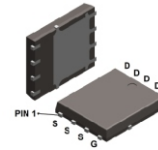


# CMS72N06H8-HF

N-Channel  
RoHS Device  
Halogen Free



## Features

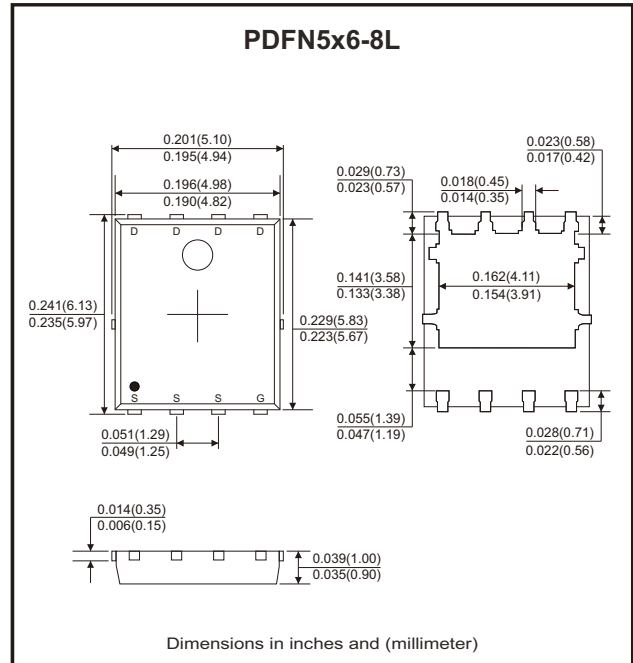
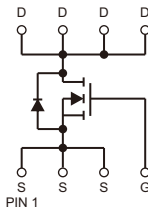
- Super low gate charge.
- Green device available.
- Excellent Cdv/dt effect decline.
- Advanced high cell density trench technology.

## Mechanical data

- Case: PDFN5x6-8L, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin plated leads, solderable per MIL-STD-202, method 208.

## Circuit Diagram

- G : Gate
- S : Source
- D : Drain



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V <sub>DS</sub>	60	V
Gate-source voltage	V <sub>GS</sub>	±20	V
Continuous drain current (T <sub>c</sub> =25°C)	I <sub>D</sub>	72	A
Continuous drain current (T <sub>c</sub> =100°C)	I <sub>D</sub>	51	
Continuous drain current (T <sub>A</sub> =25°C) (Note 1)	I <sub>D</sub>	14	
Continuous drain current (T <sub>A</sub> =100°C) (Note 1)	I <sub>D</sub>	10	
Pulsed drain current (t <sub>p</sub> =10μs, T <sub>c</sub> =25°C)	I <sub>DM</sub>	280	A
Single pulse avalanche energy (Note 3)	E <sub>AS</sub>	280	mJ
Power dissipation (T <sub>c</sub> =25°C)	P <sub>D</sub>	83	W
Operating junction temperature range	T <sub>J</sub>	-55 to +175	°C
Storage temperature range	T <sub>STG</sub>	-55 to +175	°C

## Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal resistance junction to case	R <sub>θJC</sub>		1.1	1.8	°C/W
Thermal resistance junction to air (Note 1)	R <sub>θJA</sub>		20	50	°C/W

## Electrical Characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 60V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics</b>						
Drain-source on-resistance (Note 2)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$			8	m $\Omega$
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
<b>Dynamic Characteristics</b>						
Input capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		4570		pF
Output capacitance	$C_{oss}$			302		
Reverse transfer capacitance	$C_{rss}$			291		
<b>Switching Characteristics</b>						
Turn-on delay time (Note 4)	$t_{d(on)}$	$V_{DD} = 30V, I_D = 30A, V_{GS} = 10V$ $R_G = 1.8\Omega,$		9		ns
Turn-on rise time (Note 4)	$t_r$			7		
Turn-off delay time (Note 4)	$t_{d(off)}$			40		
Turn-off fall time (Note 4)	$t_f$			15		
Total gate charge	$Q_g$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 30A$		80		nC
Gate to source charge	$Q_{gs}$			18.2		
Gate to drain (miller) charge	$Q_{gd}$			31		
<b>Source-Drain Diode Characteristics</b>						
Diode forward voltage (Note 2)	$V_{SD}$	$I_{SD} = 20A, V_{GS} = 0V, T_J = 25^\circ\text{C}$			1.0	V
Reverse recovery time	$t_{rr}$	$I_S = 30A, V_{GS} = 0V, di/dt = 100A/\mu s$		36.5		ns
Reverse recovery charge	$Q_{rr}$				39	

- Notes: 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 EAS data shows Max. rating. The test condition is  $V_{DD}=25V, V_{GS}=10V, L=1mH$ .  
 4. Guaranteed by design, not subject to production.

## Rating and Characteristic Curves (CMS72N06H8-HF)

Fig.1 - Power Dissipation

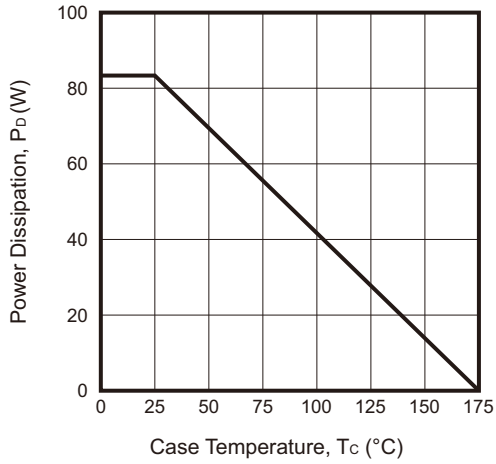


Fig.2 - Drain Current

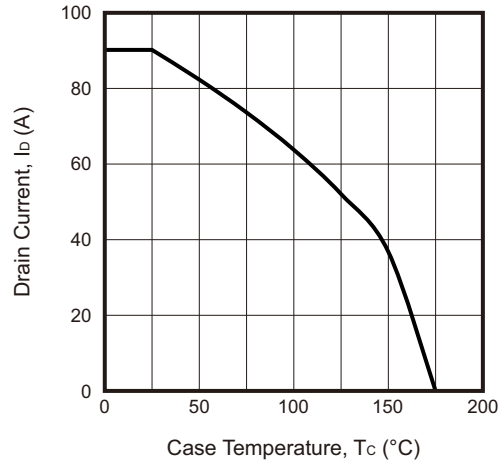


Fig.3 - Typical Output Characteristics

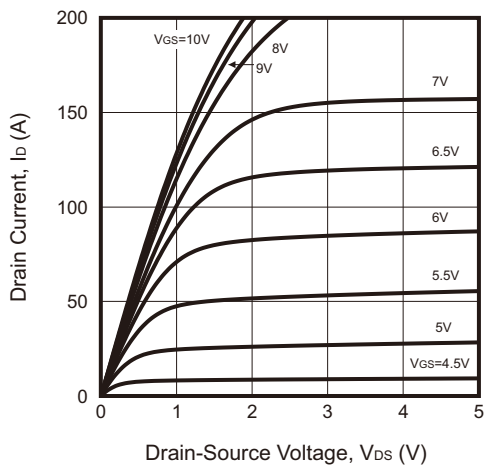


Fig.4 - On-Resistance vs. Drain Current and Gate Voltage

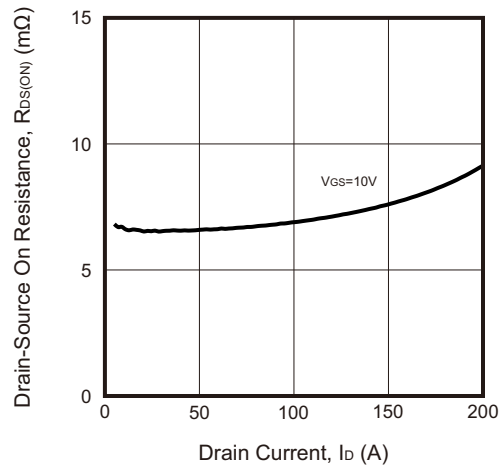


Fig.5 - On Resistance vs Gate-Source Voltage

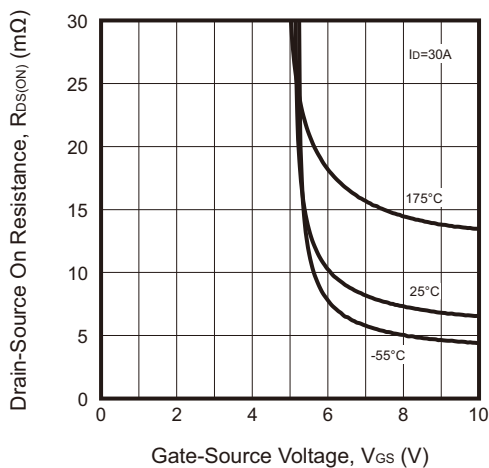
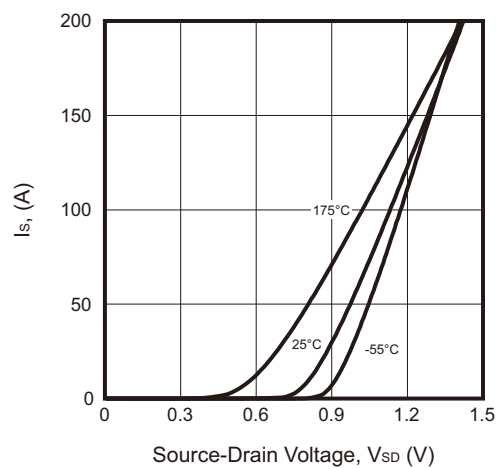


Fig.6 - Body Diode Characteristics



## Rating and Characteristic Curves (CMS72N06H8-HF)

Fig.7 - Normalized On Resistance vs Junction Temperature

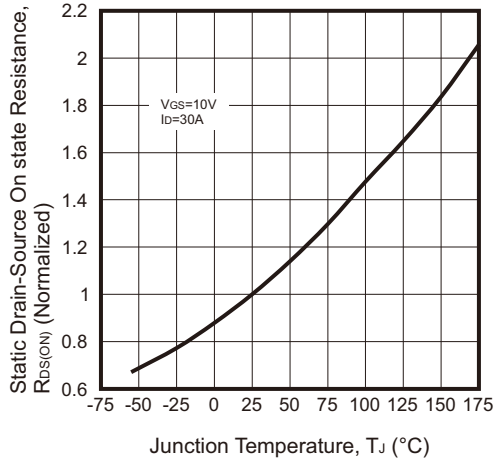


Fig.8 - Transfer Characteristics

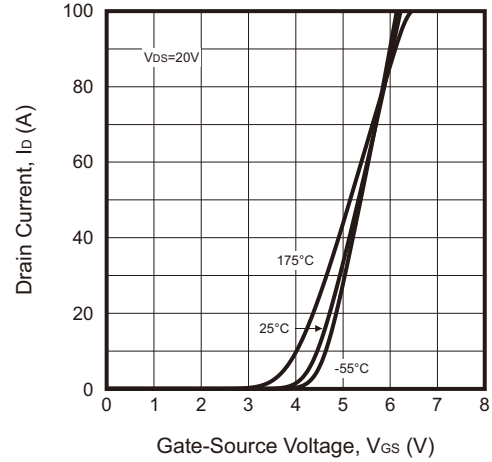


Fig.9 - Capacitance Characteristics

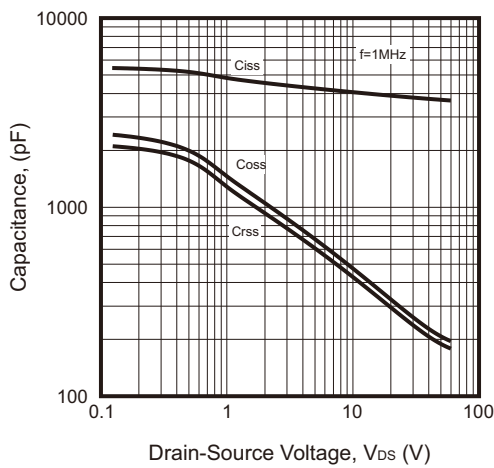


Fig.10 - Gate-Charge Characteristics

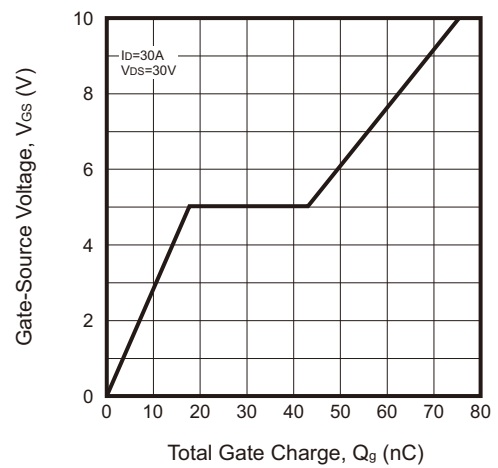


Fig.11 - Normalized Breakdown Voltage vs Junction Temperature

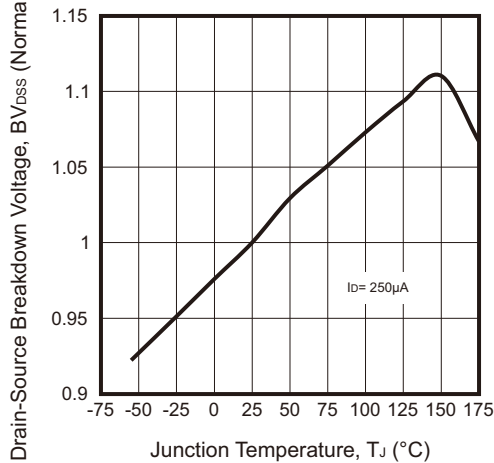
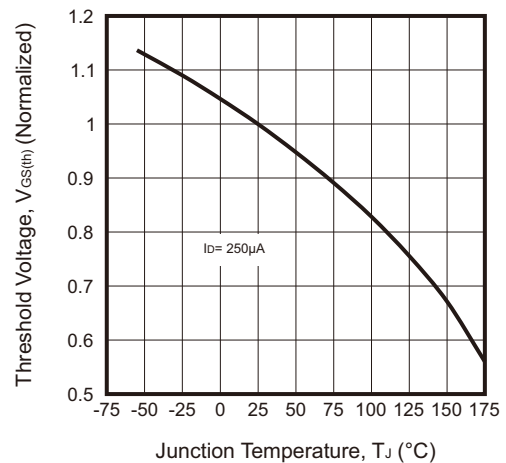
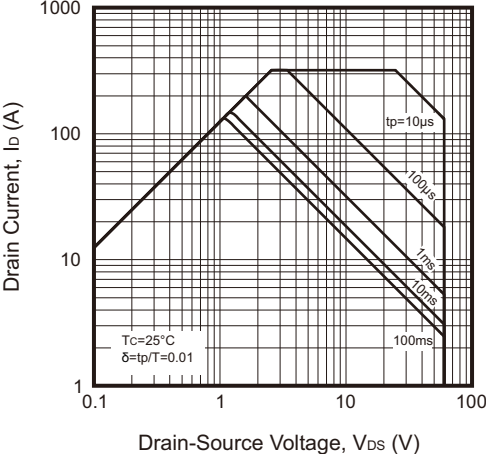


Fig.12 - Normalized V\_GS(th) vs. Junction Temperature

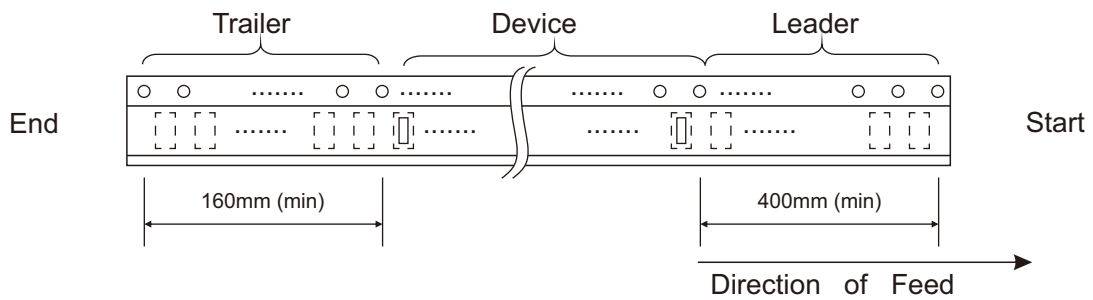
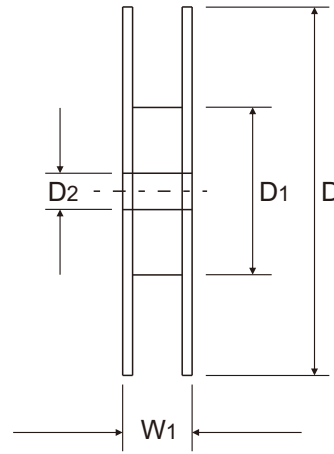
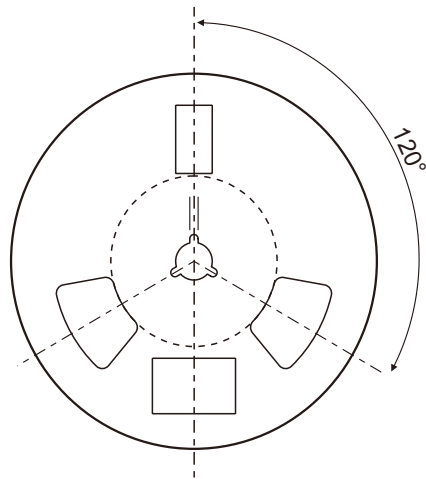
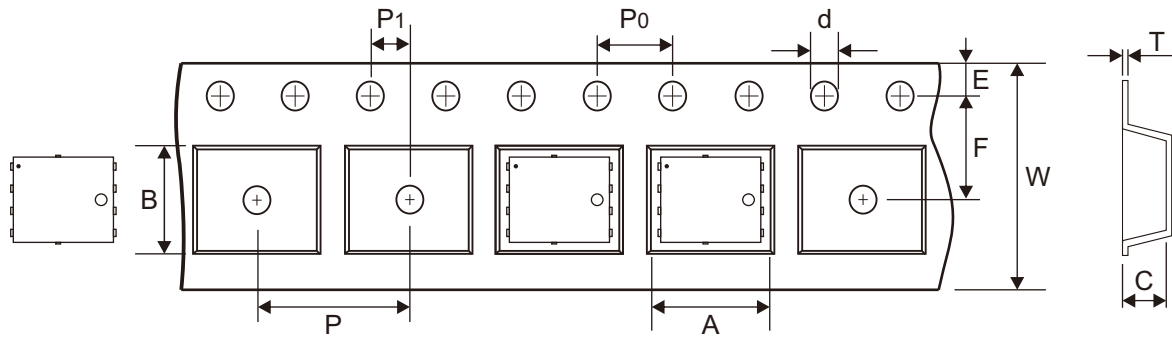


Rating and Characteristic Curves (CMS72N06H8-HF)

Fig.13 - Safe Operating Area



Reel Taping Specification

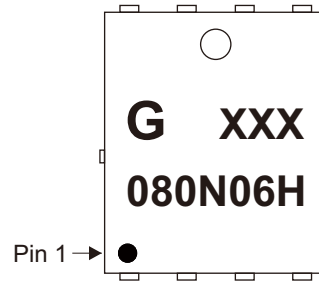


PDFN5x6-8L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.30 ± 0.10	5.30 ± 0.10	1.20 ± 0.10	1.55 + 0.01	330 ± 2.00	100 ± 2.00	13.00 ± 0.20
	(inch)	0.248 ± 0.004	0.209 ± 0.004	0.047 ± 0.004	0.061 + 0.0004	12.992 ± 0.079	3.937 ± 0.079	0.512 ± 0.008

PDFN5x6-8L	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.25 ± 0.03	12.00 + 0.30 - 0.10	18.50 ± 2.00
	(inch)	0.069 ± 0.004	0.217 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.010 ± 0.001	0.472 + 0.012 - 0.004	0.728 ± 0.079

## Marking Code

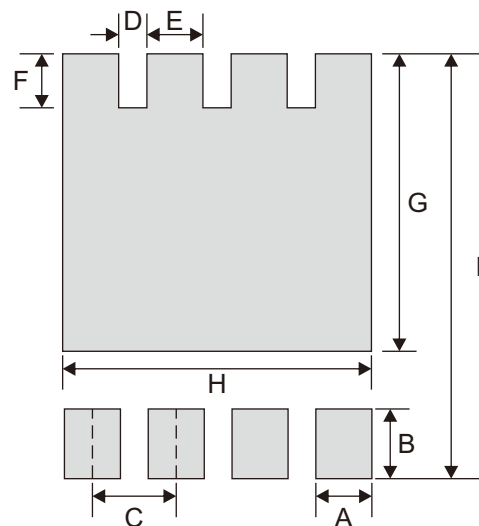
Part Number	Marking Code
CMS72N06H8-HF	080N06H



XXX = Control code

## Suggested P.C.B. PAD Layout

SIZE	PDFN5x6-8L	
	(mm)	(inch)
A	0.80	0.031
B	1.00	0.039
C	1.27	0.050
D	0.47	0.019
E	0.80	0.031
F	0.85	0.033
G	4.50	0.177
H	4.61	0.181
I	6.40	0.252



## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PDFN5x6-8L	5,000	13