MOSFET

CMS25N03V8A-HF

N-Channel
RoHS Device
Halogen Free

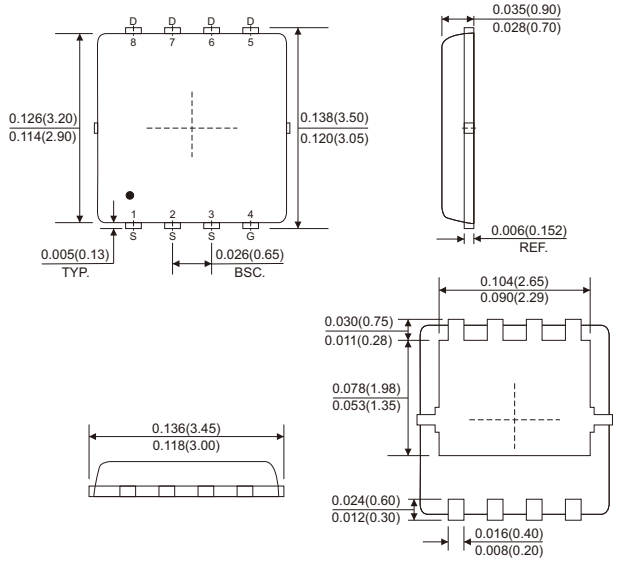
Features

- Improved dv/dt capability.
- Fast switching.
- 30V, 25A, $R_{DS(ON)}$≤18mΩ@V_{GS}=10V.

Mechanical data

- Case: PDFN3x3-8L, molded plastic.
- Mounting position: Any.

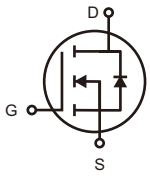
PDFN3x3-8L



Dimensions in inches and (millimeter)

Circuit Diagram

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



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

Parameter	Conditions	Symbol	Value	Unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GS}	±20	V
Drain current-continuous	T_C = 25°C	I_D	25	A
	T_C = 100°C	I_D	16	
Drain current-pulsed	(Note 1)	I_{DM}	100	A
Single pulse avalanche energy	(Note 2)	E_{AS}	32	mJ
Single pulse avalanche current	(Note 2)	I_{AS}	8	A
Power dissipation	T_C=25°C	P_D	21	W
	Derate above 25°C	P_D	0.17	W/°C
Thermal resistance junction-ambient		$R_{\theta JA}$	62	°C/W
Thermal resistance junction-case		$R_{\theta JC}$	6	°C/W
Operating junction temperature range		T_J	-50 to +150	°C
Storage temperature range		T_{STG}	-50 to +150	°C

Electrical Characteristics (at T_J=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 = 250μA	30			V
Drain-source leakage current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V, T_J = 25°C			1	μA
		V_{DS} = 24V, V_{GS} = 0V, T_J = 125°C			10	
Gate-source leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics						
Static drain-source on-resistance (Note 3)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 12A		14	18	mΩ
		V_{GS} = 4.5V, I_D = 8A		20	28	
Gate threshold voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 250μA	1.2	1.6	2.5	V
Forward transconductance	gfs	V_{DS} = 10V, I_D = 6A		6.5		S
Dynamic and Switching Characteristics						
Total gate charge (Note 3, 4)	Q_g	V_{DS} = 15V, V_{GS} = 4.5V, I_D = 6A		4.1	8	nC
Gate-source charge (Note 3, 4)	Q_{gs}			1	2	
Gate-drain charge (Note 3, 4)	Q_{gd}			2.1	4	
Turn-on delay time (Note 3, 4)	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, R_G = 6Ω, I_D = 1A		2.8	5	nS
Rise time (Note 3, 4)	t_r			7.2	14	
Turn-off delay time (Note 3, 4)	$t_{d(off)}$			15.8	30	
Fall time (Note 3, 4)	t_f			4.6	9	
Input capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0V, F = 1MHz		345	500	pF
Output capacitance	C_{oss}			55	80	
Reverse transfer capacitance	C_{rss}			32	45	
Gate resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, F = 1MHz		3.2	6.4	Ω
Drain-Source Diode Characteristics and Ratings						
Continuous source current	I_S	V_G = V_D = 0V, Force current			25	A
Pulsed source current (Note 3)	I_{SM}				50	A
Diode forward voltage (Note 3)	V_{SD}	V_{GS} = 0V, I_S = 1A, T_J = 25°C		0.7	1	V

Notes: 1. Pulse width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=1mH, I_{AS}=8A, R_G=25Ω, starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Rating and Characteristic Curves (CMS25N03V8A-HF)

Fig.1 - Continuous Drain Current vs. T_C

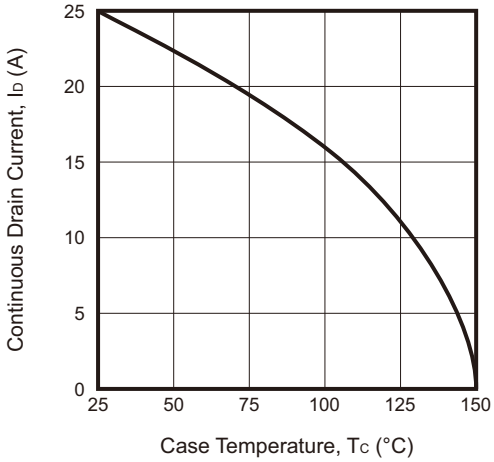


Fig.2 - Normalized $R_{DS(ON)}$ vs. T_J

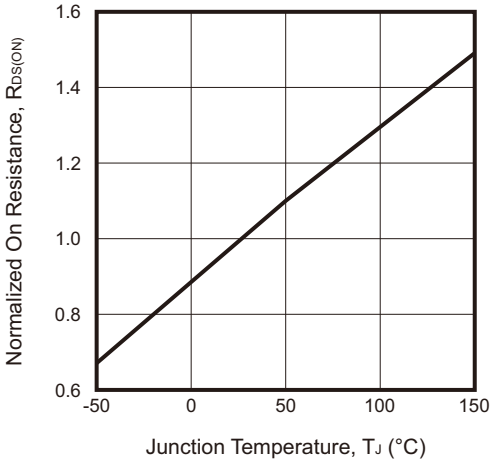


Fig.3 - Normalized V_{th} vs. T_J

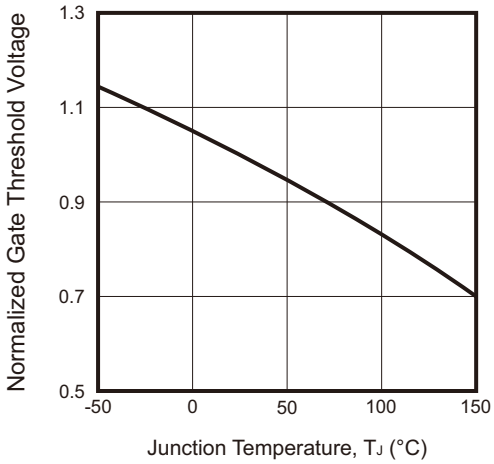


Fig.4 - Gate Charge Waveform

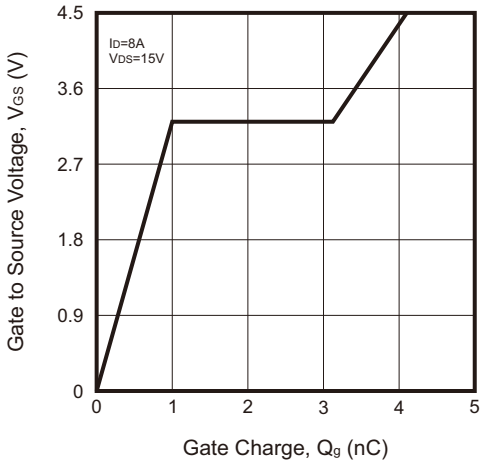
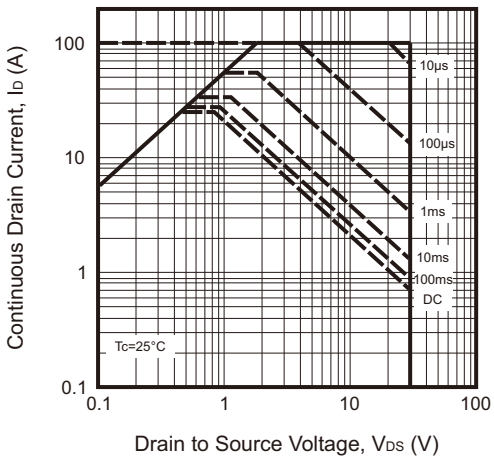
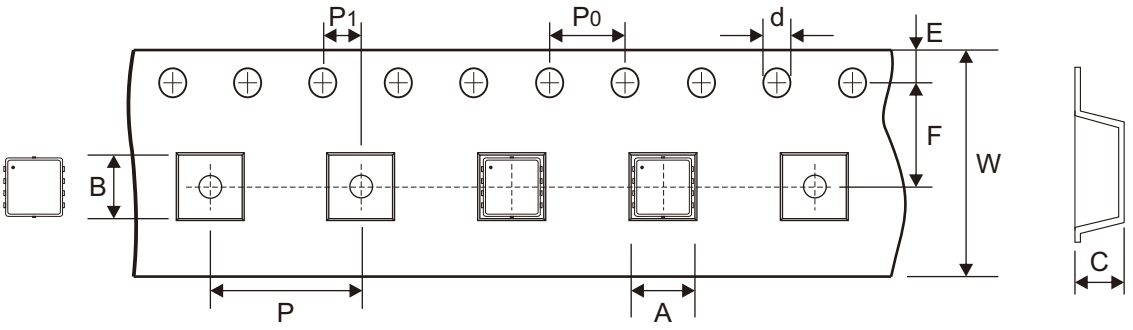
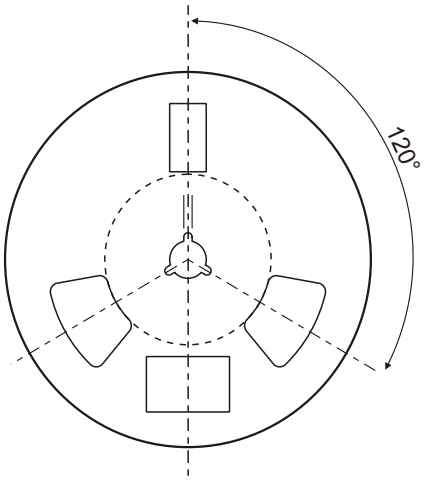


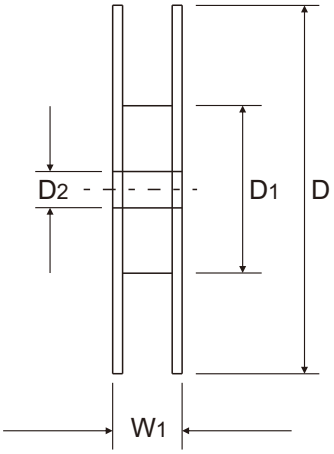
Fig.5 - Max. Safe Operating Area

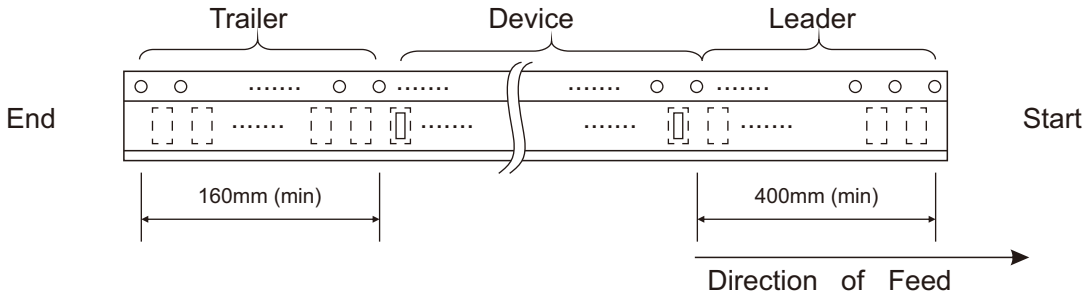


Reel Taping Specification









	SYMBOL	A	B	C	d	D	D_1	D_2
PDFN3x3 -8L	(mm)	3.60 ± 0.20	3.55 ± 0.25	1.11 ± 0.12	1.52 ± 0.13	330.5 ± 2.50	95.00 Min	13.15 ± 0.65
	(inch)	0.142 ± 0.008	0.140 ± 0.010	0.044 ± 0.005	0.060 ± 0.005	13.012 ± 0.098	3.740 Min	0.518 ± 0.026

	SYMBOL	E	F	P	P_0	P_1	W	W_1
PDFN3x3 -8L	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	12.00 ± 0.30	18.90 Max
	(inch)	0.069 ± 0.004	0.217 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.472 ± 0.012	0.744 Max

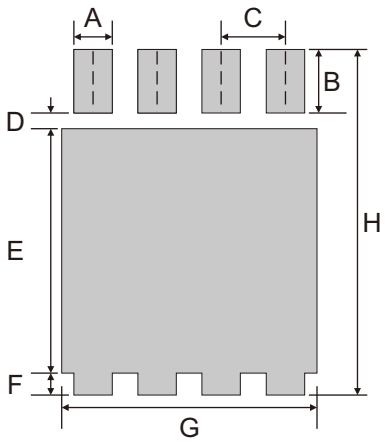
Marking Code

Part Number	Marking Code
CMS25N03V8A-HF	NC018
	Q28N03

XXX YY = Control code

Suggested P.C.B. PAD Layout

SIZE	PDFN3x3-8L	
	(mm)	(inch)
A	0.40	0.016
B	0.60	0.024
C	0.65	0.026
D	0.35	0.014
E	2.35	0.093
F	0.25	0.010
G	2.30	0.091
H	3.55	0.140



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PDFN3x3-8L	3,000	13