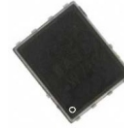


# CMS45N10H8-HF

**N-Channel**  
**RoHS Device**  
**Halogen Free**



## Features

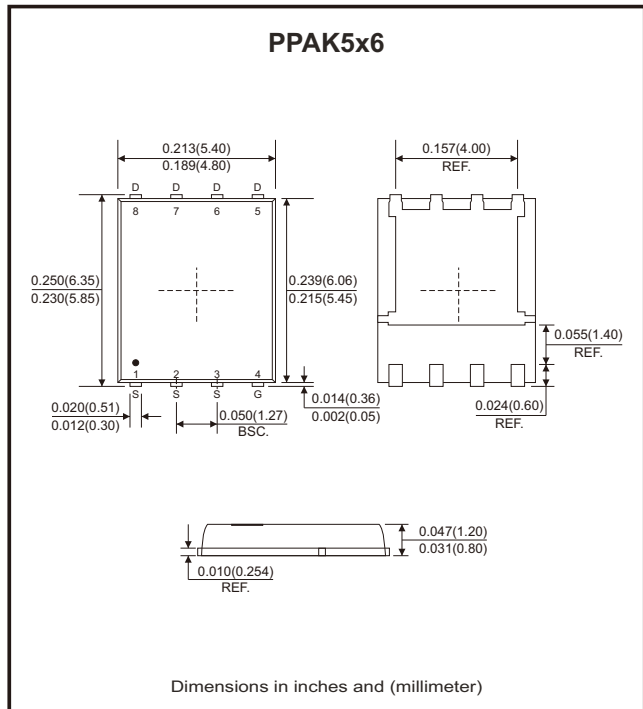
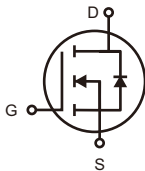
- Improved dv/dt capability.
- Fast switching.
- $R_{DS(ON)} \leq 20m\Omega @ V_{GS}=10V$ .

## Mechanical data

- Case: PPAK5x6, molded plastic.
- Mounting position: Any.

## Circuit Diagram

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



## Maximum Ratings (at $T_C=25^\circ C$ unless otherwise noted)

Parameter	Conditions	Symbol	Value	Unit
Drain-source voltage		$V_{DS}$	100	V
Gate-source voltage		$V_{GS}$	$\pm 20$	V
Drain current-continuous	$T_C = 25^\circ C$	$I_D$	45	A
Drain current-pulsed	(Note 1)	$I_{DM}$	135	A
Single pulse avalanche energy	(Note 2)	$E_{AS}$	57	mJ
Power dissipation	$T_C = 25^\circ C$	$P_D$	94.7	W
Thermal resistance junction-ambient		$R_{\theta JA}$	62	$^\circ C/W$
Thermal resistance junction-case		$R_{\theta JC}$	1.32	$^\circ C/W$
Operating junction temperature range		$T_J$	-55 to +150	$^\circ C$
Storage temperature range		$T_{STG}$	-55 to +150	$^\circ C$

## Electrical Characteristics (at T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	100			V
Drain-source leakage current	I <sub>DSS</sub>	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V			1	μA
Gate-source leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
<b>On Characteristics</b>						
Static drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A			20	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 7A			26	
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250μA	1.2	1.5	2.5	V
<b>Dynamic and Switching Characteristics</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 5A		16.2		nC
Gate-source charge	Q <sub>GS</sub>			2.8		
Gate-drain charge	Q <sub>GD</sub>			4.1		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 10V, R <sub>G</sub> = 10Ω, I <sub>D</sub> = 5A		16.6		nS
Rise time	t <sub>r</sub>			3.8		
Turn-off delay time	t <sub>d(off)</sub>			75.5		
Fall time	t <sub>f</sub>			46		
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V, F = 100kHz		1003.9		pF
Output capacitance	C <sub>oss</sub>			185.4		
Reverse transfer capacitance	C <sub>rss</sub>			9.8		
<b>Drain-Source Diode Characteristics and Ratings</b>						
Diode forward current	I <sub>S</sub>	V <sub>GS</sub> < V <sub>th</sub>		30		A
Pulsed source current	I <sub>SP</sub>	V <sub>G</sub> = V <sub>D</sub> = 0V, Force current		90		A

Notes: 1. Pulse width limited by maximum junction temperature.

2. V<sub>DD</sub>=50V, R<sub>G</sub>=25Ω, L=0.3mH, starting T<sub>J</sub>=25°C.

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

## Rating and Characteristic Curves (CMS45N10H8-HF)

Fig.1 - Output Characteristics

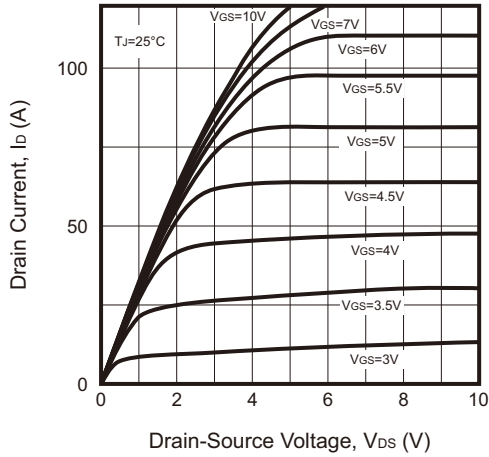


Fig.2 - Transfer Characteristics

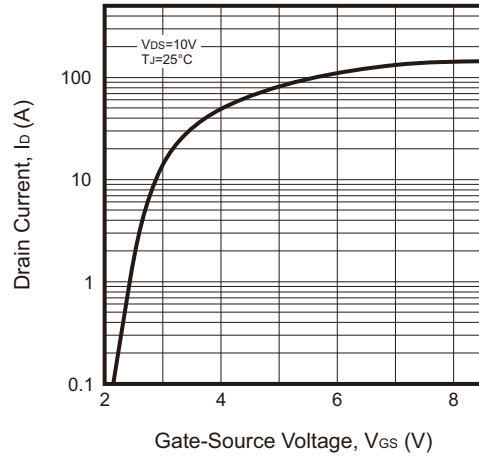


Fig.3 - Gate Charge Characteristics

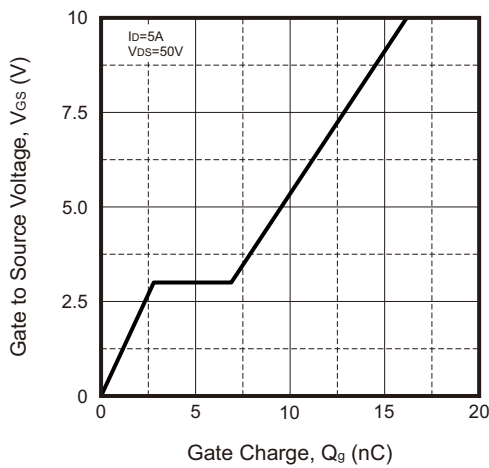


Fig.4 - Drain-Source Breakdown Voltage

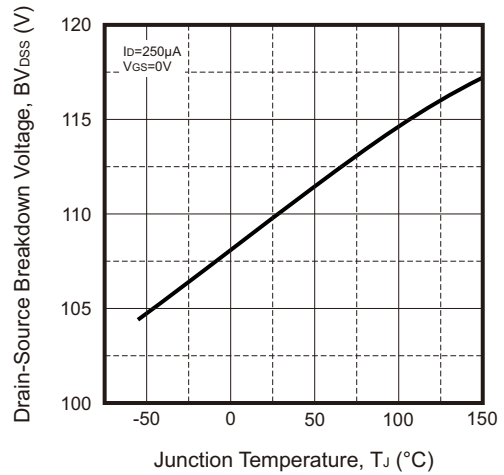


Fig.5 - Drain-Source On-State Resistance

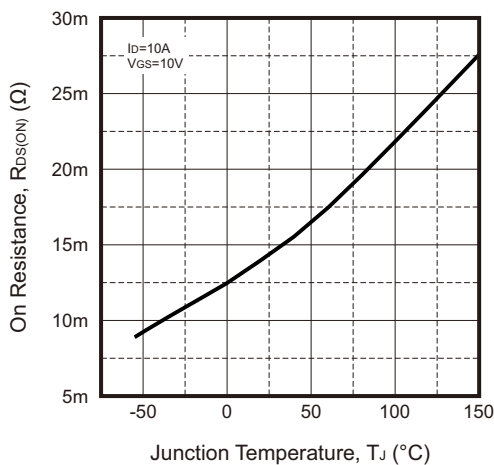
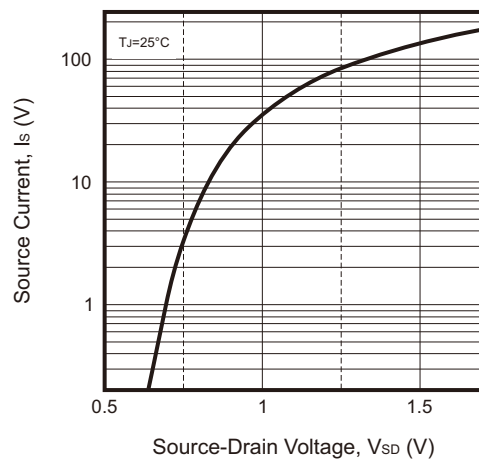
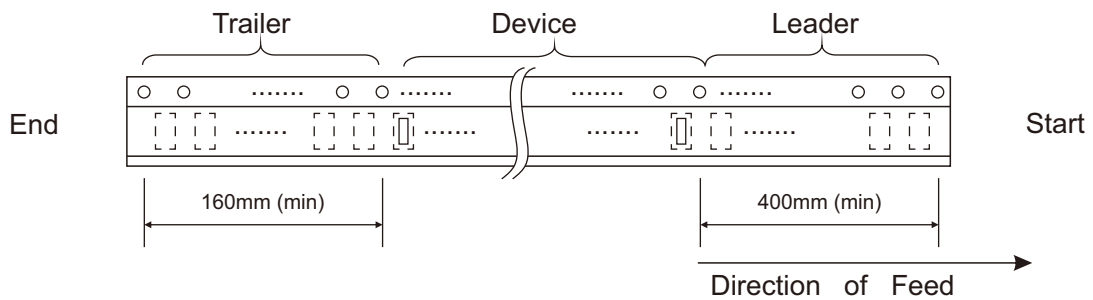
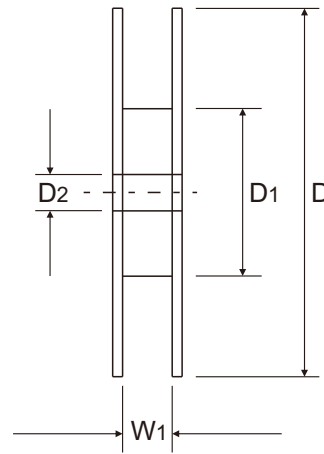
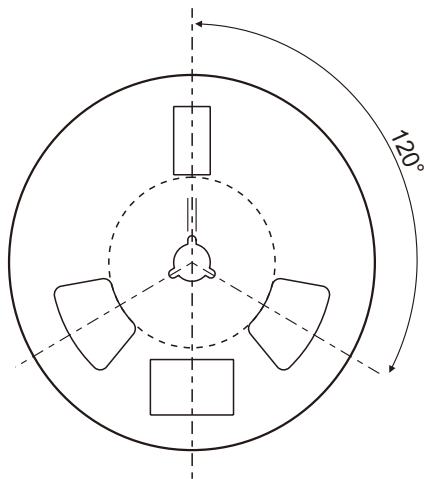
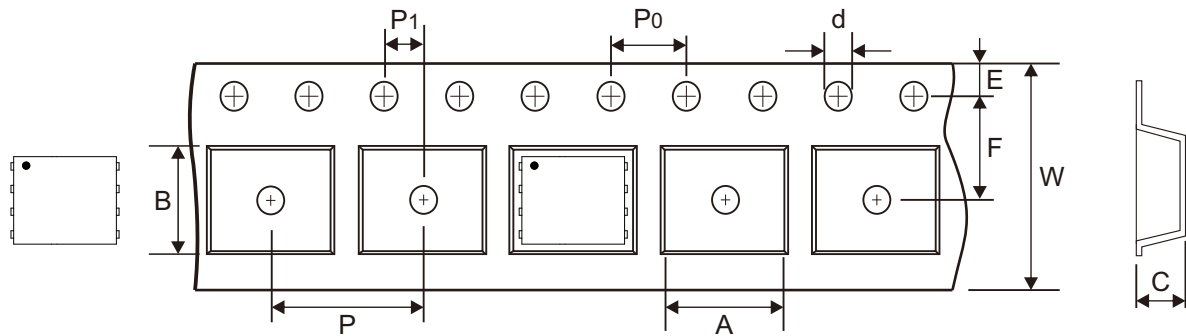


Fig.6 - Forward Characteristic of Body Diode



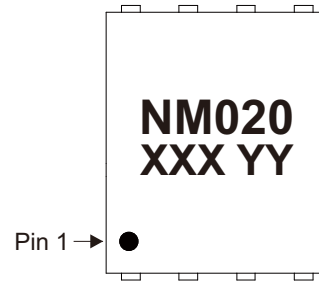
Reel Taping Specification



PPAK5x6	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.50 ± 0.10	5.39 ± 0.21	1.65 ± 0.45	1.50 + 0.10	330 ± 4.00	95.00 Min	13.00 ± 0.50
	(inch)	0.256 ± 0.004	0.212 ± 0.008	0.065 ± 0.018	0.059 + 0.004	12.992 ± 0.157	3.740 Min	0.512 ± 0.020
PPAK5x6	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	12.00 ± 0.30	12.45 ± 2.05
	(inch)	0.069 ± 0.004	0.217 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.472 ± 0.012	0.490 ± 0.081

## Marking Code

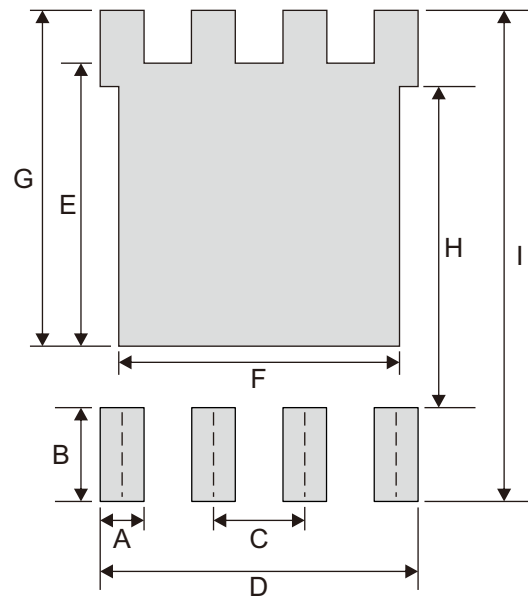
Part Number	Marking Code
CMS45N10H8-HF	NM020



XXX YY = Control code

## Suggested P.C.B. PAD Layout

SIZE	PPAK5x6	
	(mm)	(inch)
A	0.61	0.024
B	1.27	0.050
C	1.27	0.050
D	4.42	0.174
E	3.81	0.150
F	3.91	0.154
G	4.52	0.178
H	4.32	0.170
I	6.61	0.260



## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PPAK5x6	3,000	13