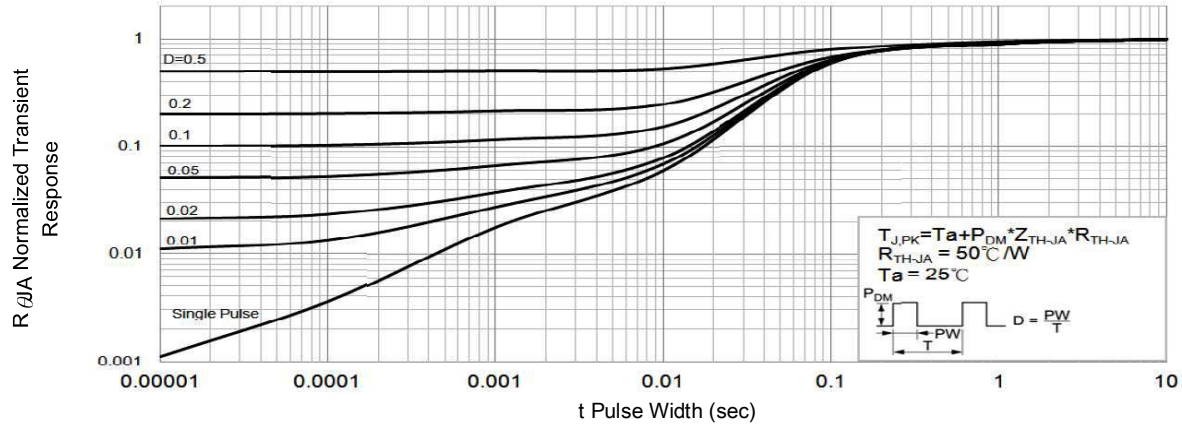
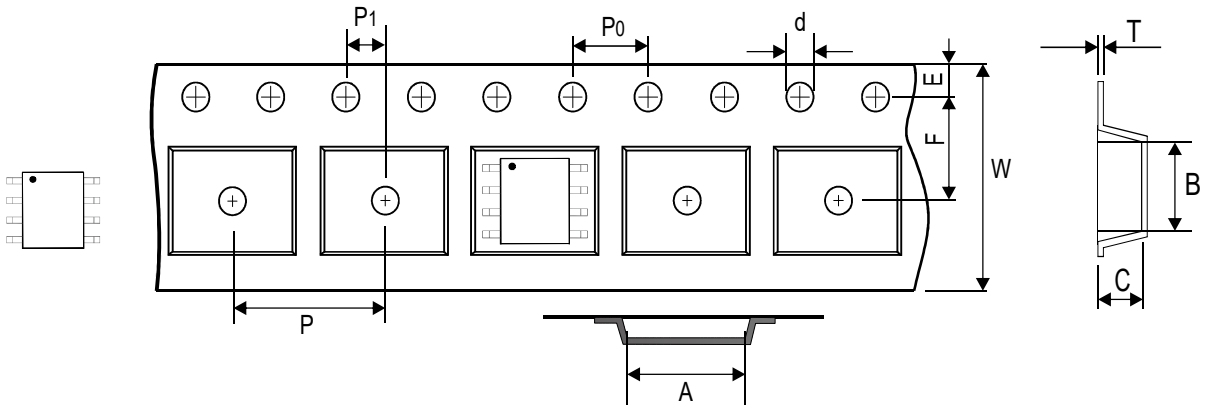
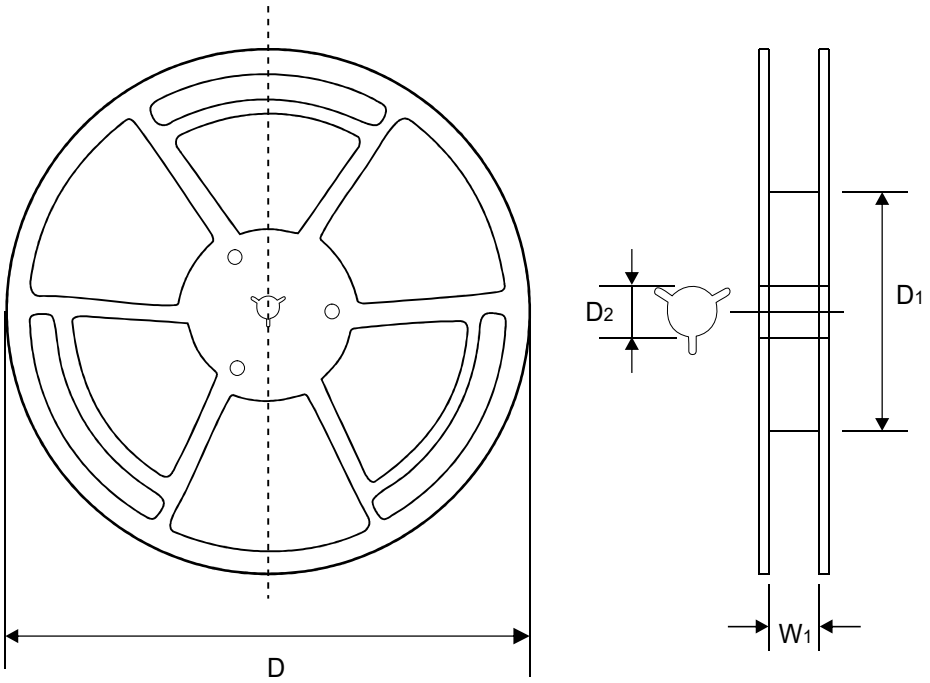


Fig.11 Normalized Maximum Transient Thermal Impedance
Normalized Transient Thermal Impedance

Reel Taping Specification



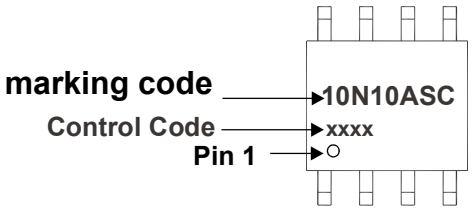


	SYMBOL	A	B	C	d	D	D1	D2
SOP-8	(mm)	6.40 ± 0.10	5.20 ± 0.10	2.10 ± 0.10	1.50 + 0.10 - 0.00	330.00 ± 1.00	100.00 ± 0.50	13.00 ± 0.20
	(inch)	0.252 ± 0.004	0.205 ± 0.004	0.083 ± 0.004	0.059 + 0.004 - 0.000	12.992 ± 0.039	3.937 ± 0.020	0.512 ± 0.008

	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

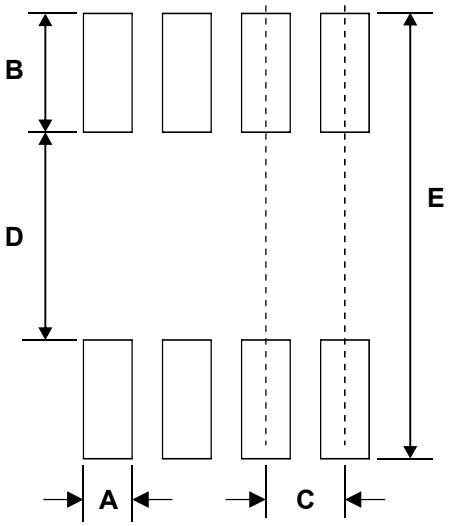
Marking Code

Part Number	Marking Code
CMS10N10Q8-HF	10N10ASC



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