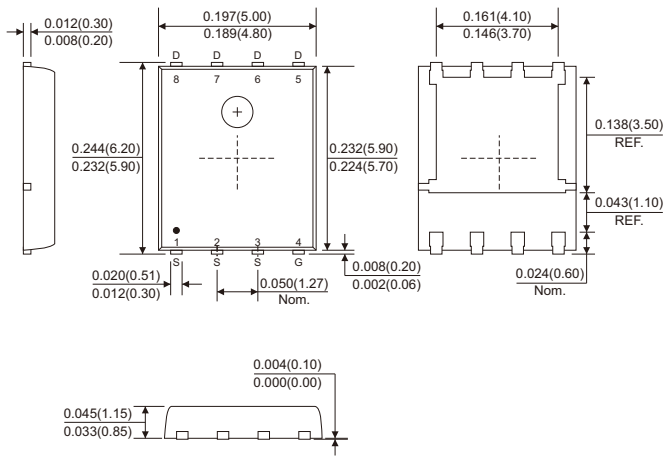
CMS100N03H8-HF

N-Channel
RoHS Device
Halogen Free

PR-PAK



Dimensions in inches and (millimeter)

Features

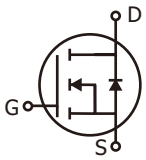
- Low on-resistance.
- Low miller charge.
- Low input capacitance.
- 100% EAS and Rg guaranteed.
- Green device available.

Mechanical data

- Case: PR-PAK

Circuit Diagram

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



Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GS}	±20	V
Continuous drain current (Note 1)	T_C = 25°C	I_D	100 (Note 3)	A
	T_C = 70°C	I_D	80	
Pulsed drain current (Note 1)		I_{DM}	500	A
Continuous drain current	T_A = 25°C	I_D	38	A
	T_A = 70°C	I_D	30	
Total power dissipation	T_C = 25°C	P_D	83	W
	T_A = 25°C	P_D	3.6	
Single pulse avalanche energy, L=0.1mH		E_{AS}	151	mJ
Single pulse avalanche current, L=0.1mH		I_{AS}	55	A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +150	°C
Thermal resistance junction-ambient (Note 2)	Steady state	$R_{\theta JA}$	35	°C/W
Thermal resistance junction-case (Note 2)	Steady state	$R_{\theta JC}$	1.5	°C/W

Notes: 1. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.

2. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by desgn while $R_{\theta CA}$ is determined by the user's board design. $R_{\theta JA}$ shown below for single device operation on FR-4 in still air.

3. Package limitation current is 100A.

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA	30			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2		2.5	
Gate-source leakage current	I_{GSS}	V_{GS} = ±20V			±100	nA
Drain-source leakage current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			1	μA
Static drain-source on-resistance (Note 1)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 30A		1.5	1.8	mΩ
		V_{GS} = 4.5V, I_D = 15A		2.1	2.4	
Total gate charge (Note 1)	Q_g	I_D = 30A, V_{DS} = 15V, V_{GS} = 10V		82		nC
Gate-source charge	Q_{gs}			24		
Gate-drain ("miller") charge	Q_{gd}			5		
Turn-on delay time (Note 1)	$t_{d(on)}$	V_{DS} = 15V, I_D = 30A, V_{GS} = 10V, R_G = 3Ω		22		nS
Rise time	t_r			7		
Turn-off delay time	$t_{d(off)}$			100		
Fall time	t_f			18		
Input capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		4222		pF
Output capacitance	C_{oss}			889		
Reverse transfer capacitance	C_{rss}			389		
Gate resistance	R_g	f = 1MHz			3.0	Ω
Source-drain diode						
Diode forward voltage (Note 1)	V_{SD}	I_S = 30A, V_{GS} = 0V			1.3	V
Reverse recovery time	t_{rr}	I_F = 30A , dI/dt = 100A/μs T_J=25°C		32		nS
Reverse recovery charge	Q_{rr}			120		nC
Guaranteed avalanche characteristics						
Single pulse avalanche energy (Note 2)	EAS	V_{DD} = 20V, L= 0.1mH, I_{AS} = 45A	101			mJ

Notes: 1. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
2. The min. value is 100% EAS tested guarantee.

Rating and Characteristic Curves (CMS100N03H8-HF)

Fig.1 - Typical Output Characteristics

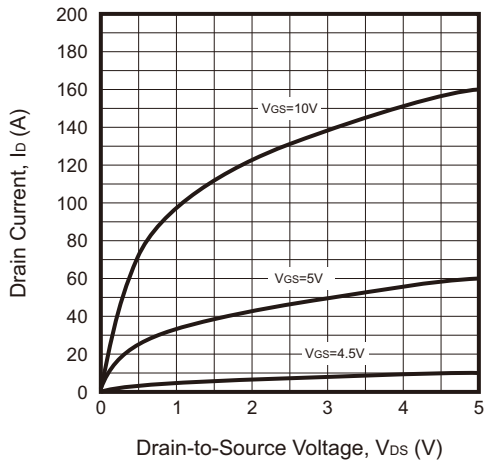


Fig.2 - On-Resistance vs. G-S Voltage

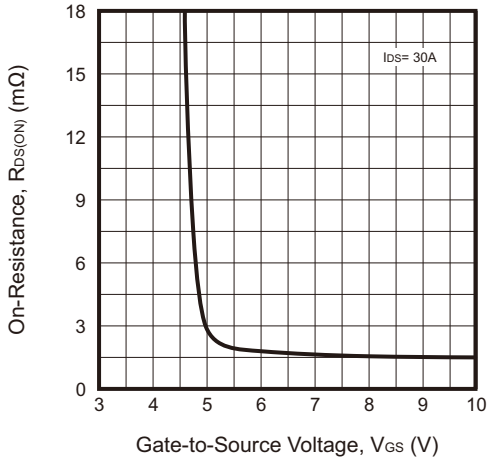


Fig.3 - On-Resistance vs. Drain Current

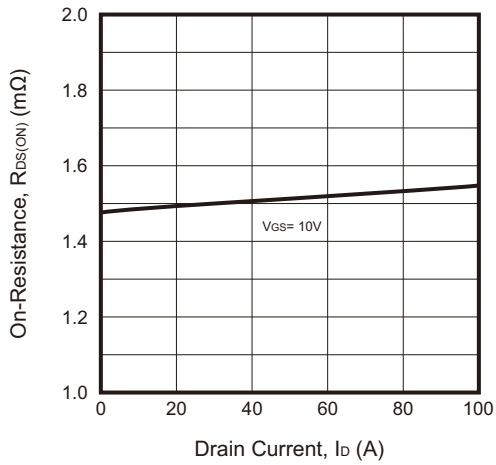


Fig.4 - Normalized $R_{DS(ON)}$ vs. T_J

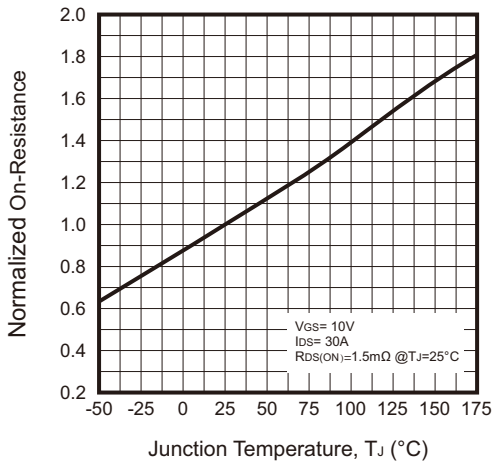


Fig.5 - Normalized $V_{GS(th)}$ vs. T_J

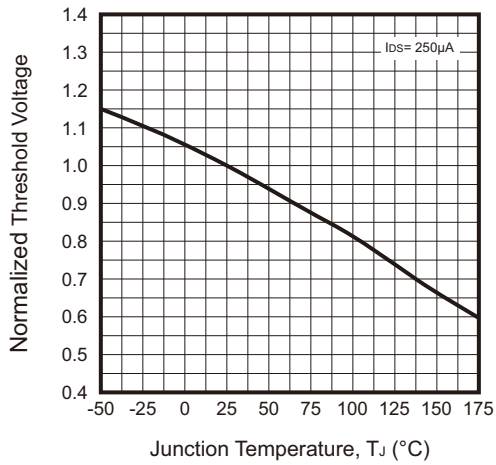
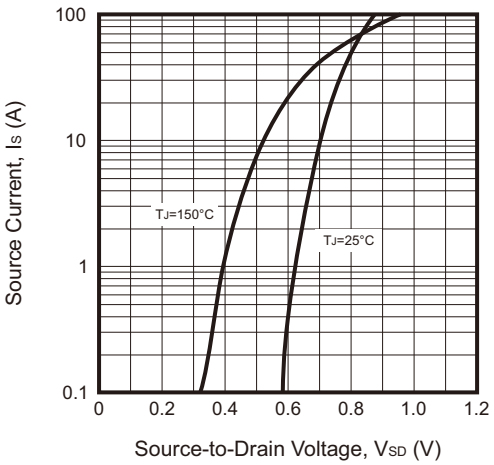


Fig.6 - Forward Characteristics of Reverse



Rating and Characteristic Curves (CMS100N03H8-HF)

Fig.7 - Gate Charge Characteristics

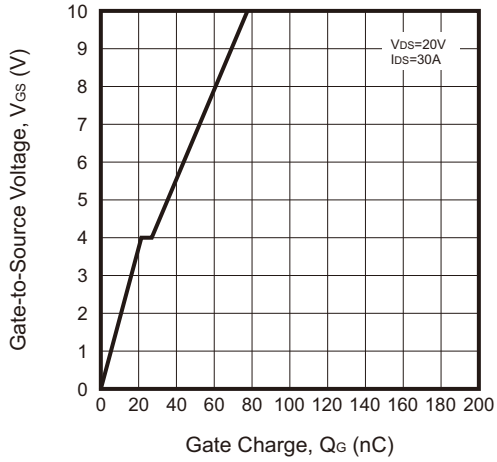


Fig.8 - Capacitance Characteristics

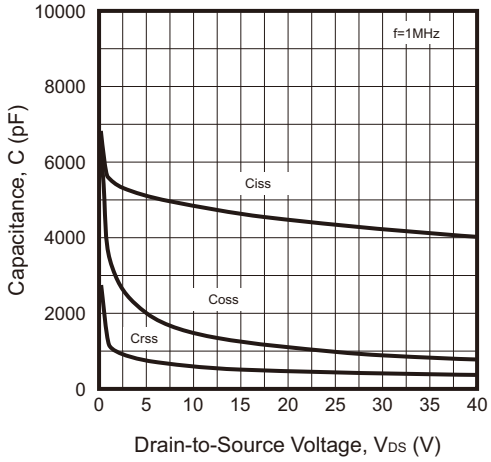


Fig.9 - Safe Operating Area

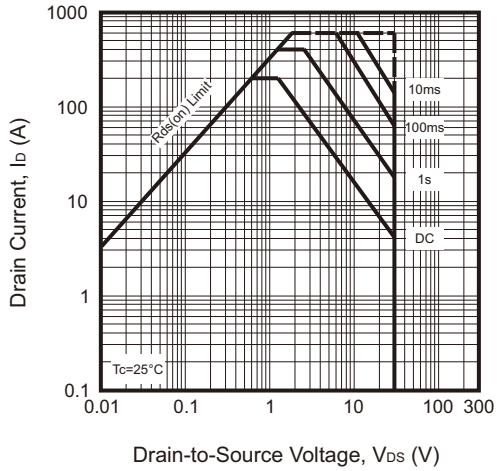


Fig.10 - Power Dissipation

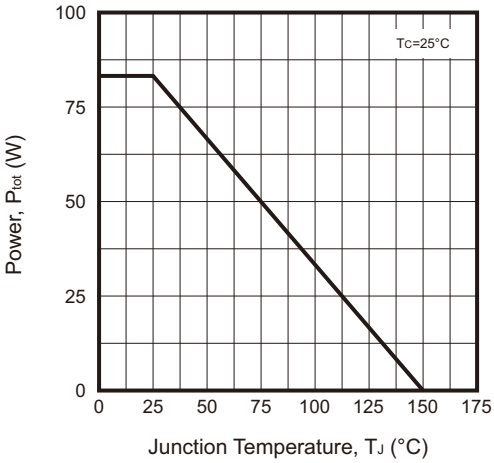
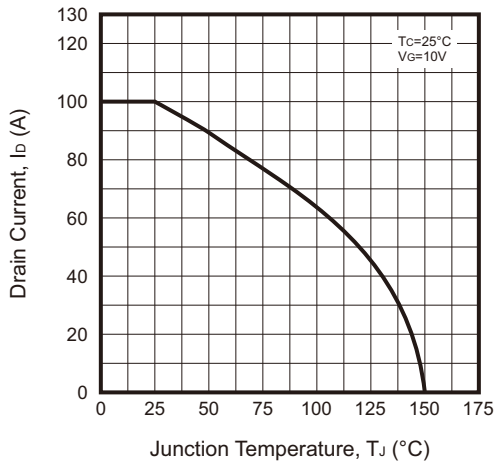
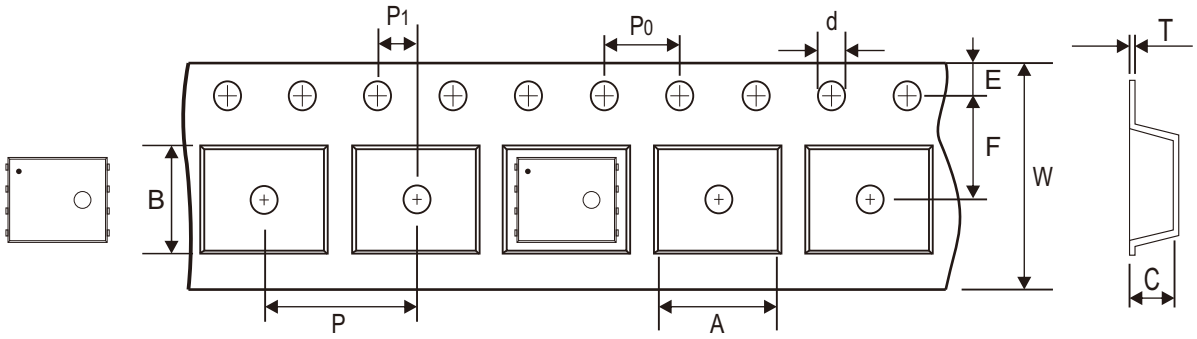
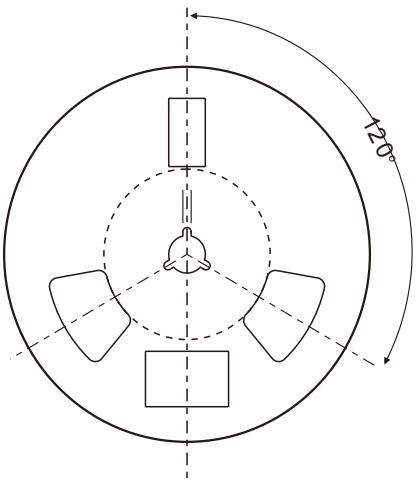


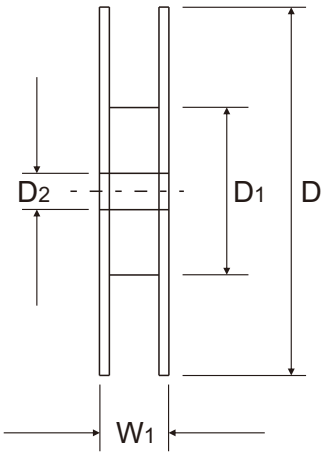
Fig.11 - Drain Current vs. TJ

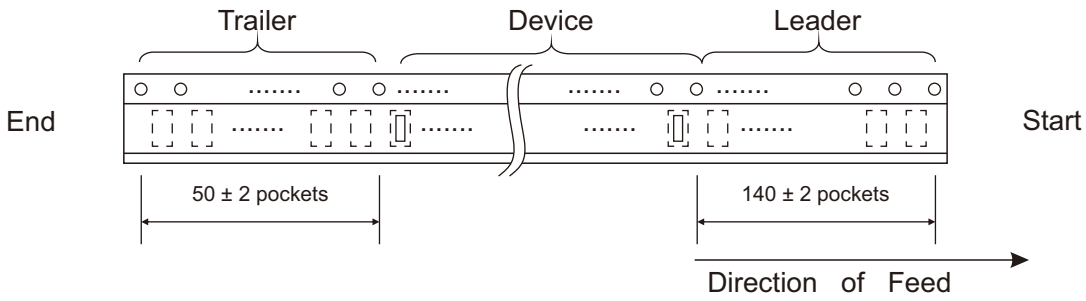


Reel Taping Specification









	SYMBOL	A	B	C	d	D	D1	D2
PR-PAK	(mm)	6.50 ± 0.10	5.30 ± 0.10	1.40 ± 0.10	1.50 + 0.10 - 0.00	330.00 ± 1.00	178.00 + 0.00 - 2.00	13.00 min.
	(inch)	0.256 ± 0.004	0.209 ± 0.004	0.055 ± 0.004	0.059 + 0.004 - 0.000	12.992 ± 0.039	7.008 + 0.000 - 0.079	0.512 min.

	SYMBOL	E	F	P	P0	P1	T	W	W1
PR-PAK	(mm)	1.75 ± 0.10	5.50 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.30 ± 0.05	12.00 ± 0.30	18.40 ref.
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.012 ± 0.002	0.472 ± 0.012	0.724 ref.

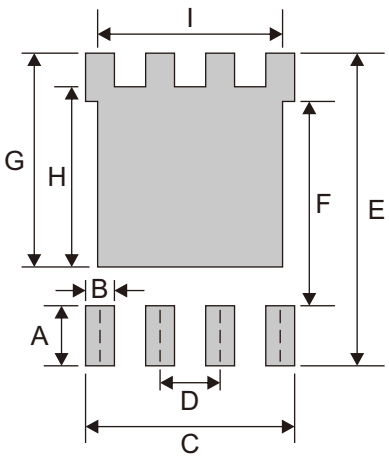
Marking Code

Part Number	Marking Code
CMS100N03H8-HF	30N07

XXXX = Control code

Suggested PAD Layout

SIZE	PR-PAK	
	(mm)	(inch)
A	1.27	0.050
B	0.61	0.024
C	4.42	0.174
D	1.27	0.050
E	6.61	0.260
F	4.32	0.170
G	4.52	0.178
H	3.81	0.150
I	3.91	0.154



Note: 1. The pad layout is for reference purposes only.

Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PR-PAK	3,000	13

Mouser Electronics

Authorized Distributor

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Comchip Technology:

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