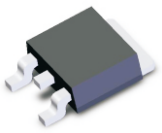
MOSFET

CMS35P03D-HF

P-Channel
RoHS Device
Halogen Free



Features

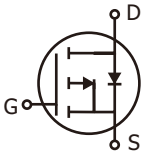
- Advanced high cell density trench technology.
- Super low gate charge.
- Excellent cdv/dt effect decline.
- Green device available.
- 100% EAS guaranteed.

Mechanical data

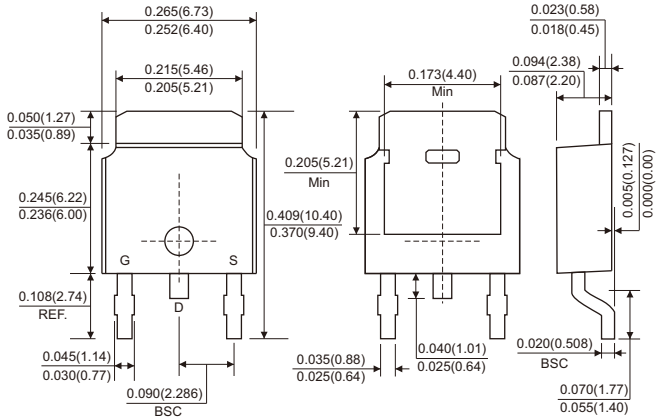
- Case: D-PAK/TO-252 standard package, molded plastic.

Circuit Diagram

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



D-PAK(TO-252)



Dimensions in inches and (millimeters)

Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
Drain-source voltage		V_{DS}	-30	V
Gate-source voltage		V_{GS}	±20	V
Continuous drain current (Note 1)	T_C = 25°C	I_D	-35	A
	T_C = 100°C	I_D	-22	
Pulsed drain current (Note 1, 2)		I_{DM}	-70	A
Continuous drain current (Note 1)	T_A = 25°C	I_D	-8.5	A
	T_A = 70°C	I_D	-6.8	
Total power dissipation (Note 4)	T_C = 25°C	P_D	34	W
	T_A = 25°C	P_D	2	
Single pulse avalanche energy, L=0.1mH (Note 3)		E_{AS}	72	mJ
Single pulse avalanche current, L=0.1mH (Note 3)		I_{AS}	38	A
Operating junction temperature range		T_J	-55 to +150	°C
Storage temperature range		T_{STG}	-55 to +150	°C
Thermal resistance junction-ambient (Note 1)	Steady state	$R_{\theta JA}$	62	°C/W
Thermal resistance junction-case (Note 1)	Steady state	$R_{\theta JC}$	3.2	°C/W

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-30			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.0		-2.5	
Forward transconductance	g_{fs}	V_{DS} = -5V, I_D = -10A		5		S
Gate-source leakage current	I_{GSS}	V_{GS} = ±20V			±100	nA
Drain-source leakage current (Tj=25°C)	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V			-1	μA
Drain-source leakage current (Tj=55°C)		V_{DS} = -24V, V_{GS} = 0V			-5	
Static drain-source on-resistance (Note 2)	$R_{DS(on)}$	V_{GS} = -10V, I_D = -15A			25	mΩ
		V_{GS} = -4.5V, I_D = -10A			35	
Total gate charge (Note 2)	Q_g	I_D = -15A, V_{DS} = -15V, V_{GS} = -4.5V		12.5		nC
Gate-source charge	Q_{gs}			5.4		
Gate-drain ("miller") charge	Q_{gd}			5		
Turn-on delay time (Note 2)	$t_{d(on)}$	V_{DS} = -15V, V_{GS} = -10V I_D = -15A, R_G = 3.3Ω		4.4		nS
Rise time	t_r			11.2		
Turn-off delay time	$t_{d(off)}$			34		
Fall time	t_f			18		
Input capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		1345		pF
Output capacitance	C_{oss}			194		
Reverse transfer capacitance	C_{rss}			158		
Gate resistance	R_g	f = 1MHz		13		Ω
Source-drain diode						
Diode forward voltage (Note 2)	V_{SD}	I_S = -15A, 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
Reverse recovery time	t_{rr}	I_F = -15A , T_J=25°C dI/dt = 100A/μs		12.4		nS
Reverse recovery charge	Q_{rr}			5		nC
Guaranteed avalanche characteristics						
Single pulse avalanche energy (Note 5)	EAS	V_{DD} = -25V, L=0.1mH, I_{AS} = -17A	14.4			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 ≤300μs, duty cycle ≤ 2%.
3. The EAS data shows max. rating. The test condition is VDD=-25V, VGS=-10V, L=0.1mH, IAS=-38A.
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 ID and IDM, in real applications, should be limited by total power dissipation.

Rating and Characteristic Curves (CMS35P03D-HF)

Fig.1 - Typical Output Characteristics

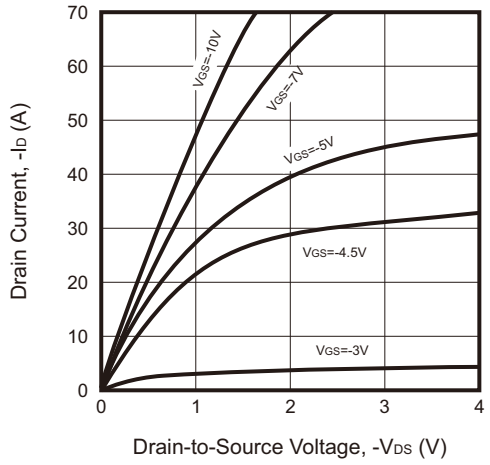


Fig.2 - On-Resistance vs. G-S Voltage

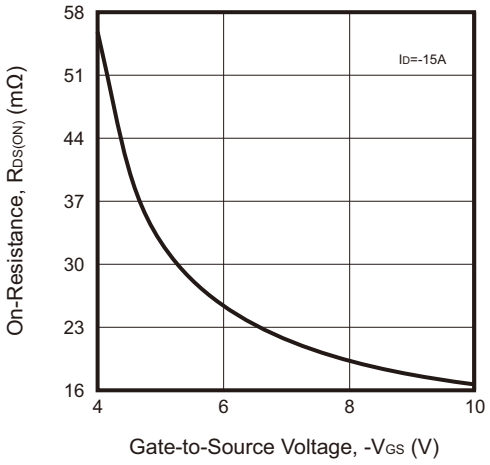


Fig.3 - Normalized $V_{GS(th)}$ vs. T_J

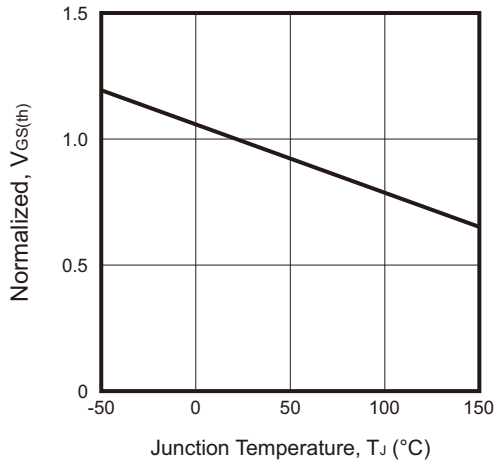


Fig.4 - Normalized $R_{DS(ON)}$ vs. T_J

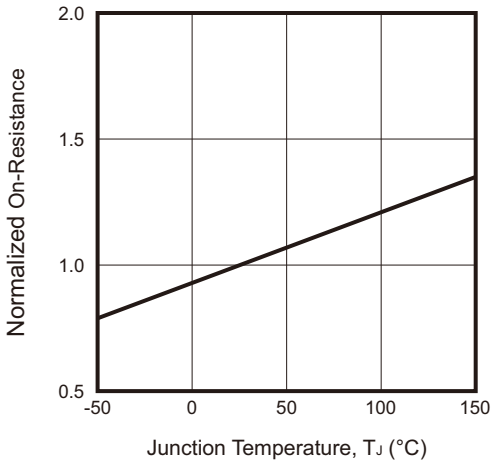


Fig.5 - Safe Operating Area

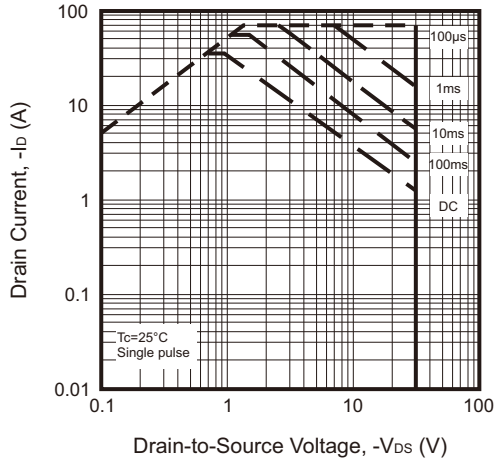
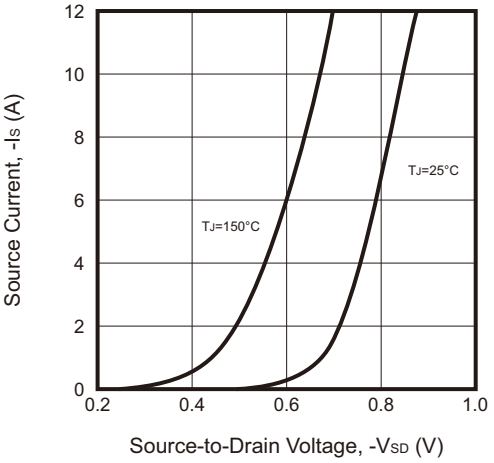


Fig.6 - Forward Characteristics of Reverse



Company reserves the right to improve product design , functions and reliability without notice.

Rating and Characteristic Curves (CMS35P03D-HF)

Fig.7 - Gate Charge Characteristics

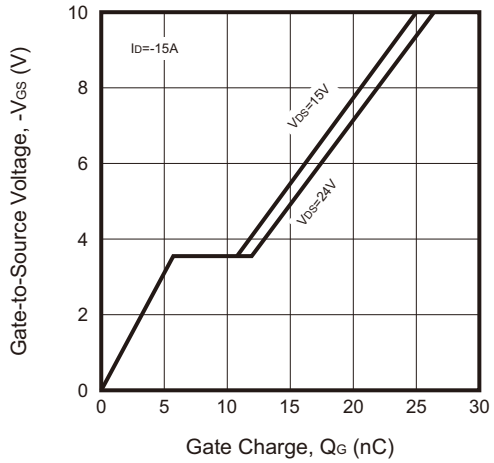
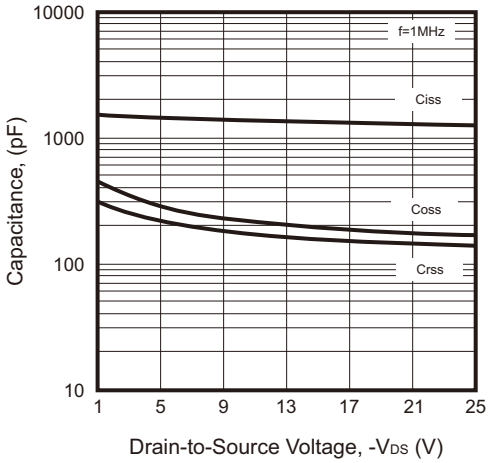
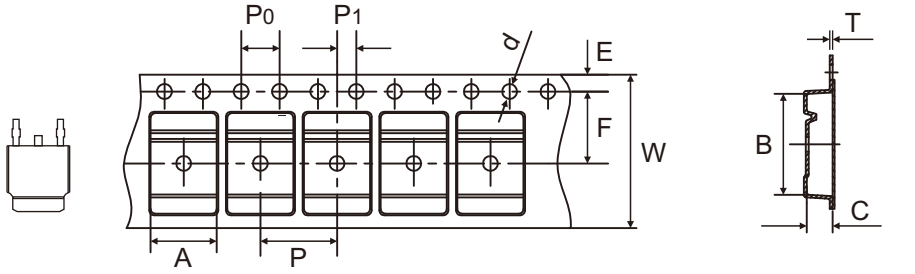
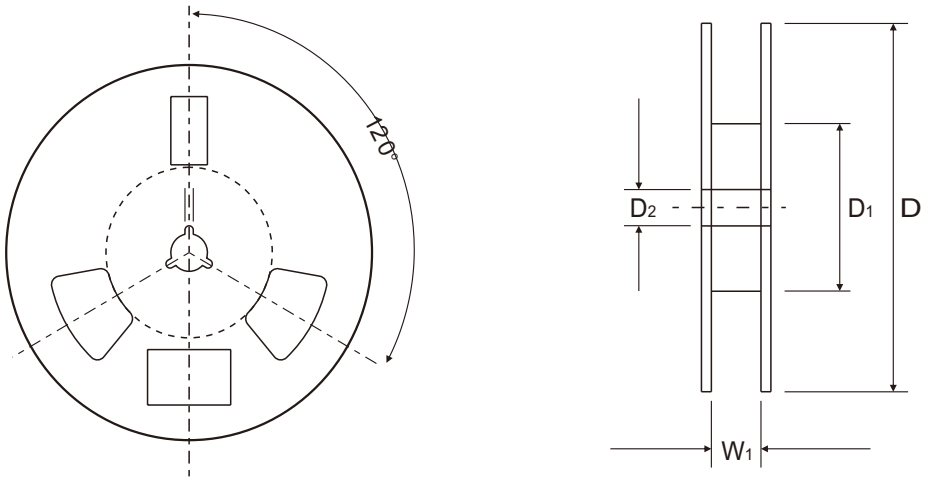


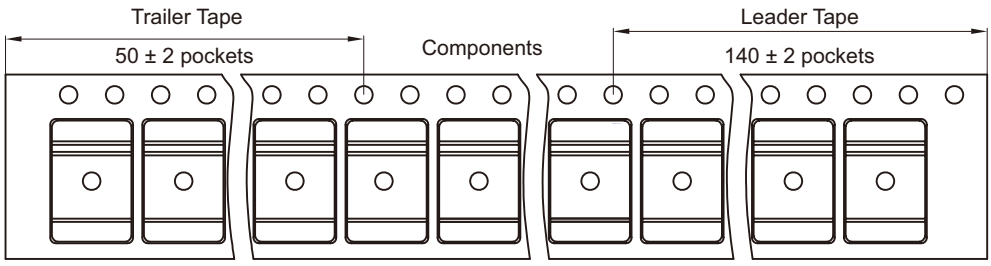
Fig.8 - Capacitance Characteristics



Reel Taping Specification





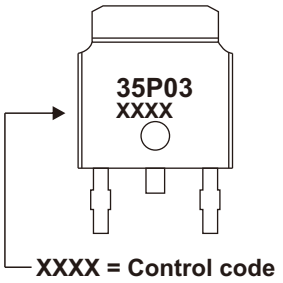


	SYMBOL	A	B	C	d	D	D1	D2
TO-252 (D-PAK)	(mm)	6.90 ± 0.10	10.50 ± 0.10	2.78 ± 0.10	1.50 ± 0.10	330 ± 1.00	100.00 ± 0.50	13.20 ± 0.20
	(inch)	0.272 ± 0.004	0.413 ± 0.004	0.109 ± 0.004	0.059 ± 0.004	12.992 ± 0.039	3.937 ± 0.020	0.520 ± 0.008

	SYMBOL	E	F	P	P0	P1	T	W	W1
TO-252 (D-PAK)	(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

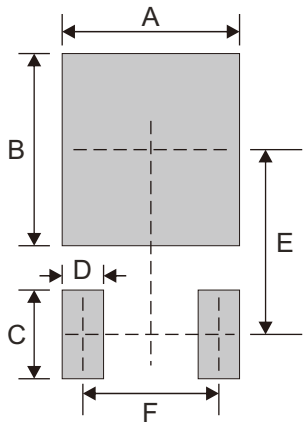
Marking Code

Part Number	Marking Code
CMS35P03D-HF	35P03



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