

CMS16P06H8-HF

Description

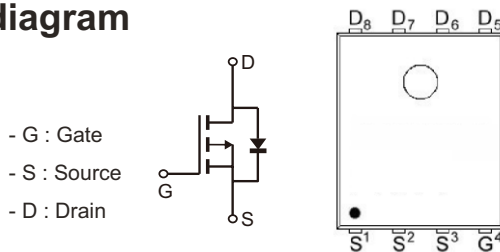
The CMS16P06H8-HF is the highest performance P-ch MOSFETs with super high dense cell design for extremely low $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The CMS16P06H8-HF meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

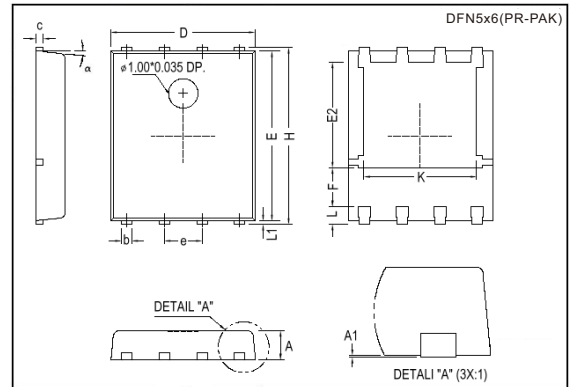
Features

- Low Reverse Transfer Capacitance
- Improve dv/dt Capability
- Green Device Available
- High Switching Speed
- 100% EAS Guaranteed

Circuit diagram



Package Dimensions



REF.	Millimeter			REF.	Millimeter		
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	0.85	1.00	1.15	E	5.70	-	5.90
A1	0.00	-	0.10	e	-	1.27	-
b	0.30	-	0.51	H	5.90	-	6.20
c	0.20	-	0.30	L	-	0.60	-
D	4.80	-	5.00	L1	0.06	-	0.20
F	1.10REF.			α	0°	-	12°
E2	3.50REF.			K	3.70	3.90	4.10

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D @ T_C=25^\circ C$	-16	A
	$I_D @ T_C=100^\circ C$	-10	A
Pulsed Drain Current ²	I_{DM}	-64	A
Continuous Drain Current ¹	$I_D @ T_A=25^\circ C$	-5	A
	$I_D @ T_A=70^\circ C$	-4	A
Total Power Dissipation ⁴	$P_D @ T_C=25^\circ C$	25	W
	$P_D @ T_A=25^\circ C$	2	W
Single Pulse Avalanche Energy, $L=0.1mH^3$	EAS	51	mJ
Single Pulse Avalanche Current, $L=0.1mH^3$	IAS	-32	A
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Conditions	Max. Value	Unit
Thermal Resistance Junction-ambient ¹	$R_{\theta JA}$	Steady State	62.5	°C/W
Thermal Resistance Junction-case ¹	$R_{\theta JC}$	Steady State	5	°C/W

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REV: A

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	-60	-	-	V	V _{GS} =0, I _D =-250uA
Gate Threshold Voltage	V _{GS(th)}	-1.0	-1.7	-2.5	V	V _{DS} =V _{GS} , I _D =-250uA
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} =±20V
Drain-Source Leakage Current	I _{DSS}	-	-	-1	uA	V _{DS} =-60V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	44	48	mΩ	V _{GS} =-10V, I _D =-8A
		-	55	65		V _{GS} =-4.5V, I _D =-4A
Total Gate Charge ²	Q _g	-	22	-	nC	I _D =-8A
Gate-Source Charge	Q _{gs}	-	4.1	-		V _{DS} =-30V
Gate-Drain (“Miller”) Change	Q _{gd}	-	5.2	-		V _{GS} =-10V
Turn-on Delay Time ²	T _{d(on)}	-	13	-	ns	V _{DS} =-30V
Rise Time	T _r	-	42	-		I _D =-1A
Turn-off Delay Time	T _{d(off)}	-	65	-		V _{GS} =-10V
Fall Time	T _f	-	16	-		R _G =6Ω
Input Capacitance	C _{iss}	-	1256	-	pF	V _{GS} =0V
Output Capacitance	C _{oss}	-	87	-		V _{DS} =-30V
Reverse Transfer Capacitance	C _{rss}	-	59	-		f=1.0MHz

Guaranteed Avalanche Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Single Pulse Avalanche Energy ⁵	EAS	3.2	-	-	mJ	V _{DD} =-25V, L=0.1mH, I _{AS} =-8A

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Diode Forward Voltage ²	V _{SD}	-	-0.72	-1.0	V	I _S =-1A, V _{GS} =0V, T _J =25°C
Continuous Source Current ^{1,6}	I _S	-	-	-16	A	-----

- Notes :**
1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
 2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
 3. The EAS data shows Max. rating. The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-32A.
 4. The power dissipation is limited by 150°C junction temperature.
 5. The Min. Value is 100% EAS tested guarantee.
 6. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Characteristics

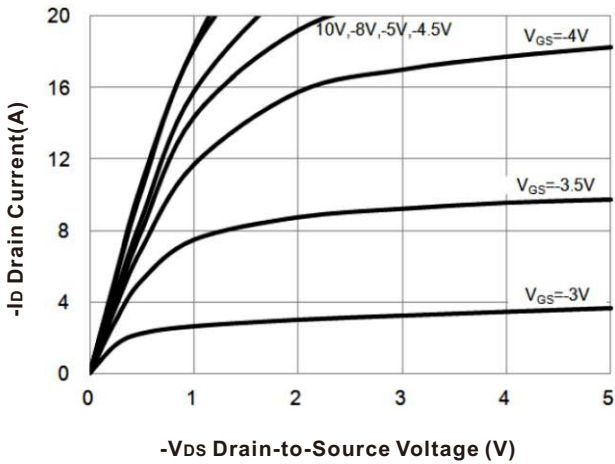


Fig.1 Typical Output Characteristics

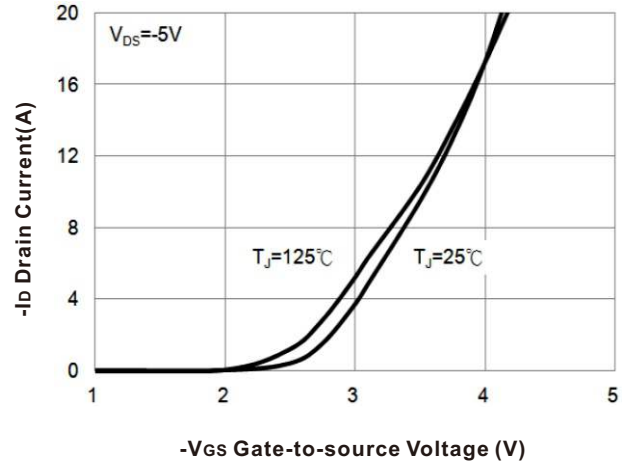


Fig.2 Transfer Characteristics

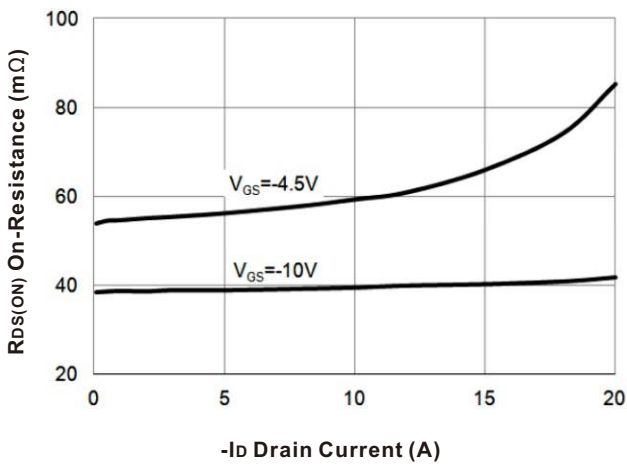


Fig.3 On-Resistance vs. Drain Current

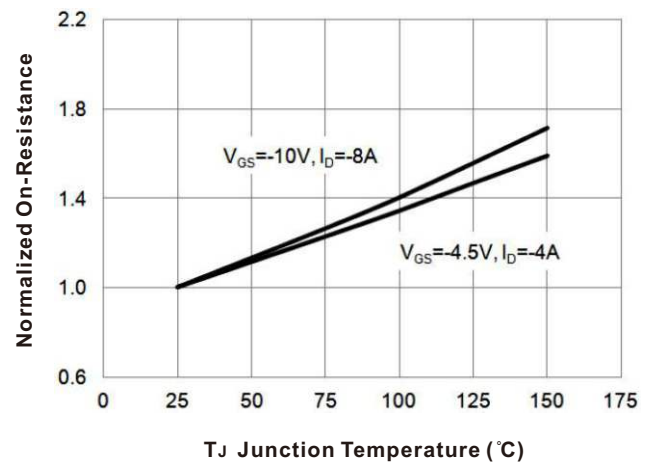


Fig.4 Normalized $R_{DS(ON)}$ vs. T_J

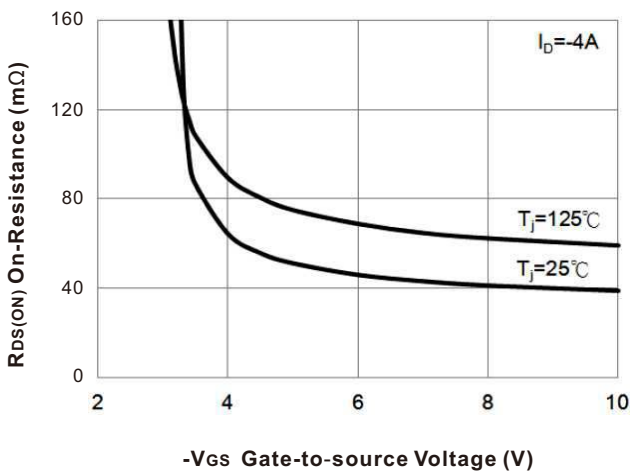


Fig.5 On-Resistance vs. G-S Voltage

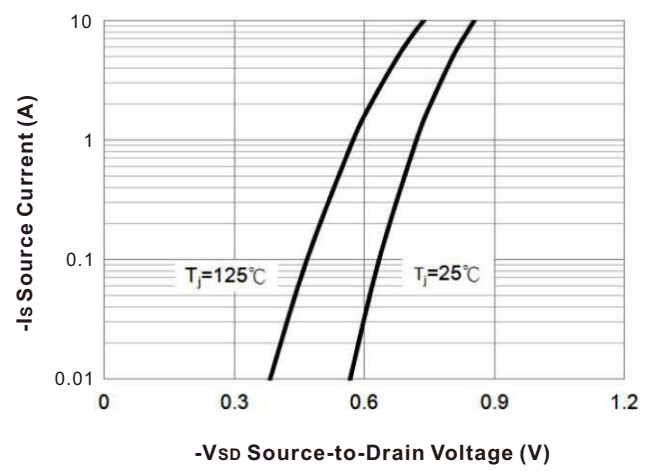


Fig.6 Forward Characteristics of Reverse

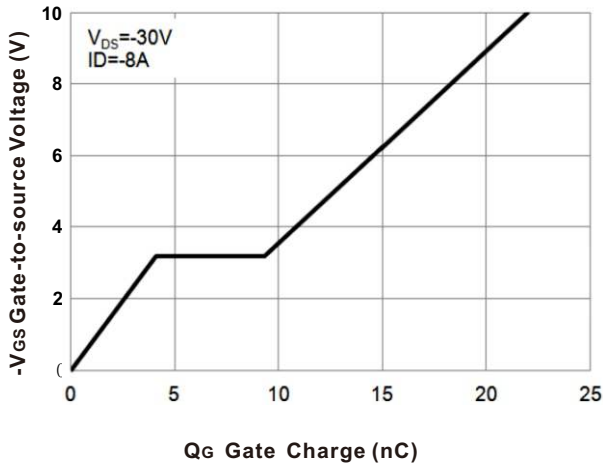


Fig.7 Gate Charge Characteristics

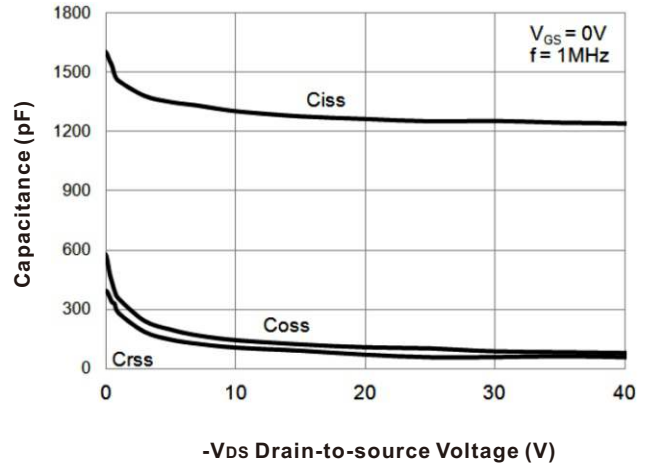


Fig.8 Capacitance Characteristics

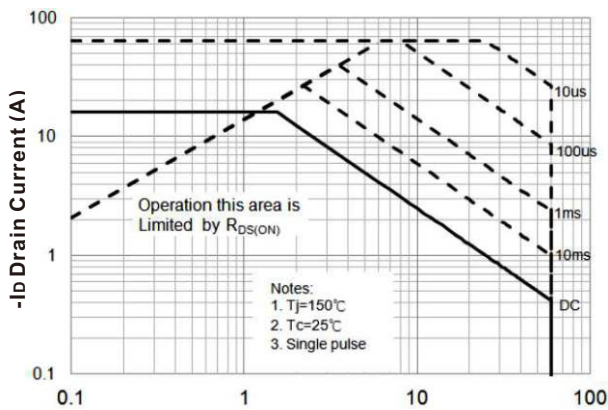


Fig.9 Safe Operating Area

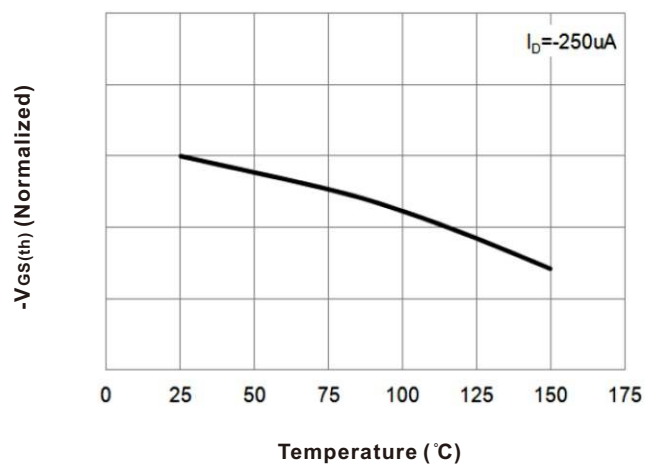


Fig.10 Normalized VGS(th) vs. Temperature

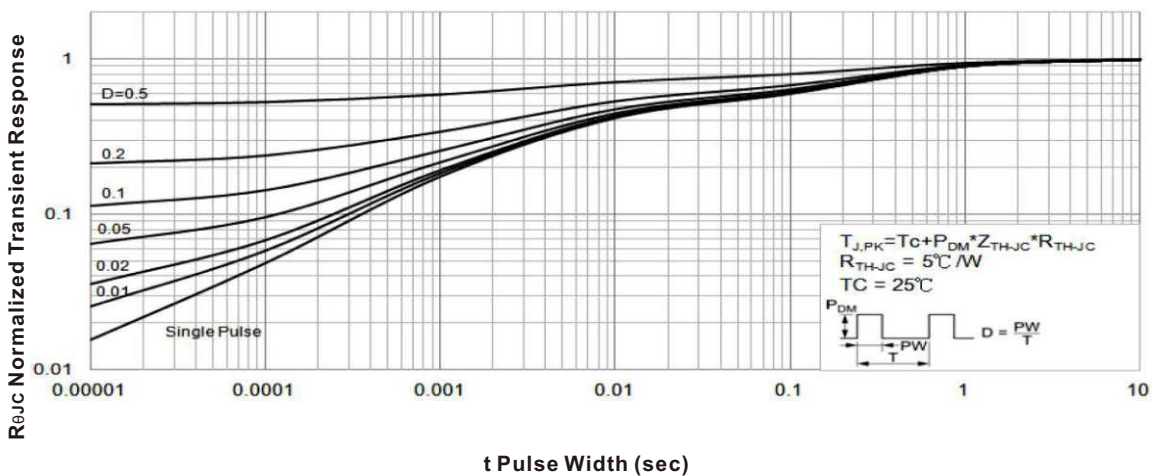
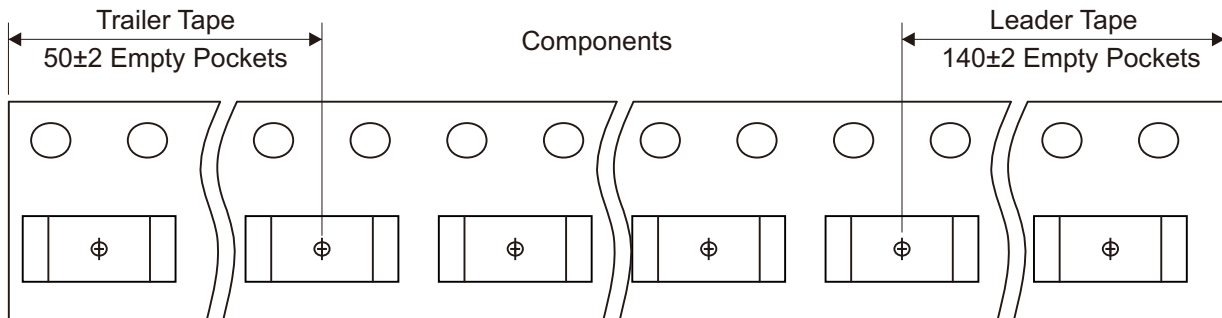
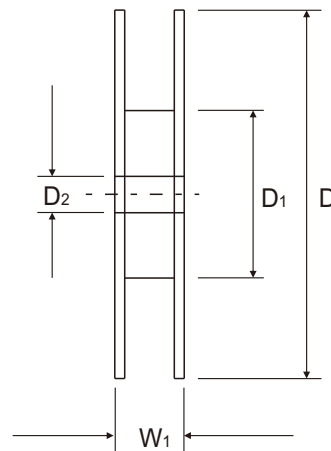
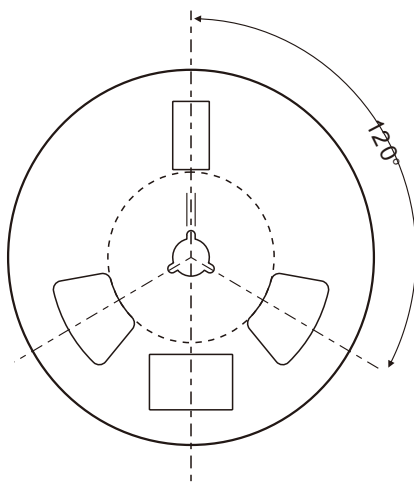
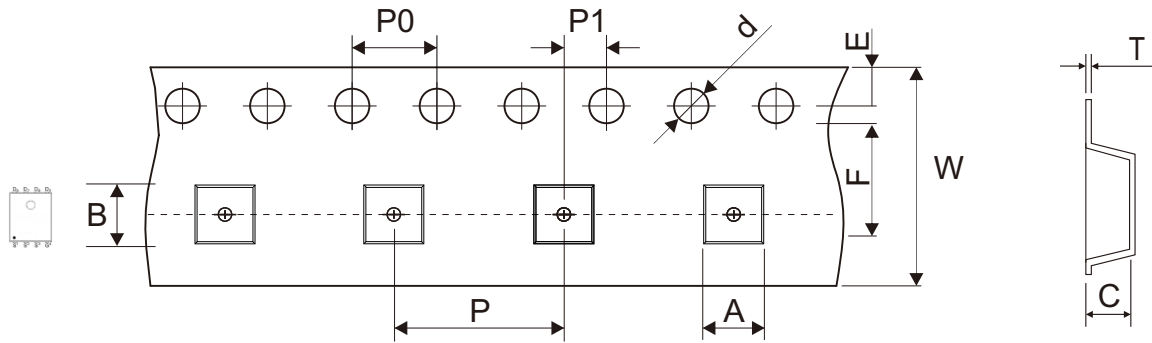


Fig.11 Normalized Maximum Transient Thermal Impedance

Reel Taping Specification



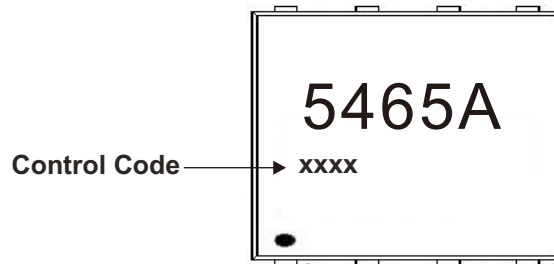
DFN5x6 (PR-PAK)	Symbol	A	B	C	d	D	D1	D2
	(mm)	6.50 ± 0.10	5.30 ± 0.10	1.40 ± 0.10	1.50 ± 0.05	330.00 ± 2.00	178.00 ± 2.00	13.00 ± 1.00
	(inch)	0.256 ± 0.004	0.209 ± 0.004	0.055 ± 0.004	0.059 ± 0.002	12.992 ± 0.079	7.008 ± 0.079	0.512 ± 0.039

DFN5x6 (PR-PAK)	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	18.40 ± 1.00
	(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	0.724 ± 0.039

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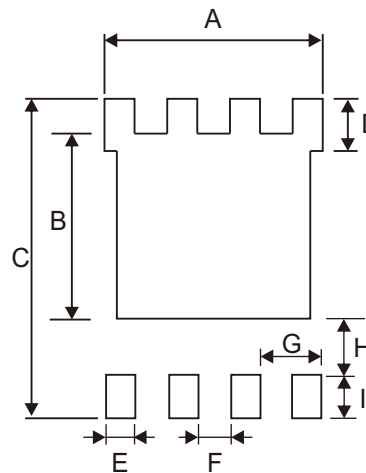
Marking Code

Part Number	Marking Code
CMS16P06H8	5465A



Suggested PAD Layout

Dimensions	Value (in mm)
A	4.420
B	3.810
C	6.610
D	1.020
E	0.610
F	0.660
G	1.270
H	0.820
I	1.270



Note:

1. The pad layout is for reference purposes only.

Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
DFN5x6 (PR-PAK)	3,000	13