

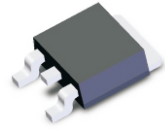
MOSFET

CMS35P06D-HF

P-Channel

RoHS Device

Halogen Free



Features

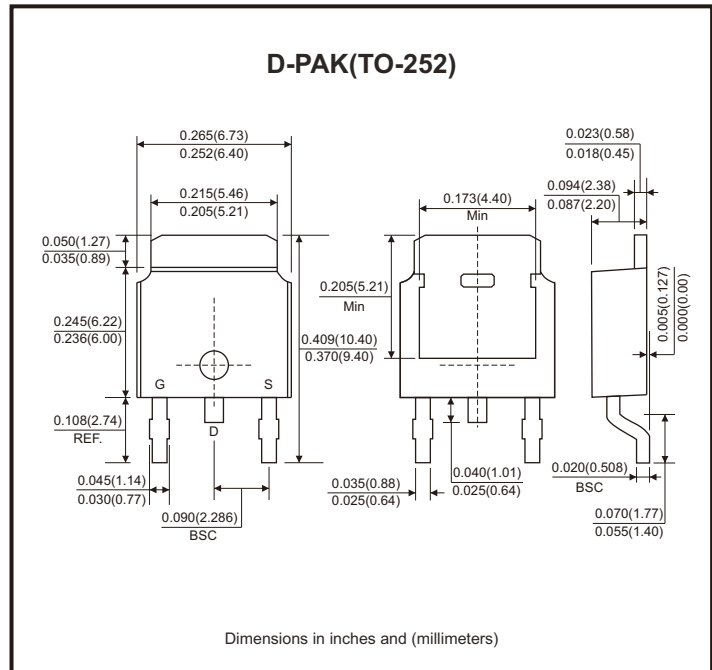
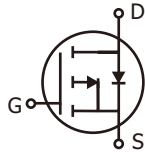
- Advanced DMOS trench technology.
- Fast switching.
- Green device available.
- 100% EAS guaranteed.

Mechanical data

- Case: D-PAK/TO-252 standard package, molded plastic.

Circuit Diagram

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



Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
Drain-source voltage		V_{DS}	-60	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current (Note 1)	$T_C = 25^\circ\text{C}$	I_D	-35	A
	$T_C = 100^\circ\text{C}$	I_D	-22.1	
Pulsed drain current (Note 1, 2)		I_{DM}	-140	A
Total power dissipation (Note 4)	$T_C = 25^\circ\text{C}$	P_D	72.6	W
	$T_A = 25^\circ\text{C}$	P_D	2	
Single pulse avalanche energy, $L=0.1\text{mH}$ (Note 3)		E_{AS}	80	mJ
Single pulse avalanche current, $L=0.1\text{mH}$ (Note 3)		I_{AS}	-40	A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$
Thermal resistance junction-ambient (Note 1)	Steady state	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal resistance junction-case (Note 1)	Steady state	$R_{\theta JC}$	1.72	$^\circ\text{C/W}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250μA	-60			V
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.4	-2.5	
Gate-source leakage current	I _{GSS}	V _{GS} = ±20V			±100	nA
Drain-source leakage current (T _J =25°C)	I _{DSS}	V _{DS} = -60V, V _{GS} = 0V			-1	μA
Drain-source leakage current (T _J =125°C)		V _{DS} = -48V, V _{GS} = 0V			-10	
Static drain-source on-resistance (Note 2)	R _{DS(on)}	V _{GS} = -10V, I _D = -20A		23	28	mΩ
		V _{GS} = -4.5V, I _D = -10A		28	35	
Total gate charge (Note 2)	Q _g	I _D = -5A, V _{DS} = -30V, V _{GS} = -10V		43.8		nC
Gate-source charge	Q _{gs}			4.6		
Gate-drain ("miller") charge	Q _{gd}			8.3		
Turn-on delay time (Note 2)	t _{d(on)}	V _{DD} = -30V, V _{GS} = -10V I _D = -1A, R _G = 6Ω		25		nS
Rise time	t _r			13.8		
Turn-off delay time	t _{d(off)}			148		
Fall time	t _f			51		
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -25V, f = 1MHz		2595		pF
Output capacitance	C _{oss}			162		
Reverse transfer capacitance	C _{rss}			115		
Source-drain diode						
Diode forward voltage (Note 2)	V _{SD}	I _S = -20A, V _{GS} = 0V, T _J =25°C			-1.2	V
Continuous source current (Note 1, 6)	I _S	V _G = V _D = 0V, Force current			-35	A
Pulsed source current (Note 2, 6)	I _{SM}				-70	A
Guaranteed avalanche characteristics						
Single pulse avalanche energy (Note 5)	EAS	V _{DD} = -25V, L=0.1mH, I _{AS} = -20A	20			mJ

- Notes: 1. The data tested by surface mounted on a 1 inch² FR-4 board with 2 oz copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. The EAS data shows max. rating. The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-40A$.
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.

Rating and Characteristic Curves (CMS35P06D-HF)

Fig.1 - Drain Current vs. Tc

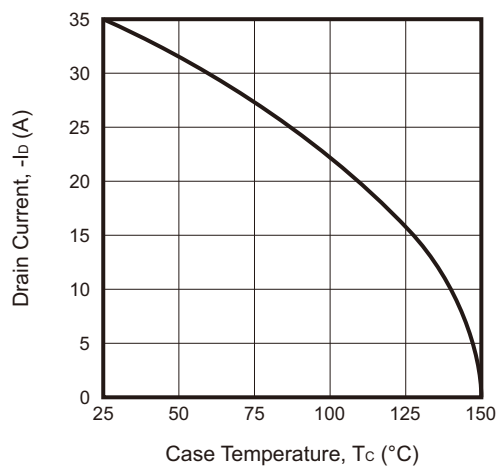


Fig.2 - Gate Charge Characteristics

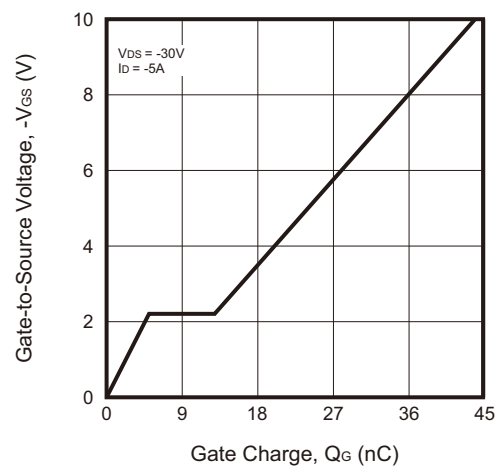


Fig.3 - Normalized $V_{GS(th)}$ vs. T_J

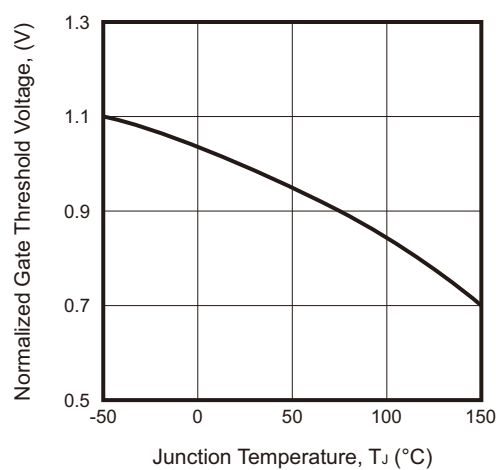


Fig.4 - Normalized $R_{DS(on)}$ vs. T_J

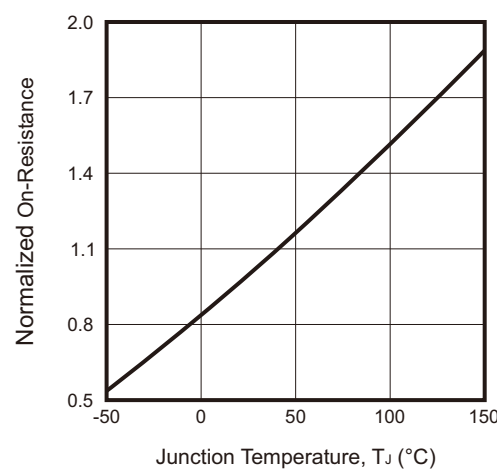
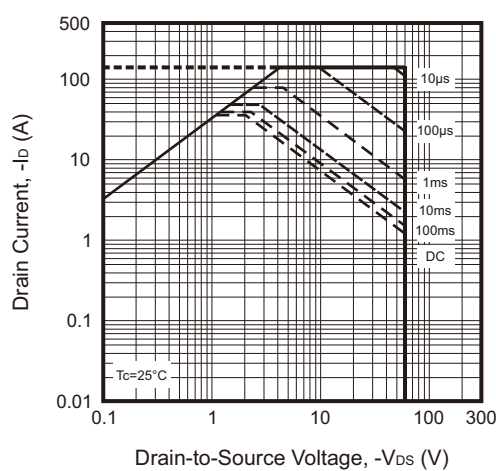
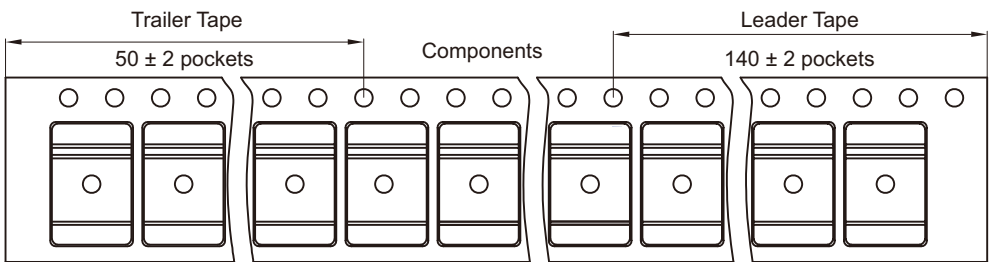
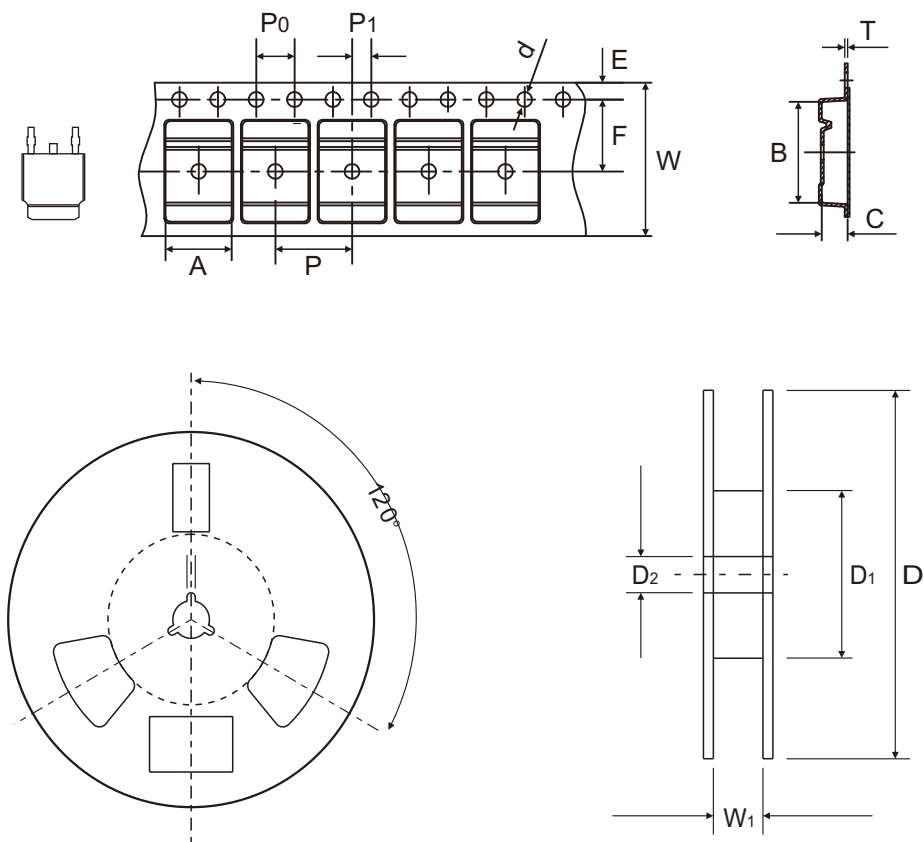


Fig.5 - Safe Operating Area



Reel Taping Specification

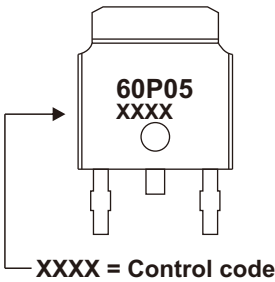


TO-252 (D-PAK)	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.90 ± 0.10	10.50 ± 0.10	2.78 ± 0.10	1.50 ± 0.10	330 ± 1.00	100.00 ± 0.50	13.20 ± 0.20
	(inch)	0.272 ± 0.004	0.413 ± 0.004	0.109 ± 0.004	0.059 ± 0.004	12.992 ± 0.039	3.937 ± 0.020	0.520 ± 0.008

TO-252 (D-PAK)	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	7.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.25 ± 0.02	16.00 ± 0.10	16.40 ± 0.02
	(inch)	0.069 ± 0.004	0.295 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.010 ± 0.001	0.630 ± 0.004	0.646 ± 0.01

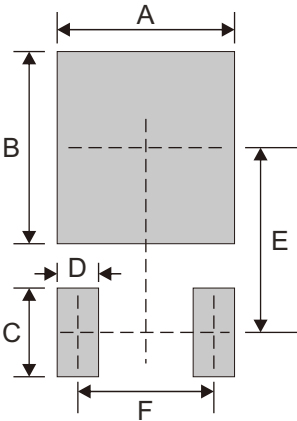
Marking Code

Part Number	Marking Code
CMS35P06D-HF	60P05



Suggested P.C.B. PAD Layout

SIZE	TO-252/D-PAK	
	(mm)	(inch)
A	6.00	0.236
B	6.50	0.256
C	3.00	0.118
D	1.40	0.055
E	6.25	0.246
F	4.60	0.181



Note: 1. The pad layout is for reference purposes only.

Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
TO-252/D-PAK	2,500	13