

CMS12P03Q8-HF

P-Channel
RoHS Device
Halogen Free



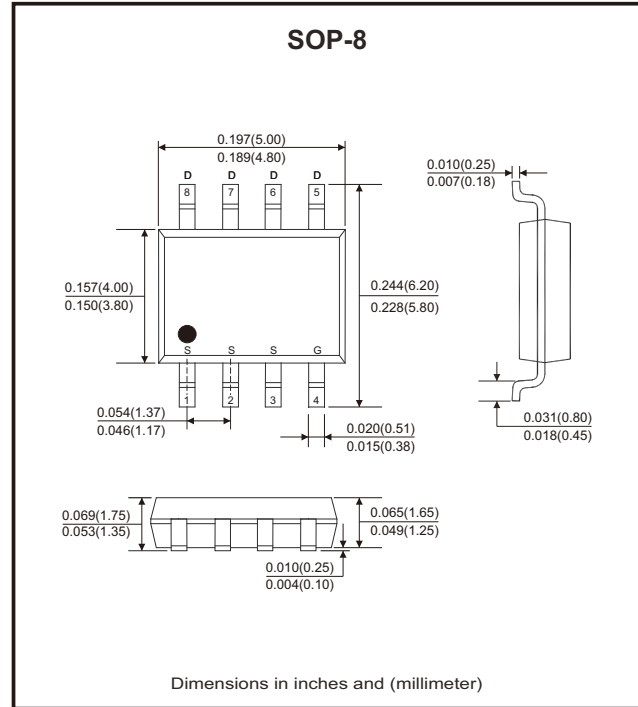
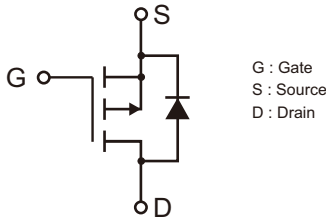
Features

- High power and current handling capability.
- Surface mount package.

Mechanical data

- Case: SOP-8, molded plastic.
- Mounting position: Any.

Circuit Diagram



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	± 20	V
Drain current-continuous	I_D	@ $T_C=25^\circ C$	-12
		@ $T_C=100^\circ C$	-8.4
Drain current-pulsed (Note 1)	I_{DM}	-48	A
Maximum power dissipation	P_D	@ $T_C=25^\circ C$	3
		@ $T_C=100^\circ C$	1.3
Single pulse avalanche energy (Note 2)	E_{AS}	231	mJ
Thermal resistance junction to ambient (Note 3)	$R_{\theta JA}$	41.67	$^\circ C/W$
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	$^\circ C$

Notes: 1. Pulse width limited by maximum junction temperature.
2. EAS condition: $T_J=25^\circ C$, $V_{DD}=-15V$, $V_G=10V$, $L=0.5mH$, $R_G=25\Omega$, $I_{AS}=-34A$.
3. Surface mounted on FR4 board, $t \leq 10$ sec.

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-30	-33		V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics (Note 1)						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.5	-2.2	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -10A$		11.5	15	m Ω
		$V_{GS} = -4.5V, I_D = -7A$		18	25	
Forward transconductance	g_{FS}	$V_{DS} = -10V, I_D = -10A$		20		S
Dynamic Characteristics (Note 2)						
Input capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$		2419		pF
Output capacitance	C_{oss}			318		
Reverse transfer capacitance	C_{rss}			262		
Switching Characteristics (Note 2)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V, I_D = -10A,$ $V_{GS} = -10V, R_{GEN} = 1\Omega$		9		ns
Turn-on rise time	t_r			8		
Turn-off delay time	$t_{d(off)}$			28		
Turn-off fall time	t_f			10		
Total gate charge	Q_g	$V_{DS} = -15V, I_D = -10A, V_{GS} = -10V$		44.4		nC
Gate-source charge	Q_{gs}			4.6		
Gate-drain charge	Q_{gd}			10		
Drain-Source Diode Characteristics						
Diode forward current (Note 3)	I_S				-12	A
Diode forward voltage (Note 1)	V_{SD}	$V_{GS} = 0V, I_S = -12A$			-1.2	V

Notes: 1. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2. Guaranteed by design, not subject to production.

3. Surface mounted on FR4 board, $t \leq 10$ sec.

Rating and Characteristic Curves (CMS12P03Q8-HF)

Fig.1 - Power Dissipation

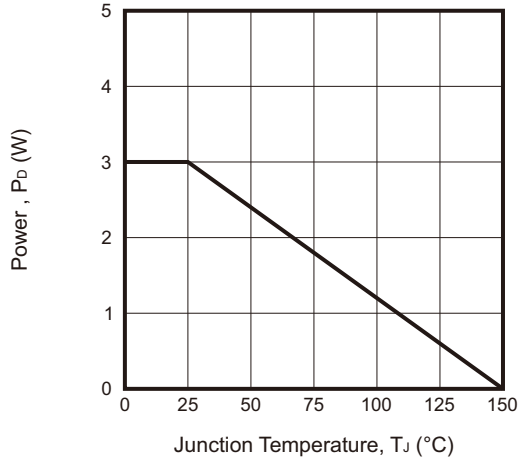


Fig.2 - Drain Current

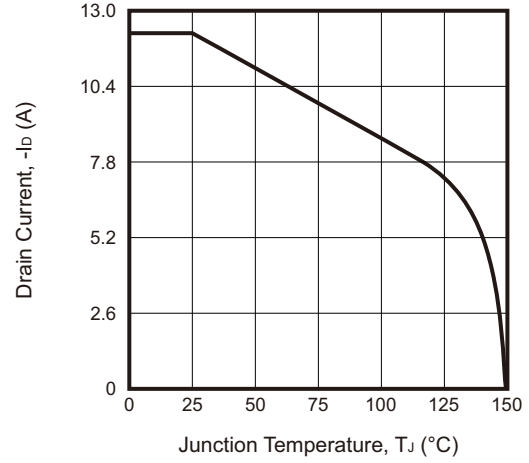


Fig.3 - Output Characteristics

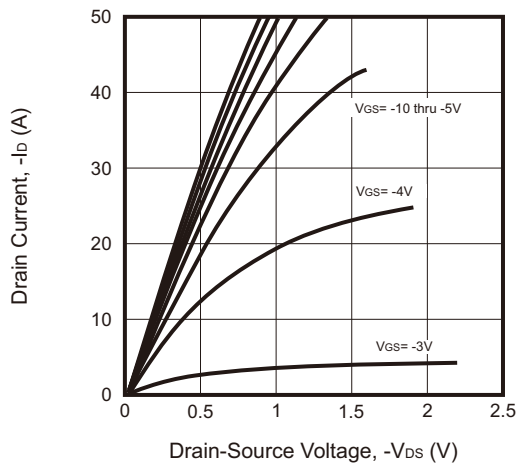


Fig.4 - Drain-Source on Resistance

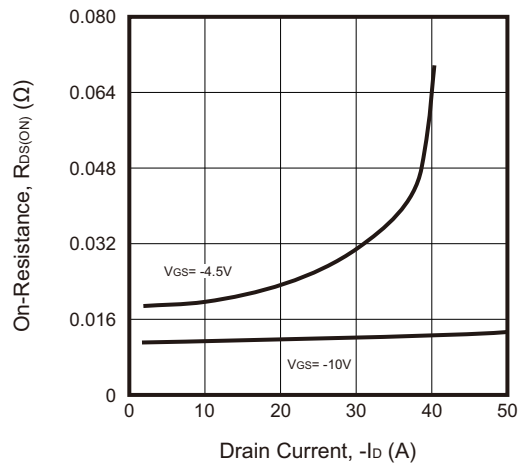


Fig.5 - Transfer Characteristics

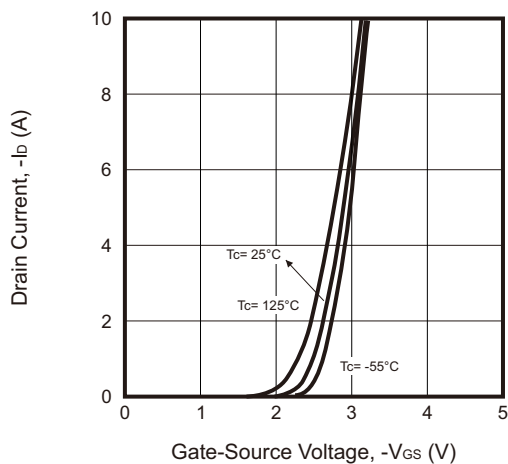
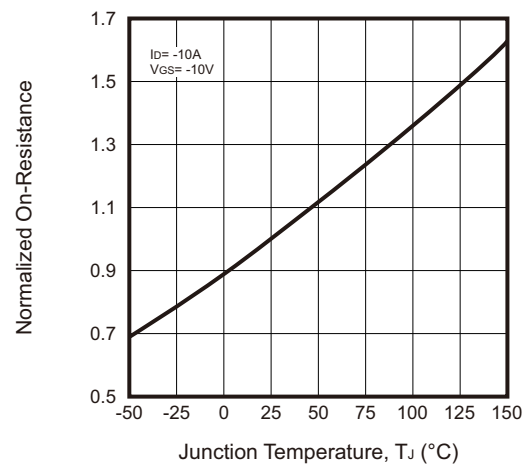


Fig.6 - Drain-Source on Resistance



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Rating and Characteristic Curves (CMS12P03Q8-HF)

Fig.7 - $R_{DS(ON)}$ vs V_{GS}

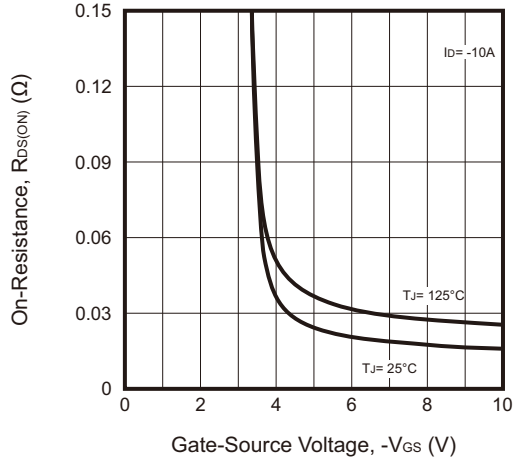


Fig.8 - Capacitance vs V_{DS}

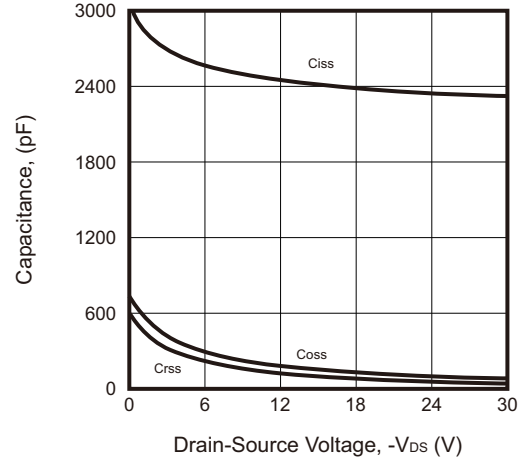


Fig.9 - Gate Charge

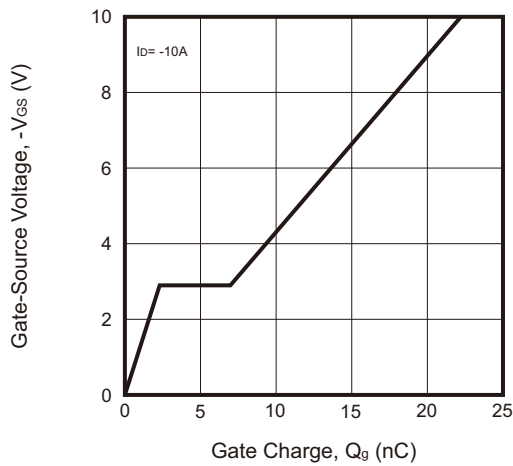


Fig.10 - Source-Drain Diode Forward

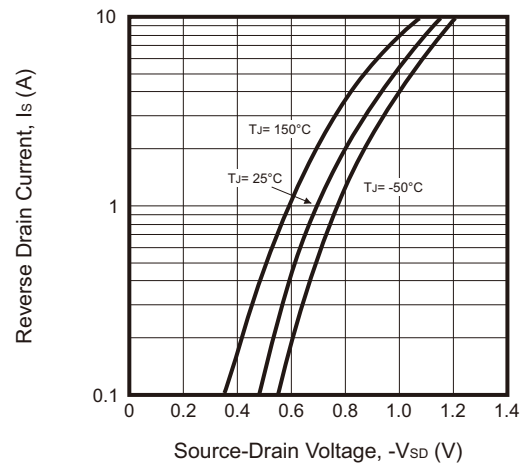
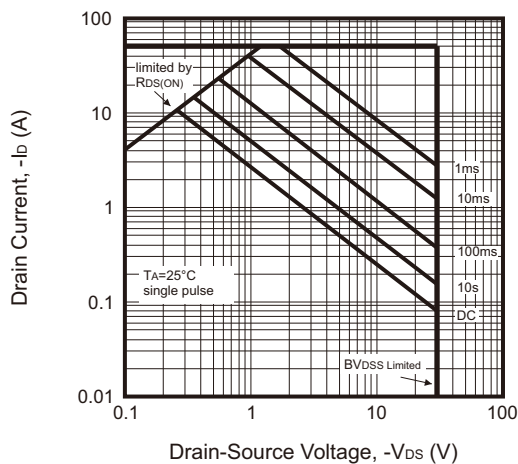


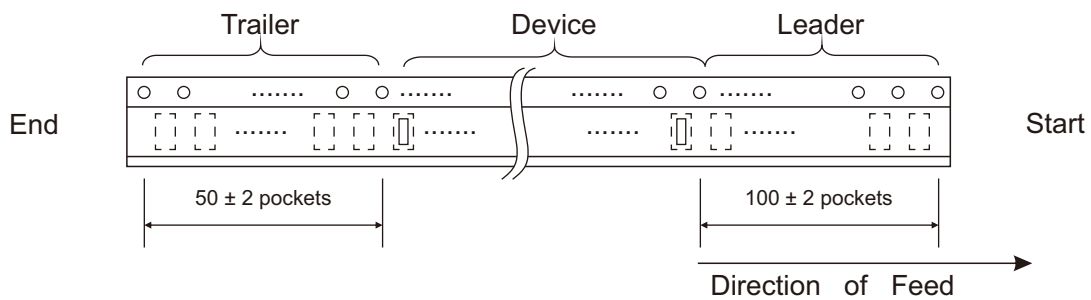
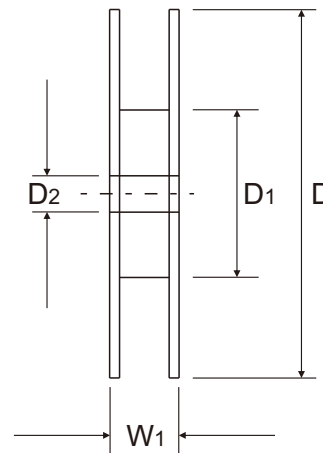
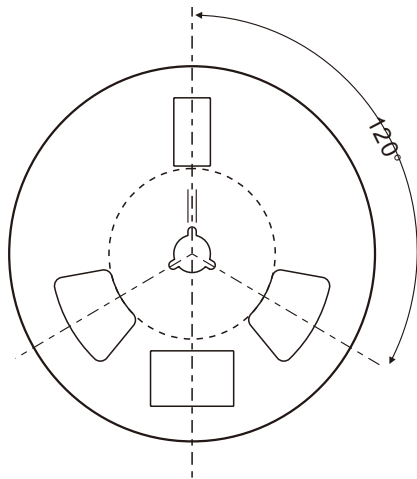
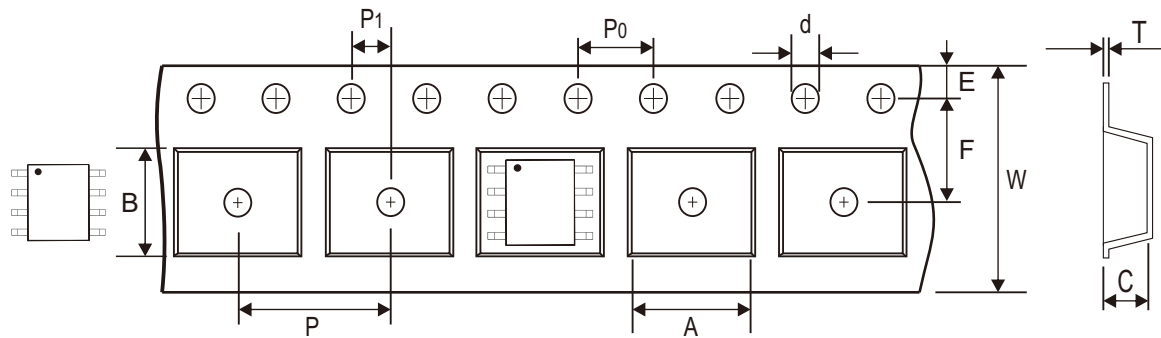
Fig.11 - Safe Operation Area



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Reel Taping Specification



SOP-8	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.40 ± 0.10	5.50 ± 0.10	2.10 ± 0.10	1.50 + 0.30 - 0.00	330.00 ± 0.25	100.00 ± 0.25	13.00 ± 0.25
	(inch)	0.252 ± 0.004	0.217 ± 0.004	0.083 ± 0.004	0.059 + 0.012 - 0.000	12.992 ± 0.010	3.937 ± 0.010	0.512 ± 0.010

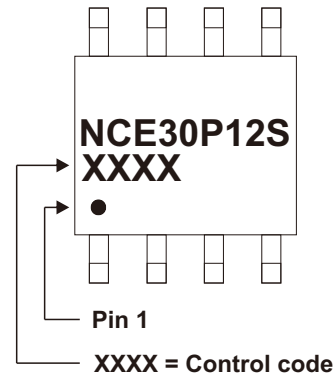
SOP-8	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.30 ± 0.05	12.00 ± 0.30	17.25 ± 0.25
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.012 ± 0.002	0.472 ± 0.012	0.679 ± 0.010

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Marking Code

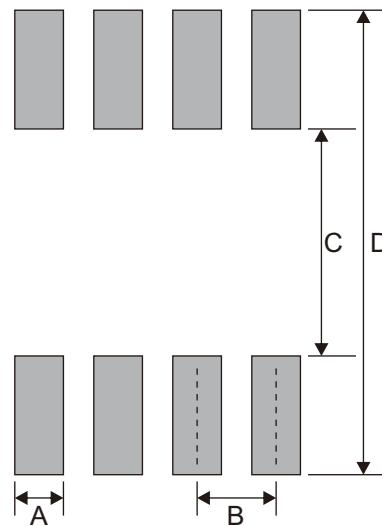
Part Number	Marking Code
CMS12P03Q8-HF	NCE30P12S



Suggested P.C.B. PAD Layout

SIZE	SOP-8	
	(mm)	(inch)
A	0.65	0.026
B	1.27	0.050
C	3.90	0.154
D	6.90	0.272

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



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOP-8	4000	13