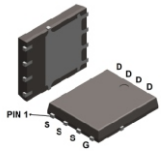
CMS36P10H8-HF

P-Channel
RoHS Device
Halogen Free



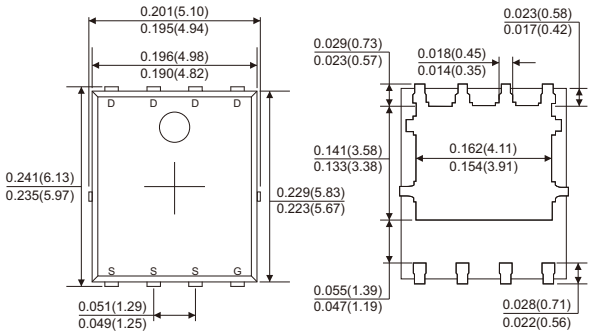
Features

- Low $R_{DS(ON)}$.
- Low gate charge.
- Fast switching characteristic.

Mechanical data

- Case: PDFN5x6-8L, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin plated leads, solderable per MIL-STD-202, method 208.

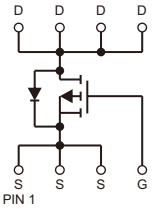
PDFN5x6-8L



Dimensions in inches and (millimeter)

Circuit Diagram

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



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	-100	V
Gate-source voltage	V_{GSS}	±20	V
Continuous drain current (V_{GS}=-10V, Tc=25°C) (Note 1)	I_D	-36	A
Continuous drain current (V_{GS}=-10V, Tc=100°C) (Note 1)	I_D	-23	
Continuous drain current (V_{GS}=-10V, T_A=25°C) (Note 2)	I_D	-7	
Continuous drain current (V_{GS}=-10V, T_A=75°C) (Note 2)	I_D	-5.6	
Pulsed drain current (Note 3)	I_{DM}	-144	A
Single pulse avalanche energy (L=0.5mH)	E_{AS}	156	mJ
Power dissipation (Tc=25°C) (Note 1)	P_D	78	W
Power dissipation (Tc=100°C) (Note 1)	P_D	31	
Power dissipation (T_A=25°C) (Note 2)	P_D	3	
Power dissipation (T_A=70°C) (Note 2)	P_D	1.9	
Thermal resistance junction to case	$R_{\theta JC}$	1.6	°C/W
Thermal resistance junction to air (Note 2)	$R_{\theta JA}$	42	°C/W
Operating junction temperature range	T_J	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V_{DSS}	V_{GS} = 0V, I_D = -250μA	-100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = -80V, V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics						
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -7A			30	mΩ
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-2		-4	V
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -50V, f = 1MHz		4660		pF
Output capacitance	C_{oss}			260		
Reverse transfer capacitance	C_{rss}			160		
Switching Characteristics (Note 4, 5)						
Turn-on delay time	$t_{d(on)}$	V_{DD} = -50V, V_{GS} = -10V, R_G = 6Ω, I_D = -1A		28		ns
Turn-on rise time	t_r			27		
Turn-off delay time	$t_{d(off)}$			154		
Turn-off fall time	t_f			50		
Total gate charge	Q_g	V_{DD} = -50V, I_D = -7A, V_{GS} = -10V		78		nC
Gate to source charge	Q_{gs}			21		
Gate to drain (miller) charge	Q_{gd}			21		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 4)	V_{SD}	I_{SD} = -7A, V_{GS} = 0V			-1.2	V
Continuous body diode forward current (Note 1)	I_S	T_C = 25°C			-36	A
Reverse recovery time	t_{rr}	I_F = -7A, dI_F/dt = 100A/μs		35		ns
Reverse recovery charge	Q_{rr}			60		nC

Notes: 1. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for case where additional heatsinking is used.

2. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2 oz. copper, in a still air environment with T_A=25°C. The power dissipation P_D is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

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

5. Independent of operating temperature.

Rating and Characteristic Curves (CMS36P10H8-HF)

Fig.1 - Typical Output Characteristics

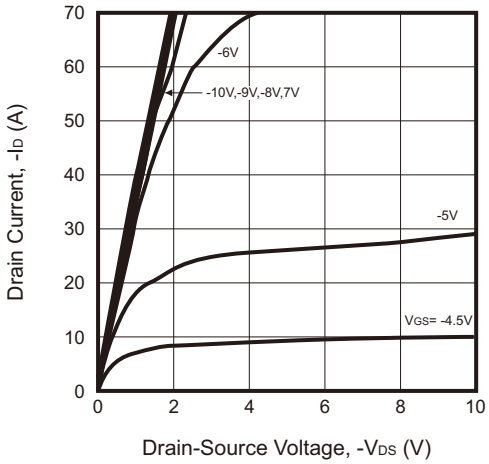


Fig.2 - On-Resistance vs. Drain Current and Gate Voltage

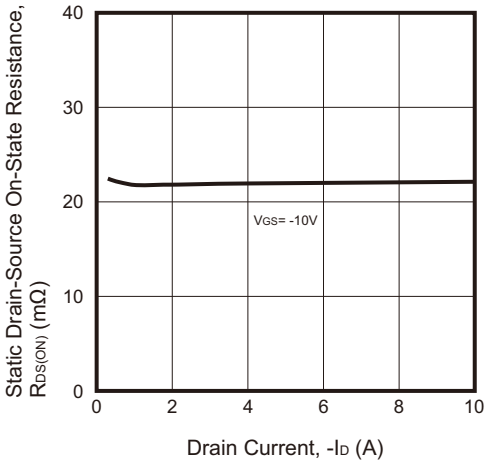


Fig.3 - On-Resistance vs. Gate-Source Voltage

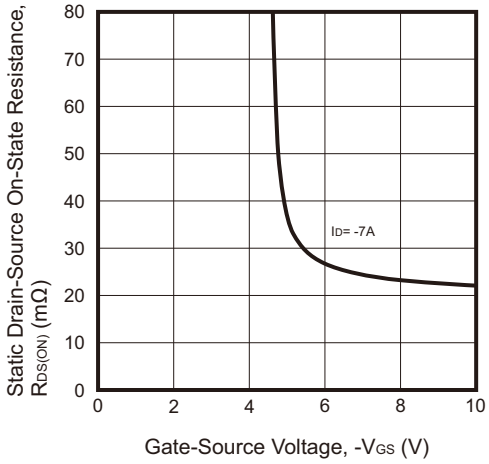


Fig.4 - Body-Diode Characteristics

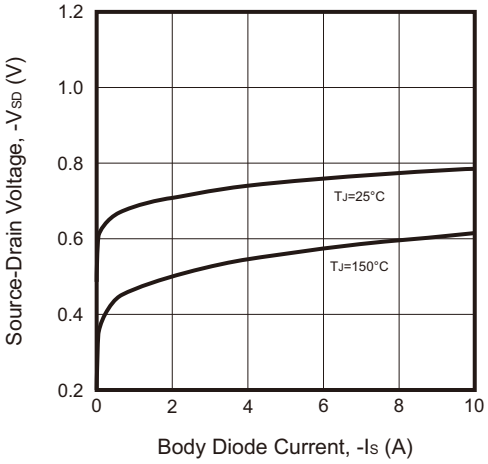


Fig.5 - On-Resistance vs. Junction Temperature

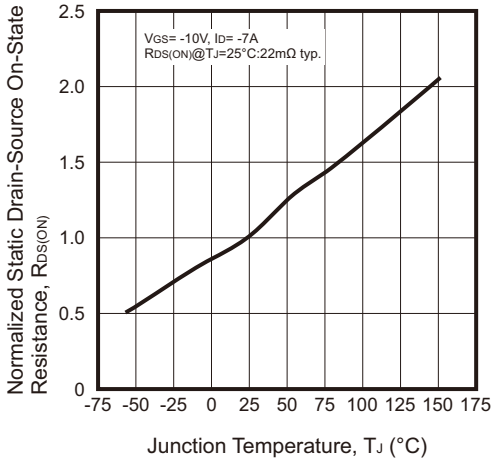
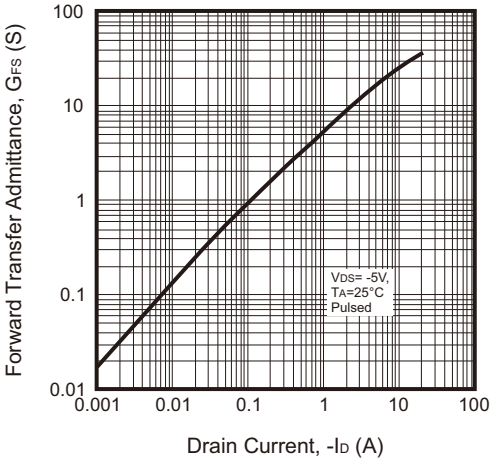


Fig.6 - Forward Transfer Admittance vs Drain Current



Rating and Characteristic Curves (CMS36P10H8-HF)

Fig.7 - Capacitance Characteristics

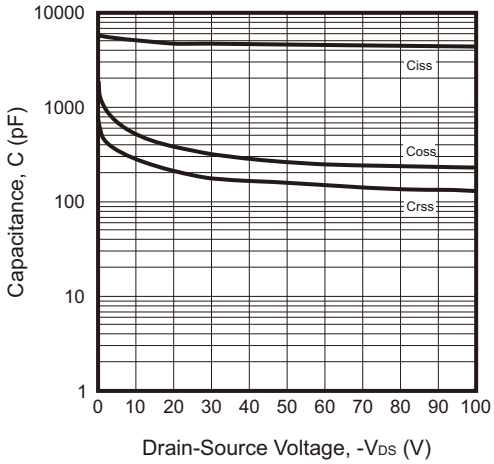


Fig.8 - Gate-Charge Characteristics

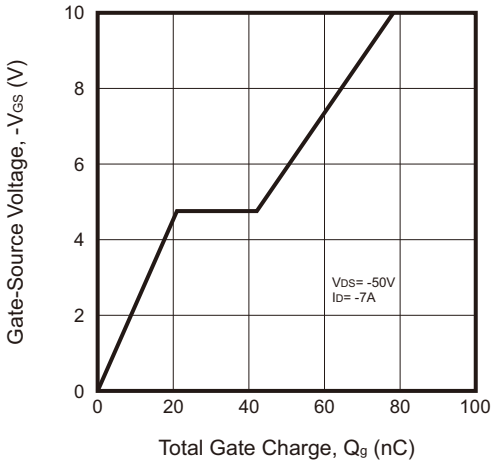


Fig.9 - Breakdown Voltage vs Junction Temperature

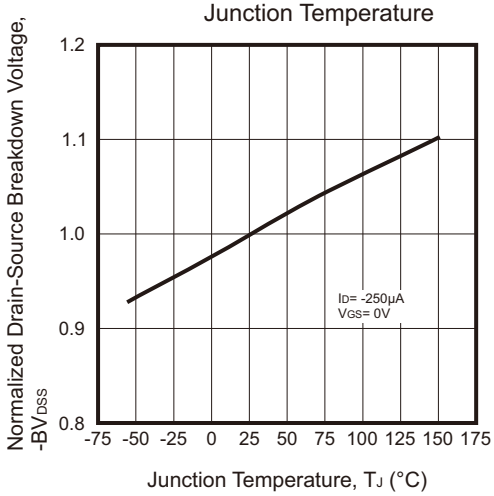


Fig.10 - $V_{GS(th)}$ vs Junction Temperature

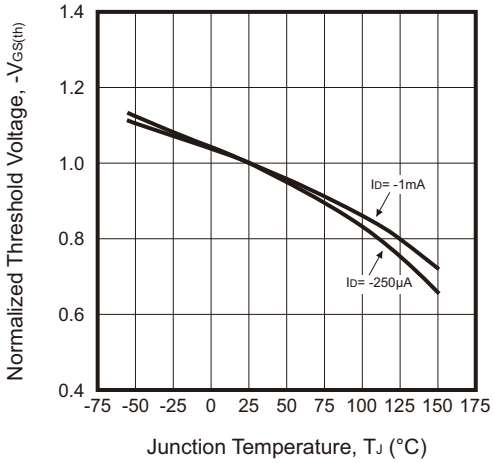


Fig.11 - Maximum Drain Current vs Junction Temperature

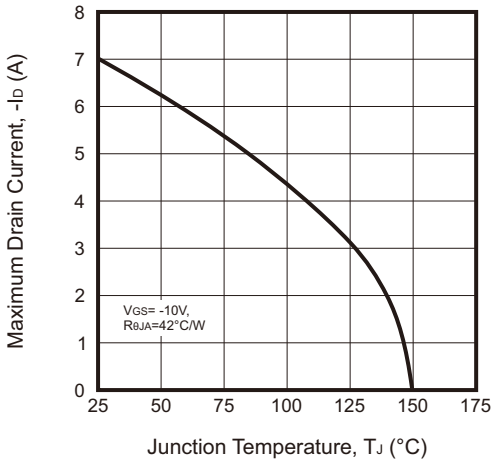
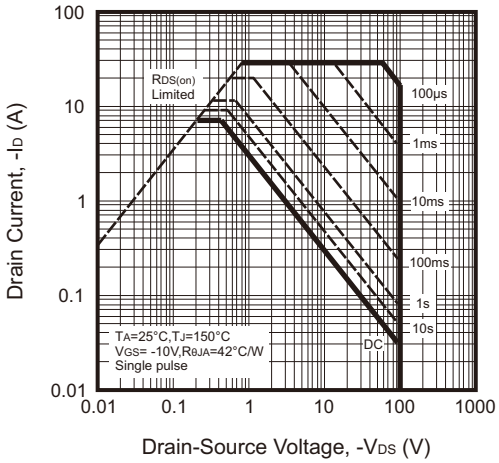
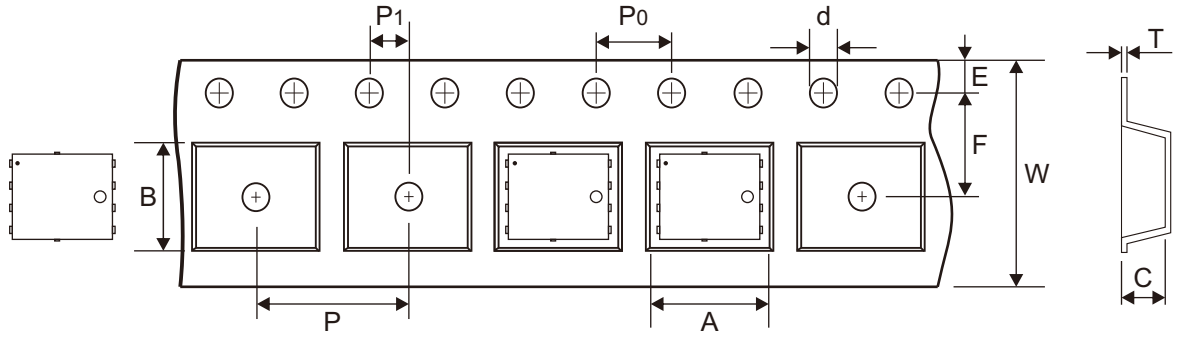
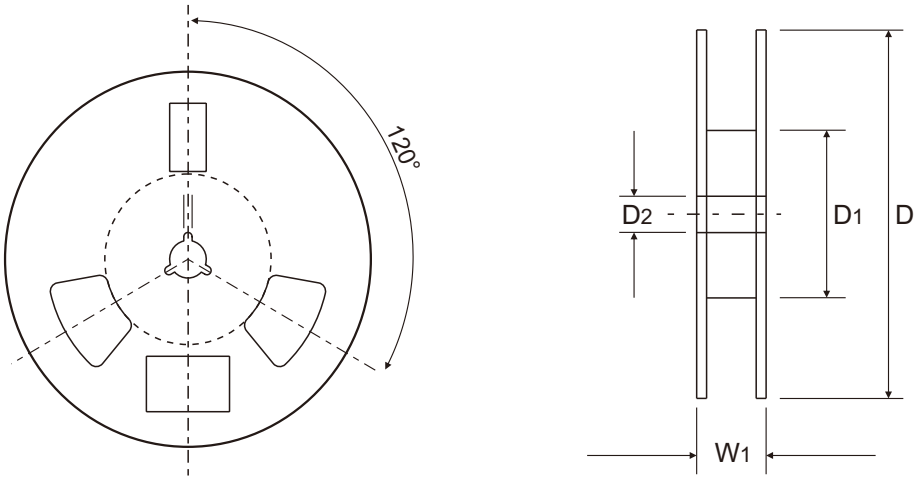


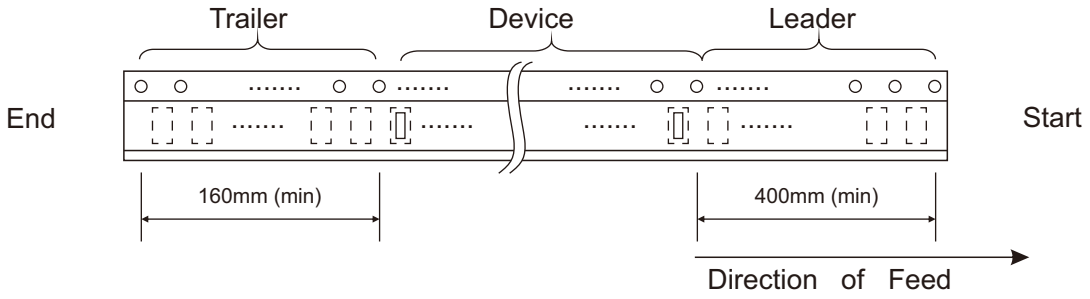
Fig.12 - Safe Operating Area



Reel Taping Specification





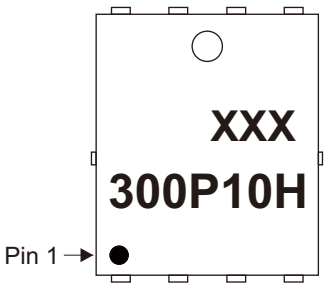


	SYMBOL	A	B	C	d	D	D1	D2
PDFN5x6 -8L	(mm)	6.30 ± 0.10	5.30 ± 0.10	1.20 ± 0.10	1.55 + 0.01	330 ± 1.00	100 ± 1.00	13.00 ± 0.20
	(inch)	0.248 ± 0.004	0.209 ± 0.004	0.047 ± 0.004	0.061 + 0.0004	12.992 ± 0.039	3.937 ± 0.039	0.512 ± 0.008

	SYMBOL	E	F	P	P0	P1	T	W	W1
PDFN5x6 -8L	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.25 ± 0.03	12.00 + 0.30 − 0.10	17.80 ± 0.30
	(inch)	0.069 ± 0.004	0.217 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.010 ± 0.001	0.472 + 0.012 − 0.004	0.701 ± 0.012

Marking Code

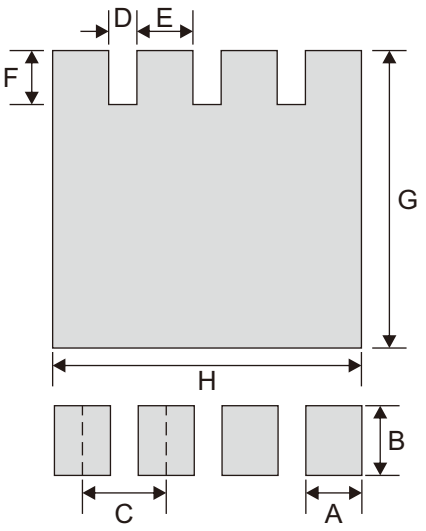
Part Number	Marking Code
CMS36P10H8-HF	300P10H



XXX = Control code

Suggested P.C.B. PAD Layout

SIZE	PDFN5x6-8L	
	(mm)	(inch)
A	0.80	0.031
B	1.00	0.039
C	1.27	0.050
D	0.47	0.019
E	0.80	0.031
F	0.85	0.033
G	4.50	0.177
H	4.60	0.181



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
PDFN5x6-8L	5,000	13