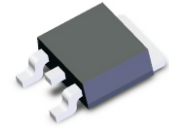


CMS10P10D-HF

P-Channel

RoHS Device

Halogen Free



Features

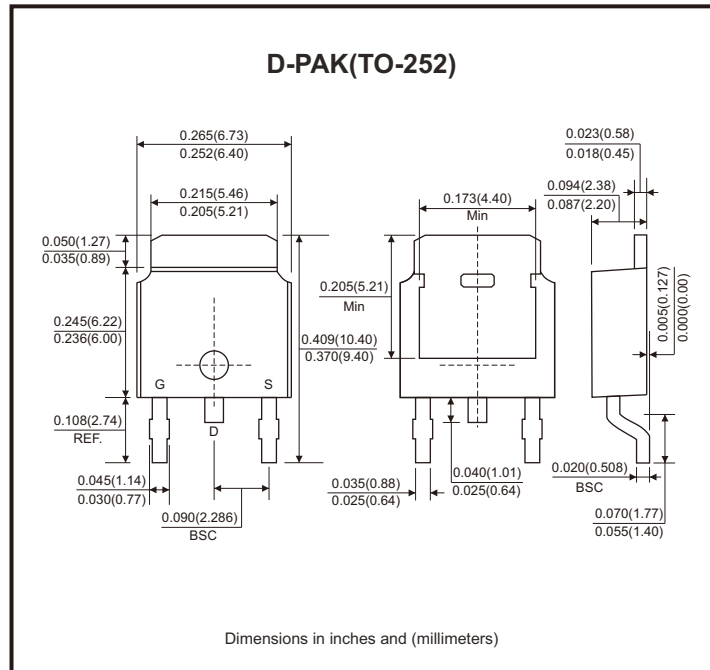
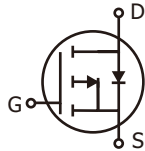
- Low reverse transfer capacitance.
- Improved dv/dt capability.
- 100% EAS guaranteed.
- High switching speed.
- Low gate charge.
- Green device available.

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}	-100	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current (Note 1)	$T_C = 25^\circ\text{C}$	I_D	-10	A
	$T_C = 100^\circ\text{C}$	I_D	-6	
Pulsed drain current (Note 1, 2)	$T_C = 25^\circ\text{C}$	I_{DM}	-40	A
Total power dissipation (Note 4)	$T_C = 25^\circ\text{C}$	P_D	54	W
	$T_A = 25^\circ\text{C}$	P_D	2	
Single pulse avalanche energy, $L=0.1\text{mH}$ (Note 3)		E_{AS}	26.4	mJ
Single pulse avalanche current, $L=0.1\text{mH}$ (Note 3)		I_{AS}	-23	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	$R_{\theta JC}$	2.3	$^\circ\text{C/W}$

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} = 0, I _D = -250μA	-100			V
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.9	-3.0	
Gate-source leakage current	I _{GSS}	V _{GS} = ±20V			±100	nA
Drain-source leakage current	I _{DSS}	V _{DS} = -100V, V _{GS} = 0			-1	μA
Static drain-source on-resistance (Note 2)	R _{DS(on)}	V _{GS} = -10V, I _D = -5A		170	210	mΩ
		V _{GS} = -4.5V, I _D = -3A		190	230	
Total gate charge (Note 2)	Q _g	I _D = -5A, V _{DS} = -80V, V _{GS} = -10V		20		nC
Gate-source charge	Q _{gs}			3.5		
Gate-drain ("miller") charge	Q _{gd}			4.6		
Turn-on delay time (Note 2)	t _{d(on)}	V _{DD} = -50V, V _{GS} = -10V I _D = -5A, R _G = 25Ω		18		nS
Rise time	t _r			8		
Turn-off delay time	t _{d(off)}			100		
Fall time	t _f			30		
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -25V, f = 1MHz		1419		pF
Output capacitance	C _{oss}			89		
Reverse transfer capacitance	C _{rss}			45		
Source-drain diode						
Forward on voltage (Note 2)	V _{SD}	I _S = -1A, V _{GS} = 0V		-0.74	-1.2	V
Continuous source current (Note 1, 6)	I _S				-10	A
Guaranteed avalanche characteristics						
Single pulse avalanche energy (Note 5)	EAS	V _{DD} = -25V, L = 0.1mH, I _{AS} = -12A	7.2			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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

3. The EAS data shows max. rating. The test condition is $V_{DD}=-25\text{V}, V_{GS}=-10\text{V}, L=0.1\text{mH}, I_{AS}=-23\text{A}$.

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 (CMS10P10D-HF)

Fig.1 - Typical Output Characteristics

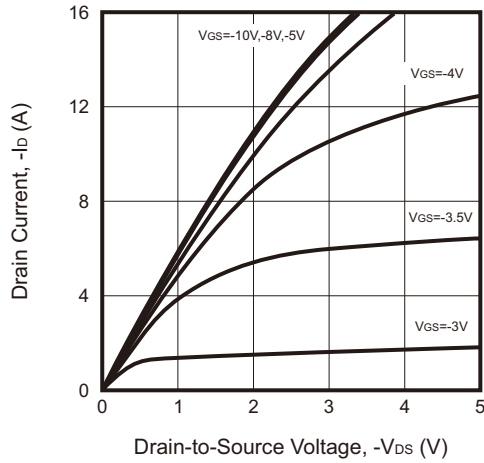


Fig.2 - Transfer Characteristics

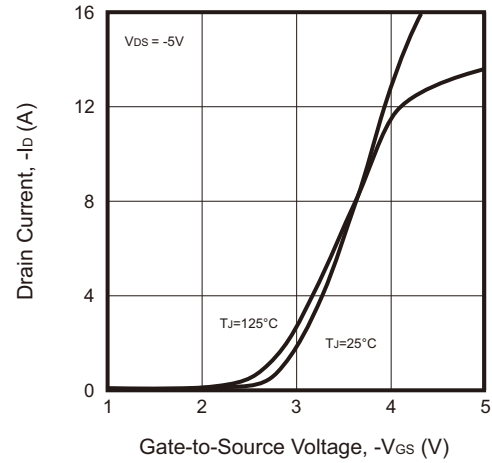


Fig.3 - On-resistance vs. Drain Current

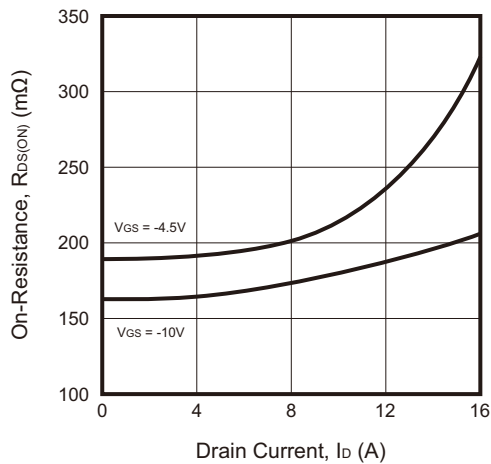


Fig.4 - Normalized $R_{DS(ON)}$ vs. T_j

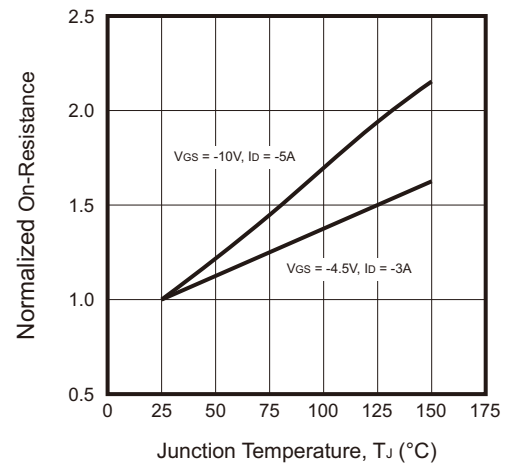


Fig.5 - On-resistance vs. G-S Voltage

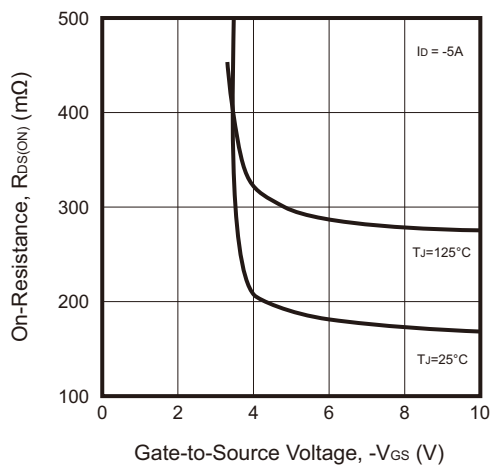
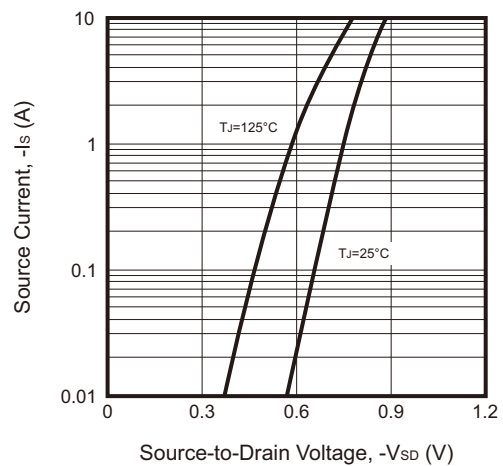


Fig.6 - Forward Characteristics of Reverse



Rating and Characteristic Curves (CMS10P10D-HF)

Fig.7 - Gate Charge Characteristics

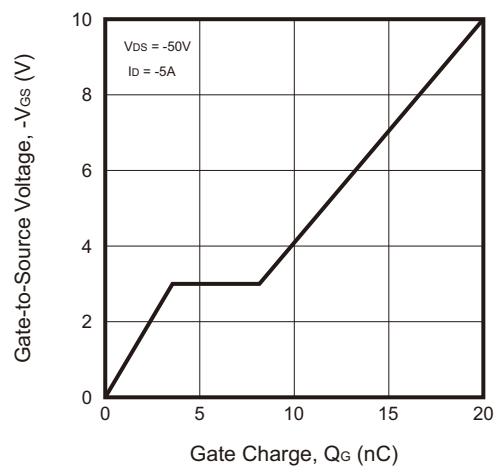


Fig.8 - Capacitance Characteristics

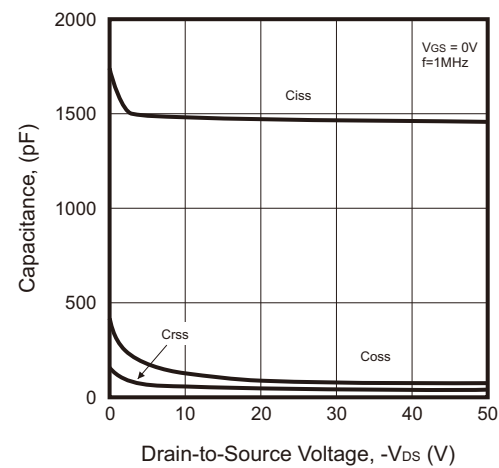


Fig.9 - Safe Operating Area

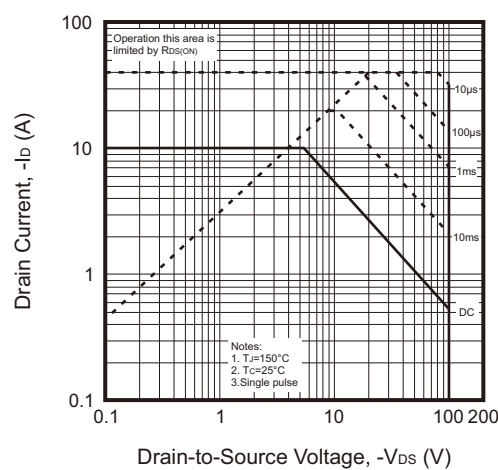
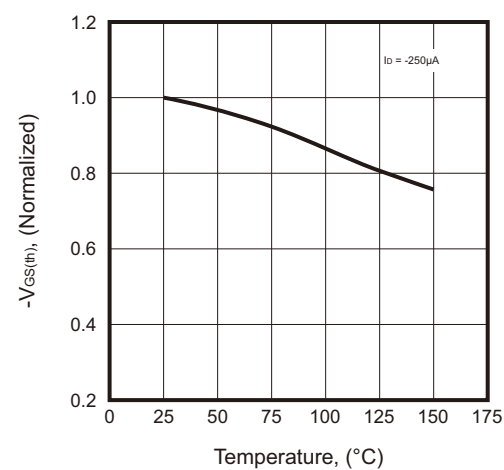
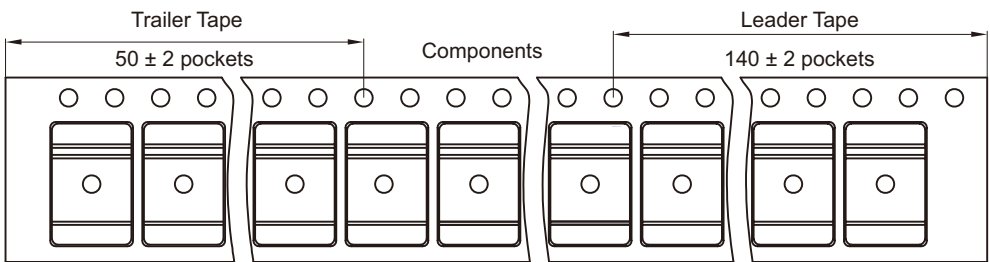
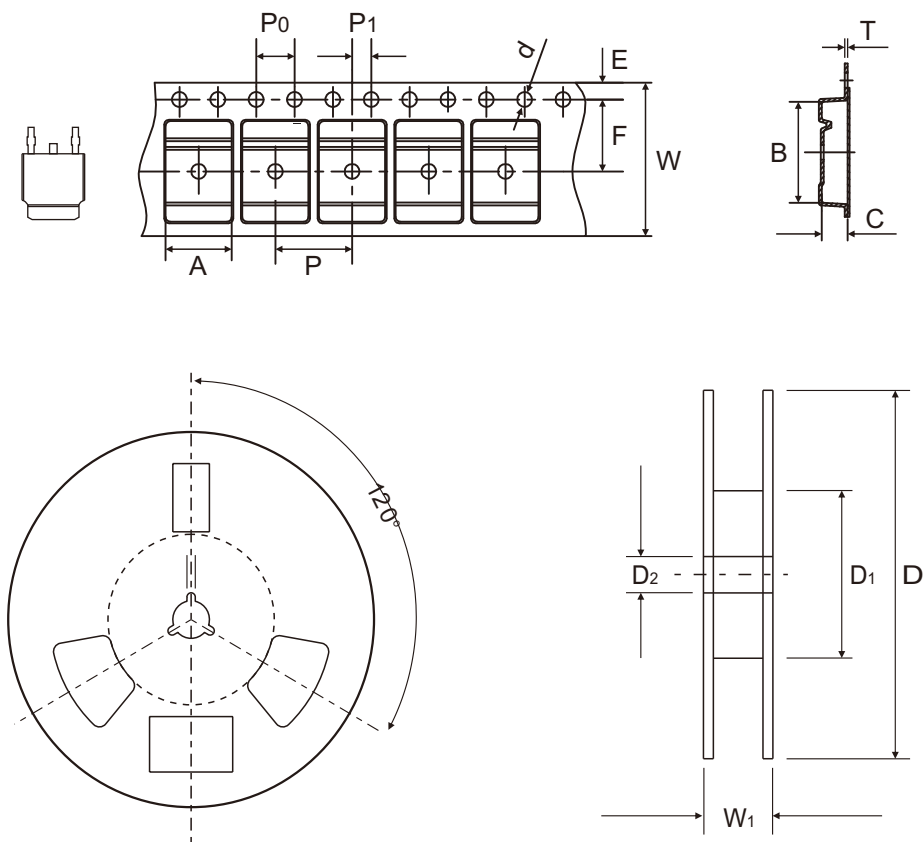


Fig.10 - Normalized $V_{GS(th)}$ vs. Temperature



Reel Taping Specification

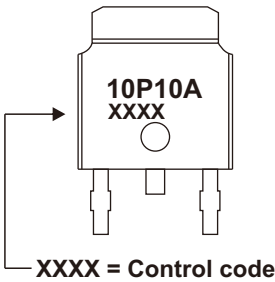


TO-252 (D-PAK)	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	6.90 ± 0.10	10.50 ± 0.10	2.70 ± 0.10	1.55 ± 0.05	332 Max	100.00 ± 2.00	13.00 Min
	(inch)	0.272 ± 0.004	0.413 ± 0.004	0.106 ± 0.004	0.061 ± 0.002	13.071 Max	3.937 ± 0.079	0.512 Min

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	0.30 ± 0.05	16.00 ± 0.10	22.4 Max
	(inch)	0.069 ± 0.004	0.295 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.012 ± 0.002	0.630 ± 0.004	0.882 Max

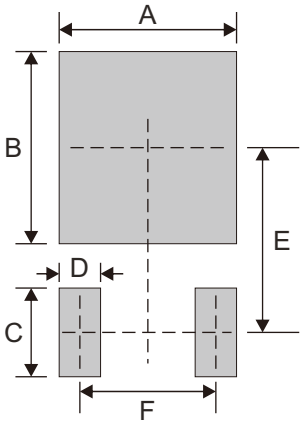
Marking Code

Part Number	Marking Code
CMS10P10D-HF	10P10A



Suggested 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	3,000	13