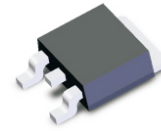


CMS50N10D-HF

N-Channel
RoHS Device
Halogen Free



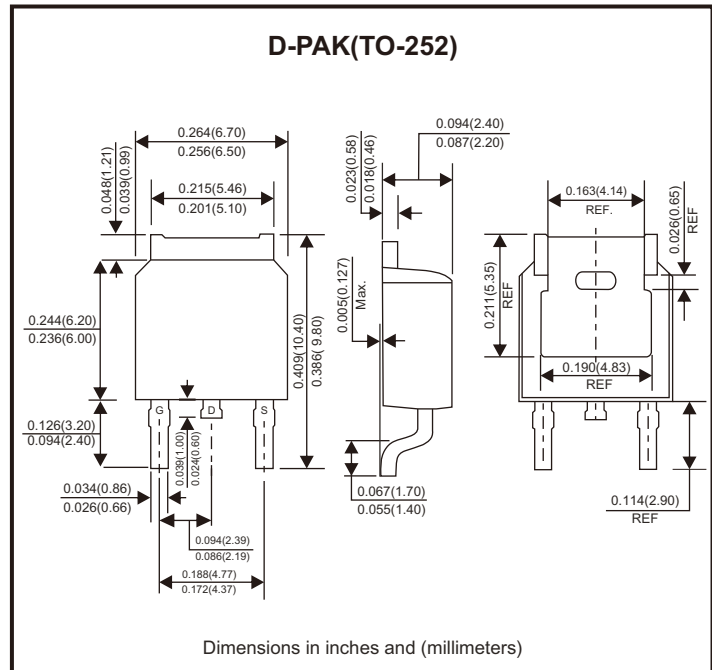
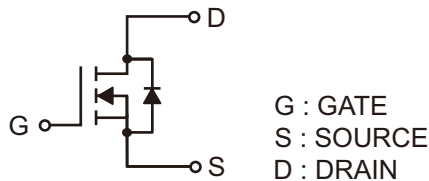
Features

- Simple drive requirement.
- Low gate charge.
- Fast switching characteristic.
- Repetitive avalanche rated.

Mechanical data

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

Circuit Diagram



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

Parameter	Symbol	Value	Units
Drain-source voltage	V _{DS}	100	V
Gate-source voltage	V _{GS}	±20	V
Continuous drain current @ V _{GS} = 10V	I _D	50	A
		35	
Pulsed drain current (Note 1)	I _{DM}	150	A
Avalanche current	I _{AS}	30	A
Avalanche energy @ L=0.1mH, I _D =30A, R _G =25Ω	E _{AS}	45	mJ
Repetitive avalanche energy @ L=0.05mH (Note 2)	E _{AR}	22.5	mJ
Power dissipation	P _D	130	W
		65	
Thermal resistance from junction to ambient	R _{θJA}	75	°C/W
Thermal resistance from junction to case	R _{θJC}	1.15	°C/W
Operating junction temperature	T _J	-55 to 175	°C
Storage temperature	T _{STG}	-55 to +175	°C

Note: 1. Pulse width limited by maximum junction temperature.
2. Duty cycle ≤ 1%.

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

REV:B

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V , I _D =250μA	100			V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.4	2.0	V
Gate-body leakage current	I _{GSS}	V _{GS} =±20V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} =80V , V _{GS} =0V			1	μA
		V _{DS} =70V , V _{GS} =0V , T _J =125°C			25	
Drain-source on-state resistance (Note 1)	R _{DS(on)}	V _{GS} =10V , I _D =30A		19	30	mΩ
		V _{GS} =5V , I _D =20A		20	35	
Forward transconductance	g _{FS}	V _{DS} =5V , I _D =30A		38		S
Dynamic						
Input capacitance	C _{iss}	V _{DS} =25V , V _{GS} =0V f=1MHZ		2003		pF
Output capacitance	C _{oss}			218		
Reverse transfer capacitance	C _{rss}			128		
Turn-on delay time (Note 1)	t _{d(on)}	V _{DS} =50V , I _D =1A V _{GS} =10V , R _G =6Ω		20		ns
Rise time (Note 1)	t _r			100		
Turn-off delay time (Note 1)	t _{d(off)}			100		
Fall time (Note 1)	t _f			55		
Total gate charge (Note 1)	Q _g	V _{DS} =50V , I _D =30A V _{GS} =10V		24		nC
Gate-source charge (Note 1)	Q _{gs}			6.5		
Gate-drain charge (Note 1)	Q _{gd}			8.1		
Gate resistance	R _g	V _{DS} =0V , V _{GS} =15mV , f=1MHZ		2		
Source-Drain Diode						
Diode forward voltage (Note 1)	V _{SD}	I _F =I _S , V _{GS} =0V			1.3	V
Continuous source-drain diode current	I _S	(Note 1)			50	A
Pulse diode forward current	I _{SM}	(Note 1)			150	

Note: 1. Pulse Test: Pulse width≤300μs, duty cycle≤2%.

TYPICAL RATING AND CHARACTERISTIC CURVES (CMS50N10D-HF)

Fig.1 - Typical Output Characteristics

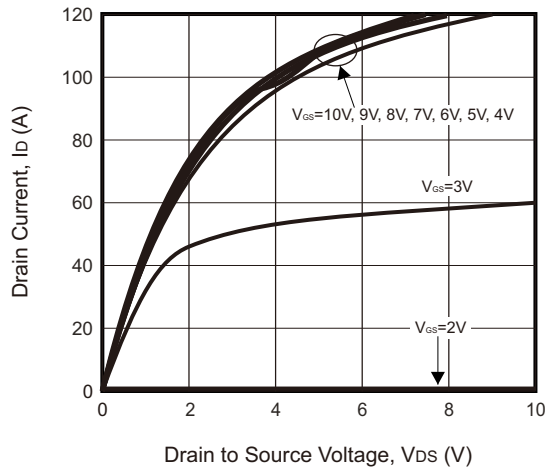


Fig.2 - Static Drain-Source On-State Resistance vs. Drain Current

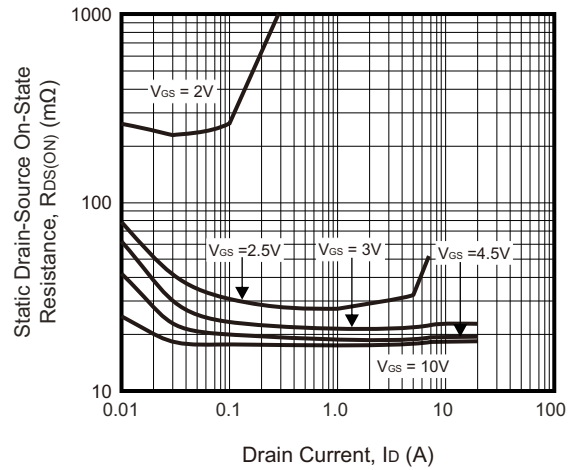


Fig.3 - Static Drain-Source On-State Resistance vs. Gate-Source Voltage

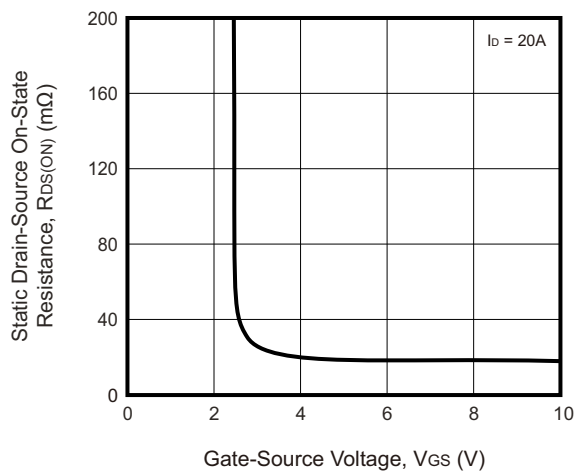


Fig.4 - Capacitance vs. Drain-Source Voltage

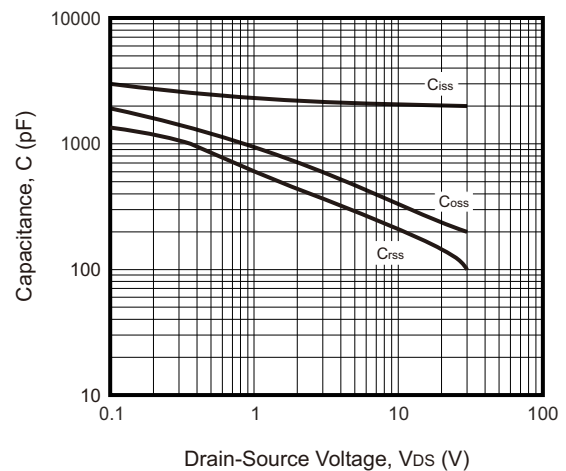


Fig.5 - Forward Transfer Admittance vs. Drain Current

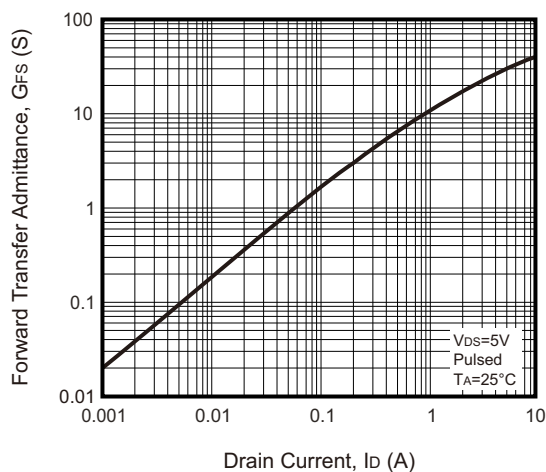
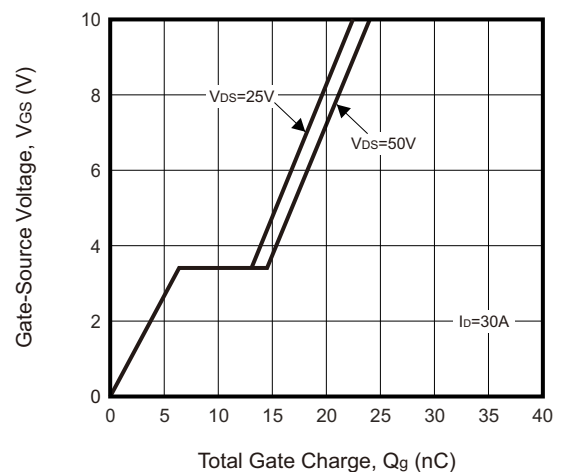


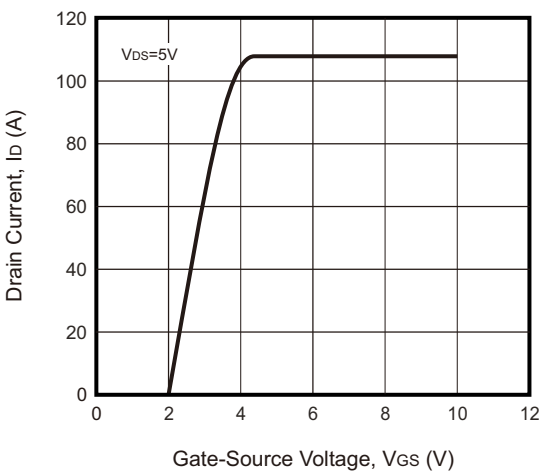
Fig.6 - Gate Charge Characteristics



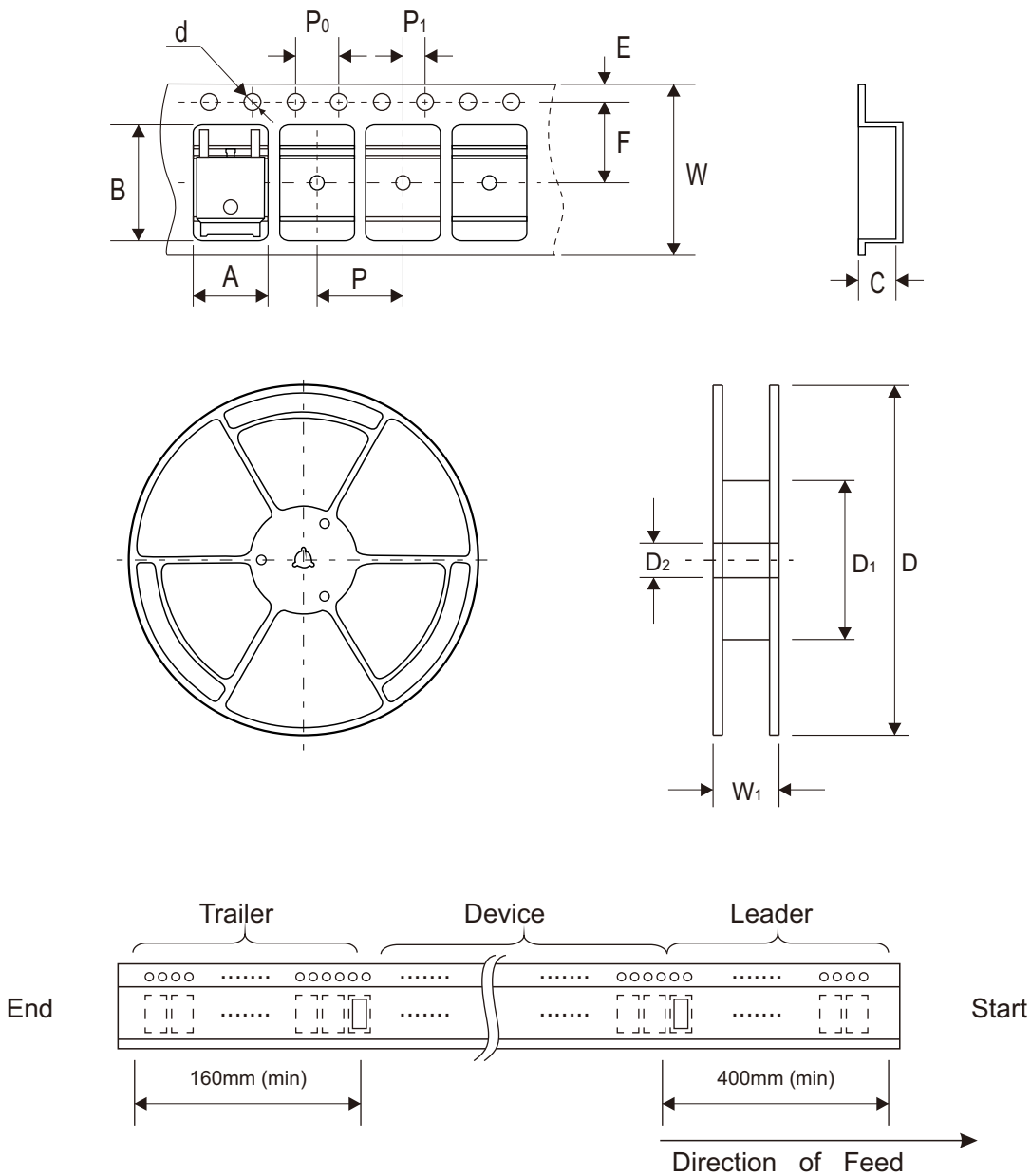
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TYPICAL RATING AND CHARACTERISTIC CURVES (CMS50N10D-HF)

Fig.7 - Typical Transfer Characteristics



Reel Taping Specification



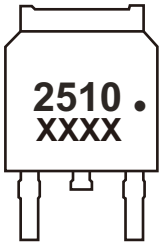
TO-252 (DPAK)	SYMBOL	A	B	C	d	D	D ₁	D ₂
	(mm)	6.90 ± 0.10	10.50 ± 0.10	2.70 ± 0.10	1.55 ± 0.05	330 ± 2.00	100 ± 1.00	21.00 ± 1.00
	(inch)	0.271 ± 0.004	0.413 ± 0.004	0.106 ± 0.004	0.061 ± 0.002	13.00 ± 0.079	3.937 ± 0.039	0.827 ± 0.039

TO-252 (DPAK)	SYMBOL	E	F	P	P ₀	P ₁	W	W ₁
	(mm)	1.75 ± 0.10	7.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	16.00 ± 0.10	21.00 ± 1.00
	(inch)	0.069 ± 0.004	0.295 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.630 ± 0.004	0.827 ± 0.039

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

Marking Code

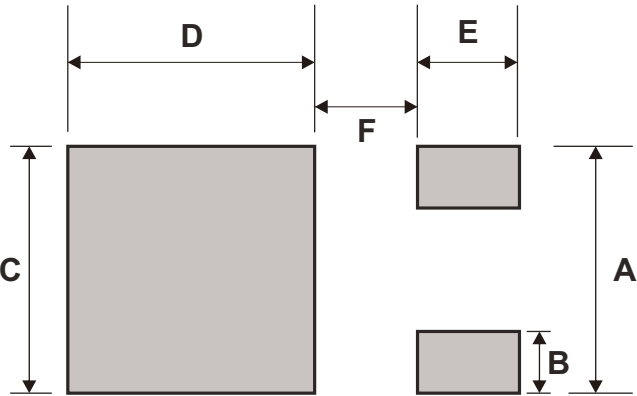
Part Number	Marking Code
CMS50N10D-HF	2510 .



XXXX = Control code

Suggested P.C.B. PAD Layout

SIZE	TO-252 / DPAK	
	(mm)	(inch)
A	6.17	0.243
B	1.60	0.063
C	5.80	0.228
D	6.20	0.244
E	3.00	0.118
F	2.58	0.101



Standard Packaging

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