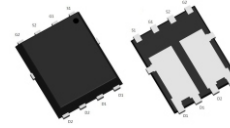


CMS28NN10H8-HF

Dual N-Channel

RoHS Device

Halogen Free



Features

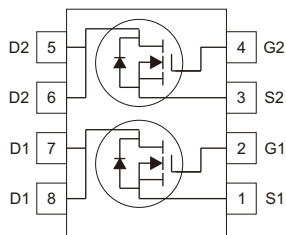
- Low on-resistance.
- Simple drive requirement.
- Low gate charge.
- Fast switching characteristic.

Mechanical data

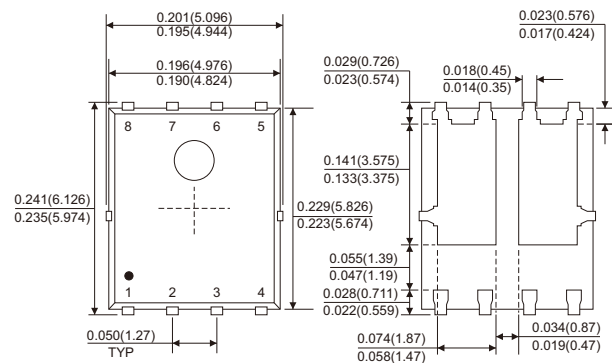
- Case: PDFN5x6-8L, molded plastic.
- Mounting position: Any.

Circuit Diagram

G:Gate
S:Source
D:Drain



PDFN5x6-8L



Dimensions in inches and (millimeter)

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

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DS}	100	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current (Note 1)	$T_C = 25^\circ\text{C}, V_{GS} = 10\text{V}$	I_D	28	A
	$T_C = 100^\circ\text{C}, V_{GS} = 10\text{V}$		18	
Continuous drain current (Note 2)	$T_A = 25^\circ\text{C}, V_{GS} = 10\text{V}$	I_{DSM}	5	
	$T_A = 70^\circ\text{C}, V_{GS} = 10\text{V}$		4	
Pulsed drain current @ $V_{GS} = 10\text{V}$ (Note 3)		I_{DM}	56	A
Avalanche current @ $L=0.1\text{mH}$ (typical) (Note 3)		I_{AS}	18	A
Avalanche energy @ $L=0.5\text{mH}$		E_{AS}	25	mJ
Power dissipation (Note 1)	$T_C = 25^\circ\text{C}$	P_D	56	W
	$T_C = 100^\circ\text{C}$		22	
Power dissipation (Note 2)	$T_A = 25^\circ\text{C}$	P_{DSM}	1.7	
	$T_A = 70^\circ\text{C}$		1.1	
Thermal resistance, junction to case, max		$R_{\theta JC}$	2.2	$^\circ\text{C/W}$
Thermal resistance, junction to ambient, max (Note 4)		$R_{\theta JA}$	72	$^\circ\text{C/W}$
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

*Drain current limited by maximum junction temperature.

REV:A

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	100			V
	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D = 250μA		0.05		V/°C
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2		4	V
Forward transconductance (Note 5)	G _{FS}	V _{DS} = 10V, I _D = 5A		6.7		S
Gate-source leakage	I _{GSS}	V _{GS} = ±20V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} = 80V, V _{GS} = 0V			1	μA
		V _{DS} = 80V, V _{GS} = 0V, T _J = 85°C			25	
Static Drain-source on-state resistance (Note 5)	R _{DS(ON)}	V _{GS} = 10V, I _D = 5A		27	35	mΩ
		V _{GS} = 7V, I _D = 4A		31	42	
Dynamic						
Total gate charge (Note 5)	Q _g	V _{DS} = 50, I _D = 5A, V _{GS} = 10V	16.2	23.2	30.2	nC
Gate-source charge (Note 5)	Q _{gs}		1.6	3.2	6.4	
Gate-drain charge (Note 5)	Q _{gd}		5.5	11	15	
Turn-on delay time (Note 5)	t _{d(ON)}	V _{DS} = 50V, I _D = 5A, V _{GS} = 10V, R _{GS} = 3Ω		12.6		ns
Rise time (Note 5)	t _r			24.6		
Turn-off delay time (Note 5)	t _{d(OFF)}			30.8		
Fall time (Note 5)	t _f			16.2		
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 50V, f = 1MHz	536	767	997	pF
Output capacitance	C _{oss}		63	91	118	
Reverse transfer capacitance	C _{rss}		67	96	125	
Gate resistance	R _g	f = 1MHz		0.7		Ω
Source-Drain Diode (Note 5)						
Drain continuous forward current	I _S				28	A
Pulsed source drain current	I _{SM}				45	A
Diode forward voltage	V _{SD}	I _S = 1A, V _{GS} = 0V		0.74	1	V
Reverse recovery time	t _{rr}	V _{GS} = 0V, I _F = 5A, dI _F /dt = 100A/μs		36		ns
Recovered charge	Q _{rr}			48.2		nC

- Notes: 1. The power dissipation PD is based on $T_J(\text{MAX})=150^{\circ}\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for case where additional heatinking is used.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. copper, in a still air environment with $T_A=25^{\circ}\text{C}$.
The value in any given application depends on the user's specific board design.
The power dissipation PDSM is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C .
3. Ratings are based on low frequency and low duty cycles to keep initial $T_J=25^{\circ}\text{C}$.
4. When mounted on 1 in² copper pad of FR-4 board, 125°C/W when mounted on minimum copper pad.
5. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

Typical Rating and Characteristic Curves (CMS28NN10H8-HF)

Fig.1 - Typical Output Characteristics

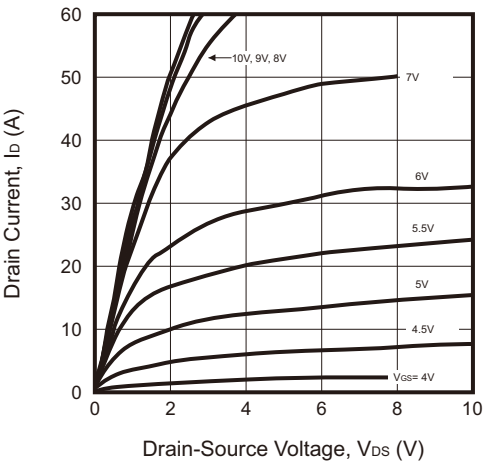


Fig.2 - Breakdown Voltage vs Ambient Temperature

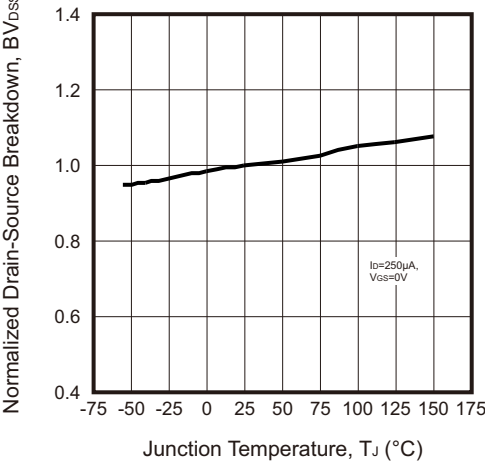


Fig.3 - Static Drain-Source On-State Resistance vs Drain Current

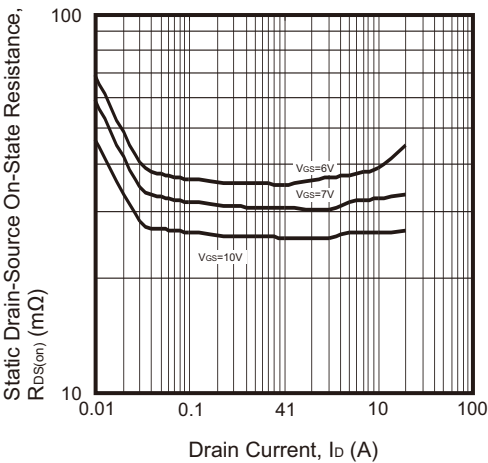


Fig.4 - Reverse Drain Current vs Source-Drain Voltage

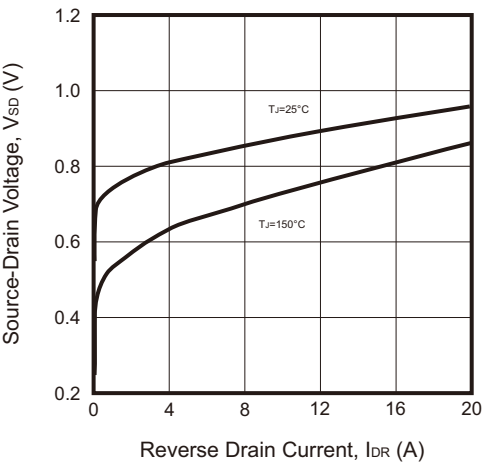


Fig.5 - Static Drain-Source On-State Resistance vs Gate-Source Voltage

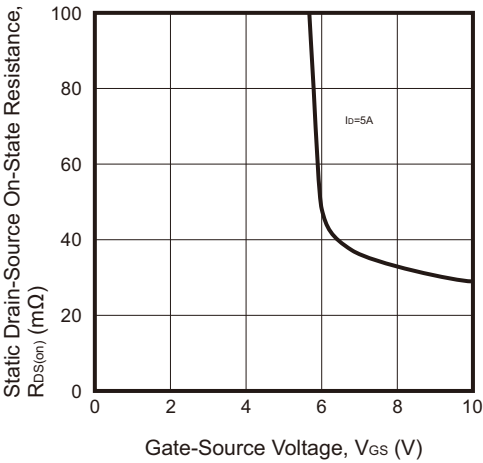
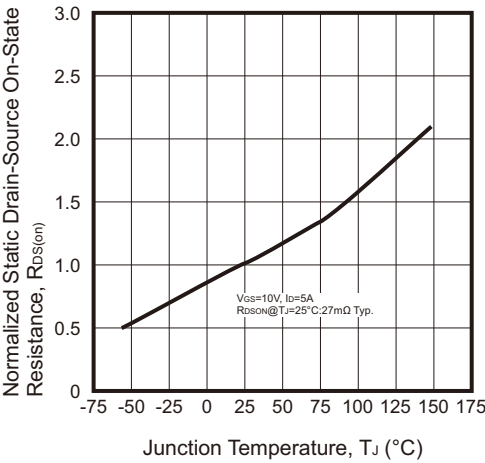


Fig.6 - Drain-Source On-State Resistance vs Junction Temperature



Typical Rating and Characteristic Curves (CMS28NN10H8-HF)

Fig.7 - Capacitance vs Drain-to-Source Voltage

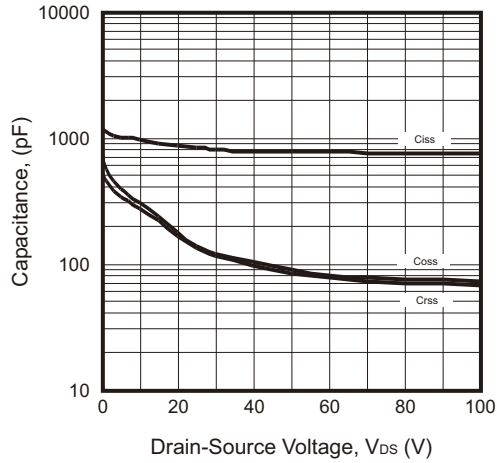


Fig.8 - Normalized Threshold Voltage vs Junction Temperature

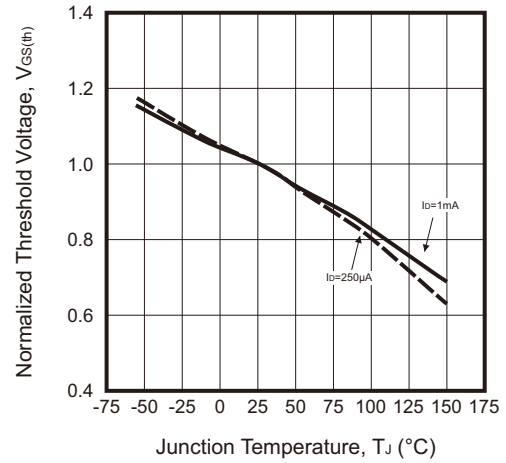


Fig.9 - Forward Transfer Admittance vs Drain Current

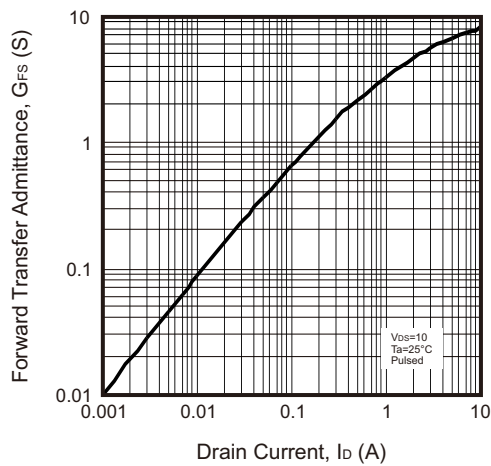


Fig.10 - Gate Charge Characteristics

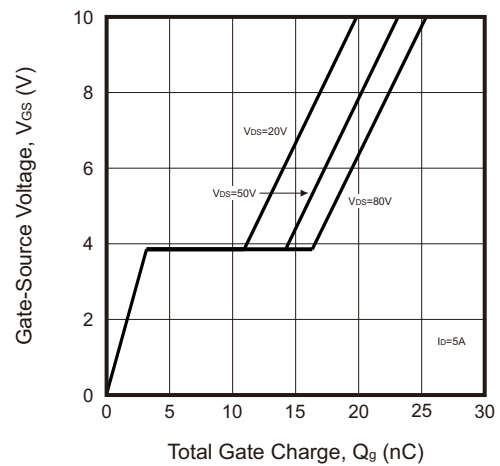


Fig.11 - Maximum Safe Operating Area

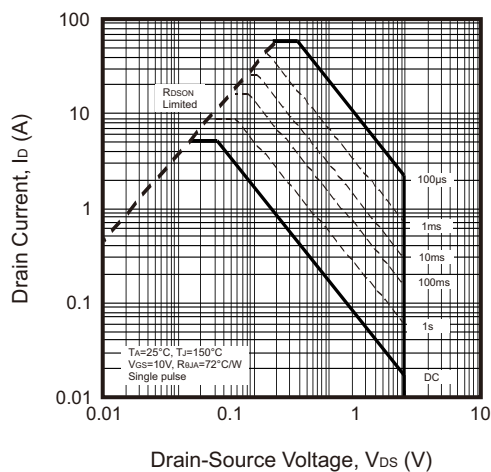
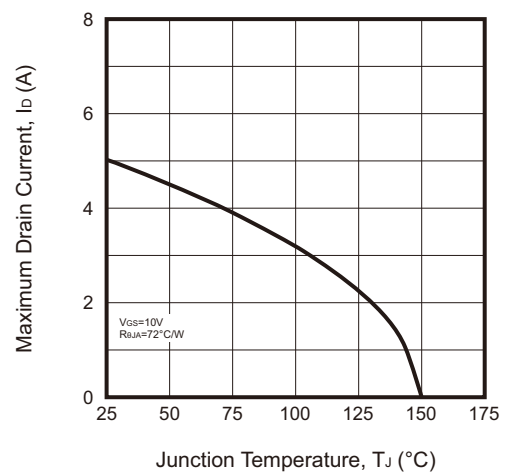


Fig.12 - Maximum Drain Current vs Junction Temperature



Typical Rating and Characteristic Curves (CMS28NN10H8-HF)

Fig.13 - Single Pulse Maximum Power Dissipation

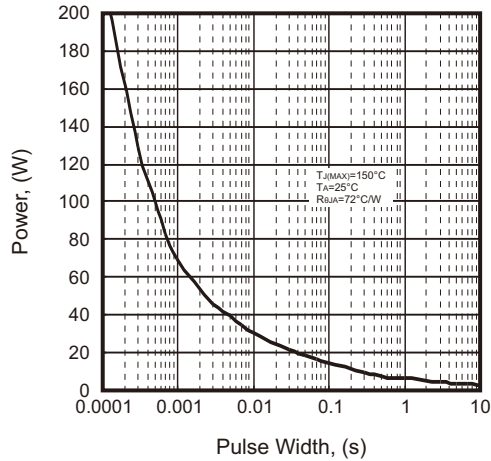


Fig.14 - Maximum Safe Operating Area

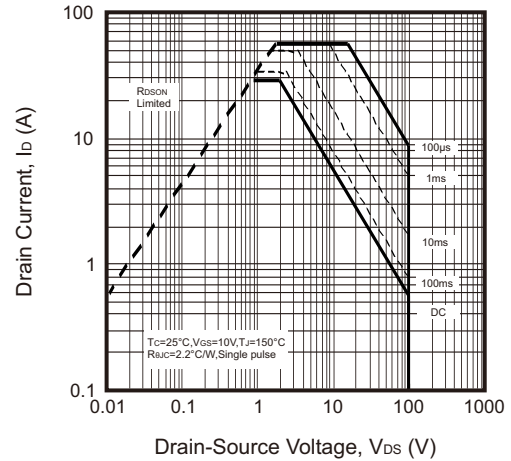


Fig.15 - Single Pulse Maximum Power Dissipation

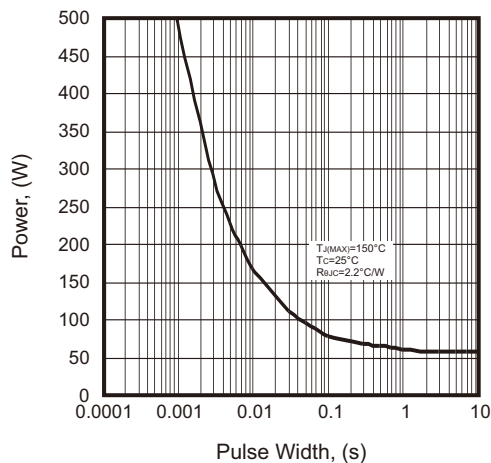


Fig.16 - Power Derating Curve

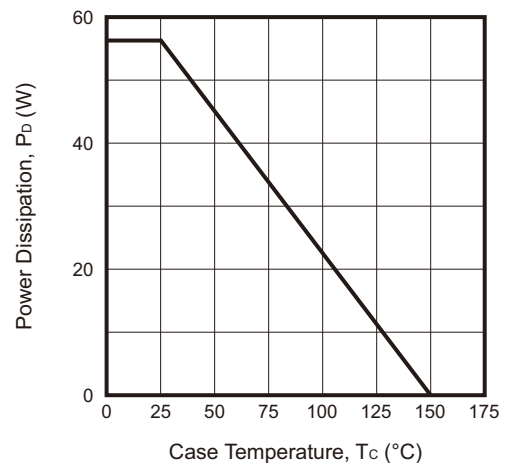
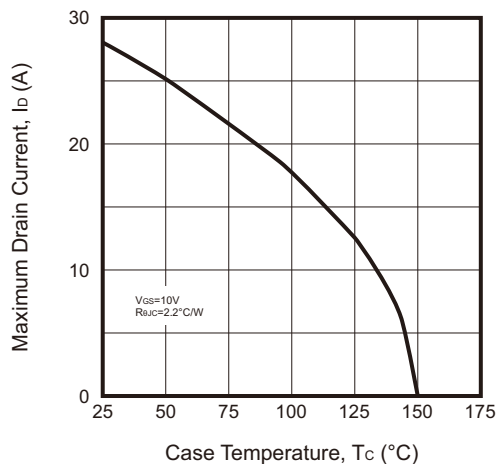
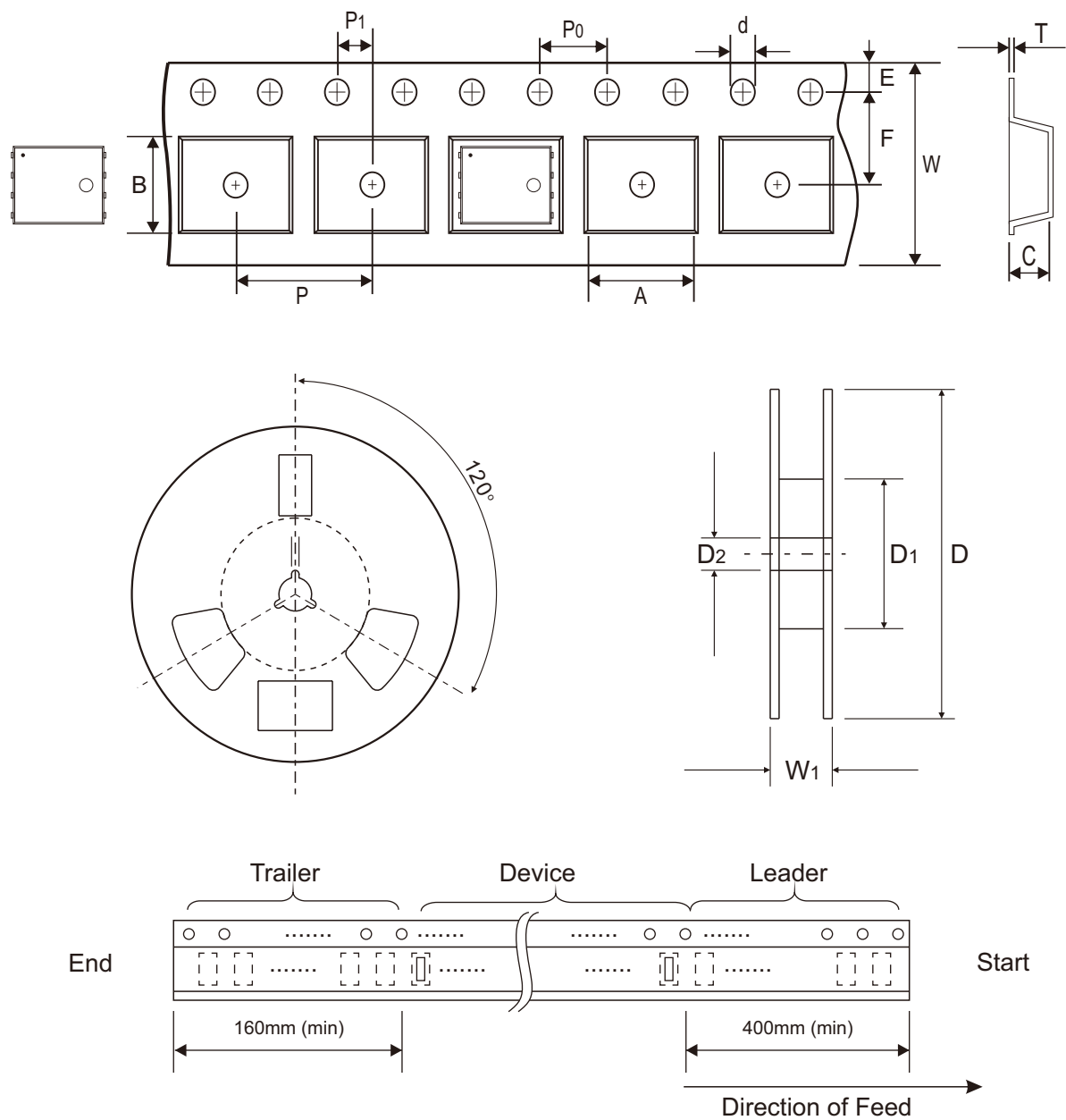


Fig.17 - Maximum Drain Current vs Case Temperature



Reel Taping Specification

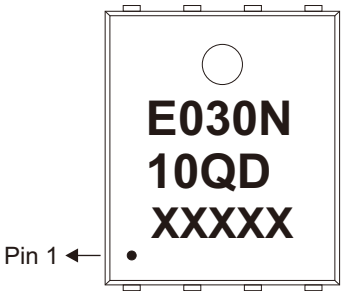


PDFN5x6 -8L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.30 ± 0.10	5.30 ± 0.10	1.20 ± 0.10	1.50 + 0.10 - 0.00	330.00 ± 1.00	100 ± 0.50	13.00 ± 0.20
	(inch)	0.248 ± 0.004	0.209 ± 0.004	0.047 ± 0.004	0.059 + 0.004 - 0.000	12.992 ± 0.039	3.937 ± 0.020	0.512 ± 0.008

PDFN5x6 -8L	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	0.25 ± 0.05	12.00 ± 0.30	17.60 + 0.10 - 0.00
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.010 ± 0.002	0.472 ± 0.012	0.693 + 0.004 - 0.000

Marking Code

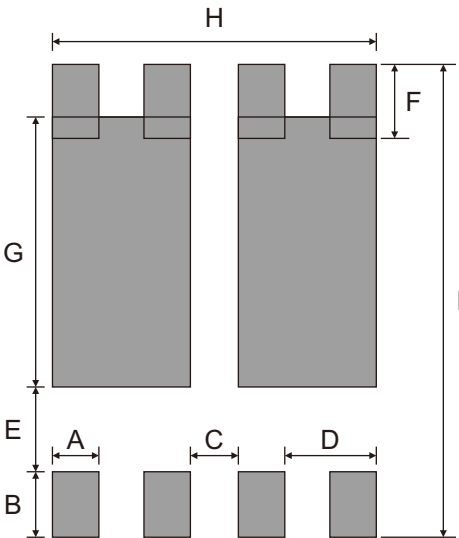
Part Number	Marking Code
CMS28NN10H8-HF	E030N10QD XXXXX



XXXXX = Control code

Suggested P.C.B. PAD Layout

SIZE	PDFN5x6-8L	
	(mm)	(inch)
A	0.61	0.024
B	0.86	0.034
C	0.66	0.026
D	1.27	0.050
E	1.23	0.048
F	1.02	0.040
G	3.81	0.150
H	4.42	0.174
I	6.61	0.260



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PDFN5x6-8L	3,000	13