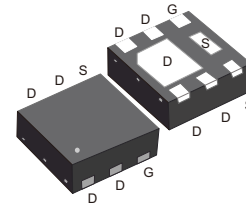


CMS05N10A6-HF

N-Channel
RoHS Device
Halogen Free



Features

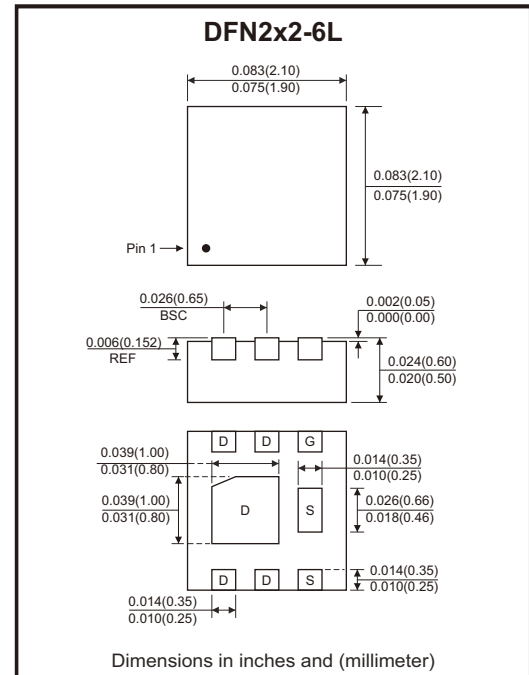
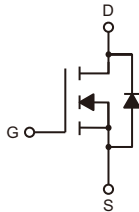
- Super low gate charge.
- Load switches.

Mechanical data

- Case: DFN2x2-6L, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.
- Mounting position: Any.

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_{DS}	100	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current @ $T_C=25^\circ\text{C}$	I_D	5	A
Continuous drain current @ $T_C=100^\circ\text{C}$	I_D	3.8	
Pulsed drain current (Note 1)	I_{DM}	24	A
Single pulse avalanche energy (Note 2)	EAS	3.2	mJ
Power dissipation @ $T_C=25^\circ\text{C}$	P_D	15	W
Thermal resistance junction to ambient (Note 3)	$R_{\theta JA}$	41.6	$^\circ\text{C/W}$
Thermal resistance junction to case	$R_{\theta JC}$	8.3	$^\circ\text{C/W}$
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	100			V
Gate-body leakage current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±10V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V, T _J = 25°C			1	μA
		V _{DS} = 100V, V _{GS} = 0V, T _J = 100°C			100	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2	V
Static drain-source on-resistance (Note 4)	R _{DS(on)}	V _{GS} = 10V, I _D = 4A		210	260	mΩ
	R _{DS(on)}	V _{GS} = 4.5V, I _D = 2A		220	280	mΩ
Forward transconductance (Note 4)	g _{fs}	V _{DS} = 10V, I _D = 4A		7		S
Dynamic Characteristics (Note 5)						
Input capacitance	C _{iss}	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz		440		pF
Output capacitance	C _{oss}			14		
Reverse transfer capacitance	C _{rss}			10		
Gate resistance	R _G	f = 1MHz		1.7		Ω
Switching Characteristics (Note 5)						
Total gate charge	Q _g	V _{GS} = 10V, V _{DS} = 50V, I _D = 4A		9.5		nC
Gate to source charge	Q _{gs}			1.7		
Gate to drain charge	Q _{gd}			1.5		
Turn-on delay time	t _{d(on)}	V _{GS} = 10V, V _{DD} = 50V, R _G = 3Ω , I _D = 4A		4.5		ns
Turn-on rise time	t _r			1.5		
Turn-off delay time	t _{d(off)}			12.2		
Turn-off fall time	t _f			1.3		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 4)	V _{SD}	I _S = 4A, V _{GS} = 0V			1.2	V
Continuous source current	I _S	T _A = 25°C			5	A

- Notes: 1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$.
 2. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=4A$.
 3. The data tested by surface mounted on a 1inch² FR-4 board with 2OZ copper.
 The value in any given application depends on the user's specific board design.
 4. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 5. This value is guaranteed by design hence it is not included in the production test.

Typical Rating and Characteristic Curves (CMS05N10A6-HF)

Fig.1 - Output Characteristics

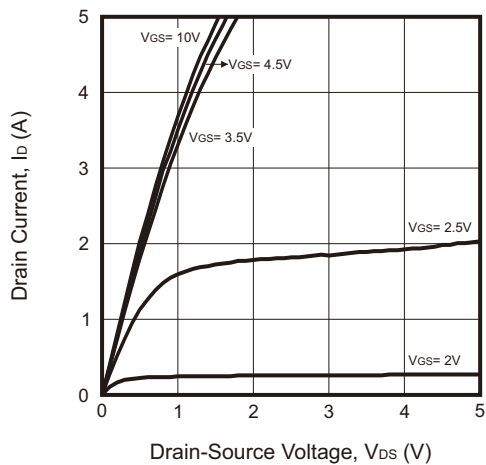


Fig.2 - Transfer Characteristics

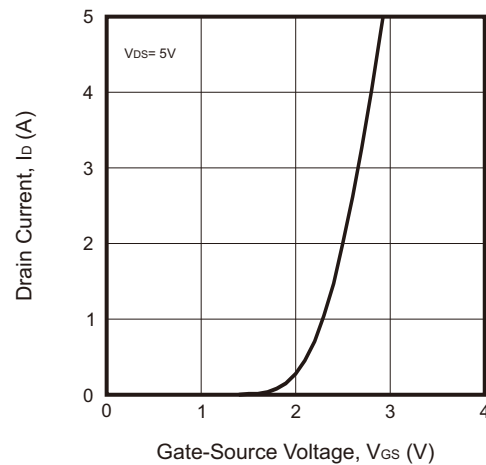


Fig.3 - Forward Characteristics of Reverse

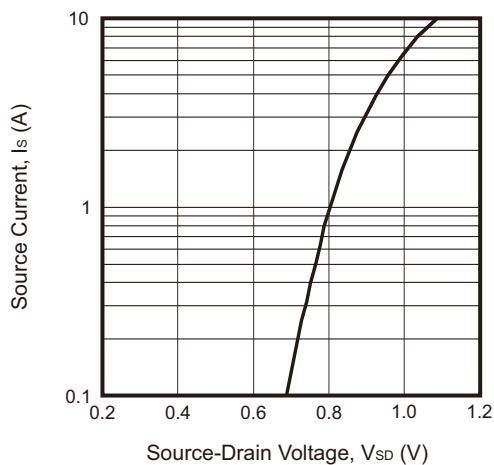


Fig.4 - On-Resistance vs. Gate-Source Voltage

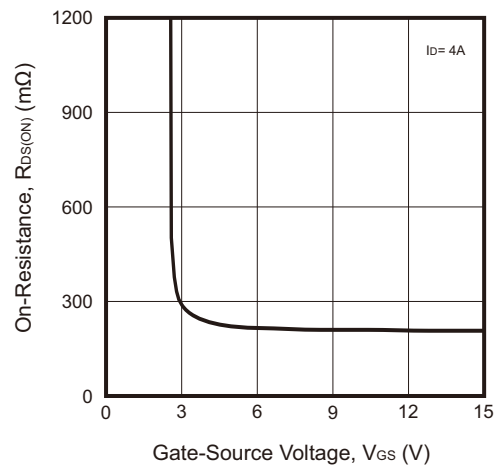


Fig.5 - On-Resistance vs. Drain Current

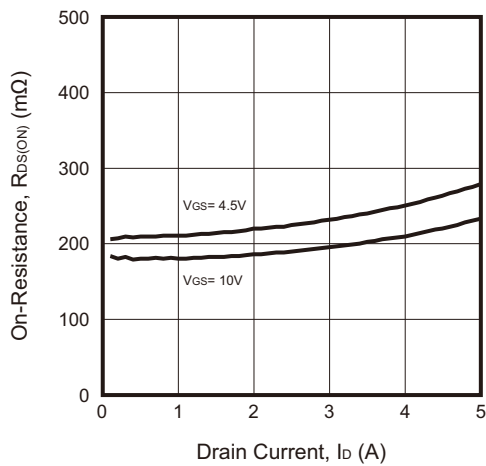
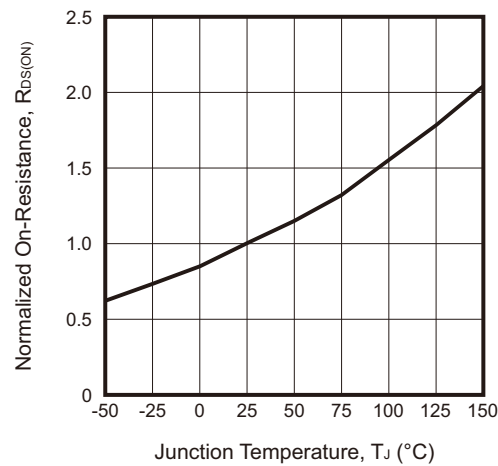


Fig.6 - Normalized On-Resistance vs. Junction Temperature



Typical Rating and Characteristic Curves (CMS05N10A6-HF)

Fig.7 - Capacitance Characteristics

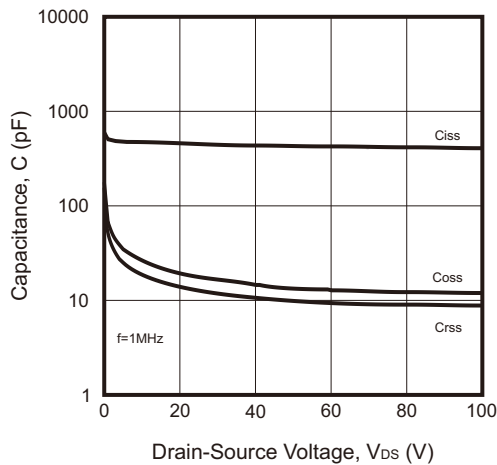


Fig.8 - Gate Charge Characteristics

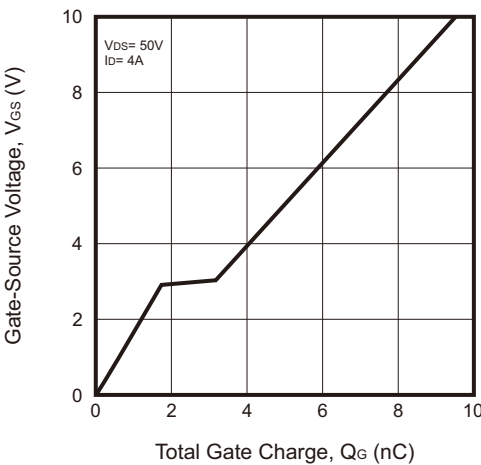


Fig.9 - Power Dissipation

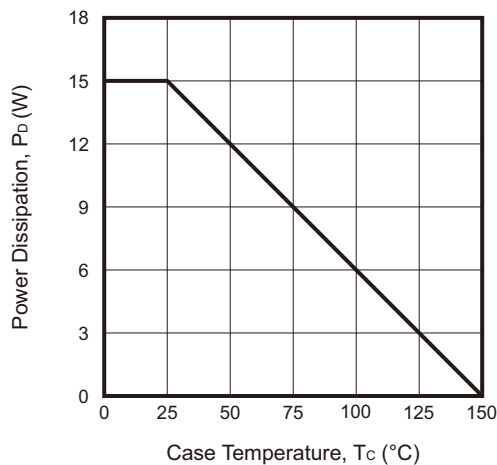
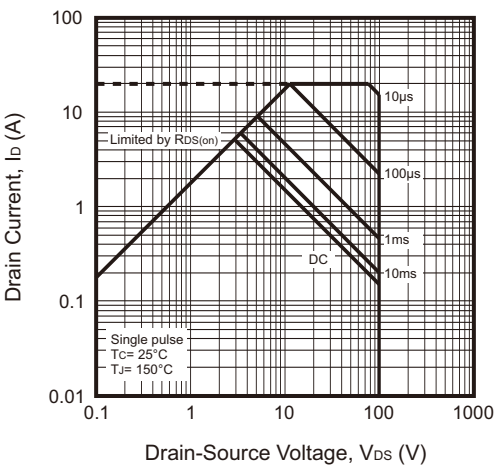
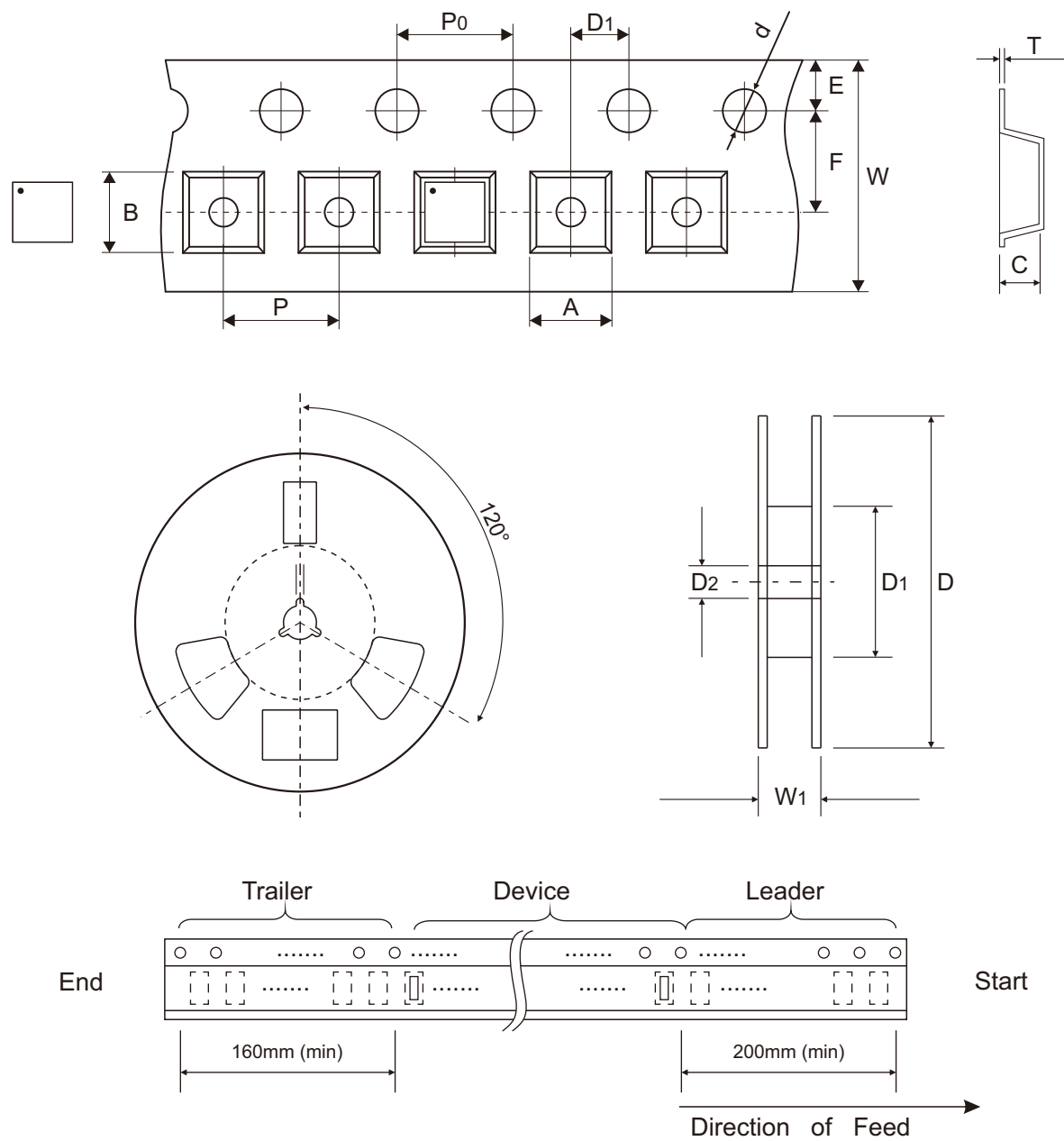


Fig.10 - Safe Operating Area



Reel Taping Specification



DFN2x2 -6L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	2.24 ± 0.16	2.24 ± 0.16	0.91 ± 0.31	1.50 ± 0.10	178.50 ± 2.50	55.25 ± 5.25	13.00 ± 0.50
	(inch)	0.088 ± 0.006	0.088 ± 0.006	0.036 ± 0.012	0.059 ± 0.004	7.028 ± 0.098	2.175 ± 0.207	0.512 ± 0.020

DFN2x2 -6L	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.225 ± 0.075	8.00 + 0.30 - 0.10	13.00 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.009 ± 0.003	0.315 + 0.012 - 0.004	0.512 ± 0.039

Marking Code

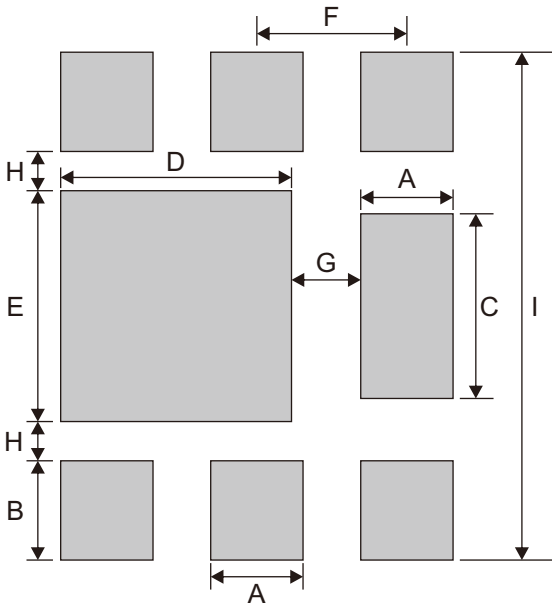
Part Number	Marking Code
CMS05N10A6-HF	R05N10S



WWXXXXX = Control code

Suggested P.C.B. PAD Layout

SIZE	DFN2x2-6L	
	(mm)	(inch)
A	0.40	0.016
B	0.43	0.017
C	0.80	0.031
D	1.00	0.039
E	1.00	0.039
F	0.65	0.026
G	0.25	0.010
H	0.17	0.007
I	2.20	0.087



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
DFN2x2-6L	3,000	7