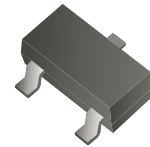


CMS2301A-HF

P-Channel
RoHS Device
Halogen Free



Features

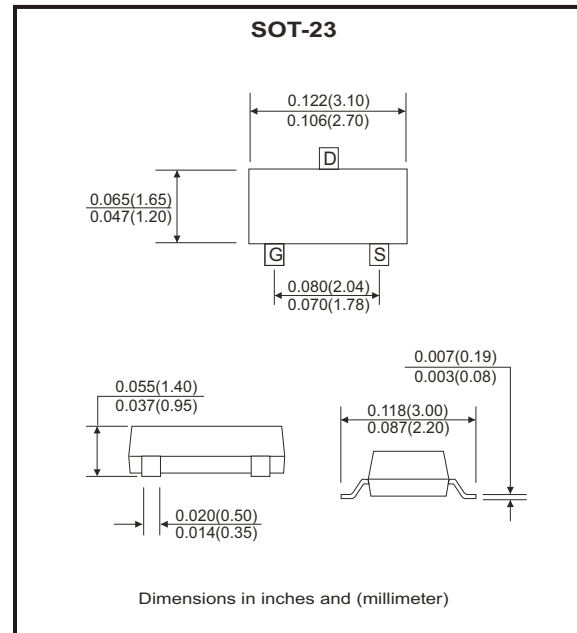
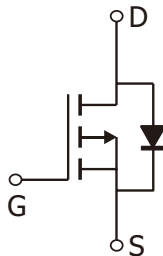
- Advanced trench process technology
- High density cell design for ultra low on resistance
- Excellent thermal and electrical capabilities
- Compact and low profile SOT-23 package

Mechanical data

- Case: SOT-23, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.

Circuit diagram

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



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-20	V
Gate-source voltage	V_{GS}	±8	
Continuous drain current	I_D	-3	A
Pulsed drain current	I_{DM}	-4.8	
Continuous source-drain diode current	I_S	-0.72	
Maximum power dissipation	P_D	0.80	W
Thermal resistance from junction to ambient (t ≤5s)	$R_{\theta JA}$	357	°C/W
Junction temperature	T_J	150	°C
Storage temperature	T_{STG}	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4		-1	
Gate-source leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 10V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Drain-source on-state resistance (Note1)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -3A$		0.064	0.110	Ω
		$V_{GS} = -2.5V, I_D = -2A$		0.09	0.140	
Forward transconductance (Note1)	g_{fs}	$V_{DS} = -5V, I_D = -1.8A$		6.5		S
Dynamic (Note2)						
Input capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		405		pF
Output capacitance	C_{oss}			75		
Reverse transfer capacitance	C_{rss}			55		
Total gate charge	Q_g	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -3A$		5.5	10	nC
				3.3	6	
Gate-source charge	Q_{gs}	$V_{DS} = -10V, V_{GS} = -2.5V, I_D = -3A$		0.7		
Gate-drain charge	Q_{gd}			1.3		
Gate resistance	R_g	$f = 1MHz$		6.0		Ω
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10V,$ $R_L = 10\Omega, I_D = -1A,$ $V_{GEN} = -4.5V, R_g = 1\Omega$		11	20	nS
Rise time	t_r			35	60	
Turn-off delay time	$t_{d(off)}$			30	50	
Fall time	t_f			10	20	
Drain-source body diode characteristics						
Continuous source-drain diode current	I_s	$T_C = 25^{\circ}\text{C}$			-1.3	A
Pulse diode forward current (Note1)	I_{SM}				-10	
Body diode voltage	V_{SD}	$I_s = -0.7A$		-0.8	-1.2	V

Notes:

1. Pulse test: Pulse width $< 300\mu s$, Duty cycle $\leq 2\%$
2. Guaranteed by design, not subject to production testing.

Typical Characteristics (CMS2301A-HF)

Fig.1 - Output Characteristics

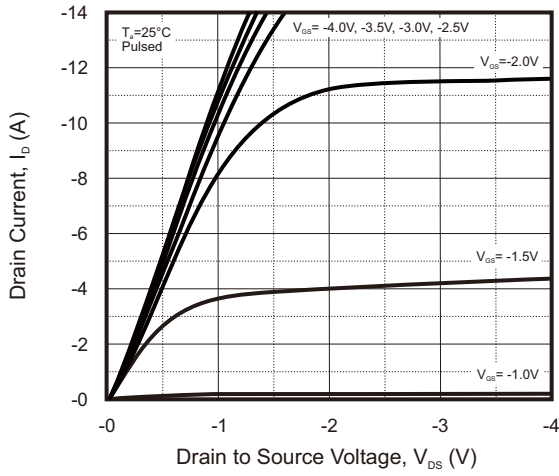


Fig.2 - Transfer Characteristics

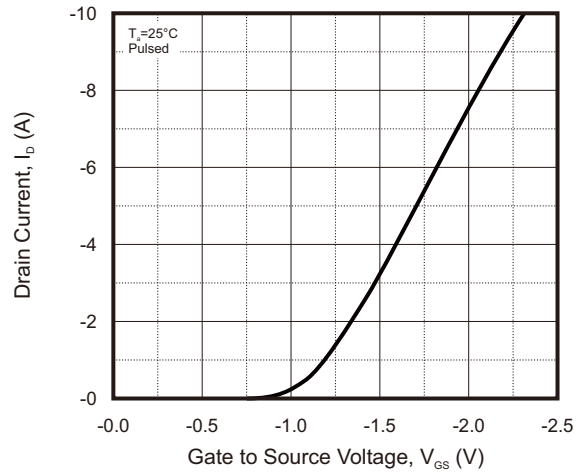


Fig.3 - $R_{DS(ON)} - I_D$

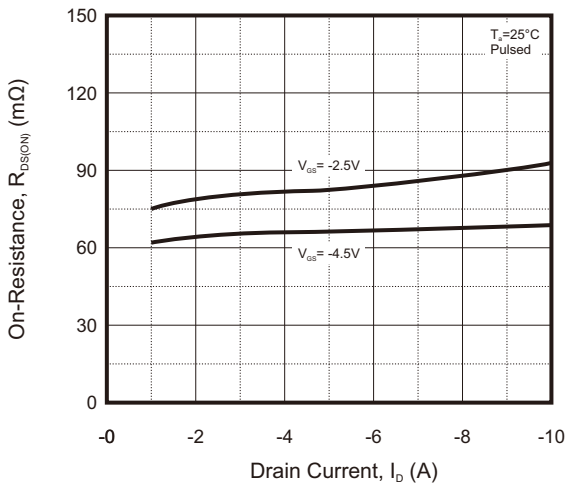


Fig.4 - $R_{DS(ON)} - V_{GS}$

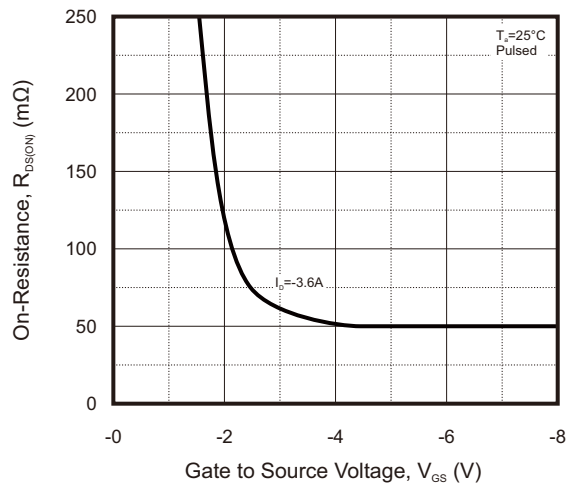
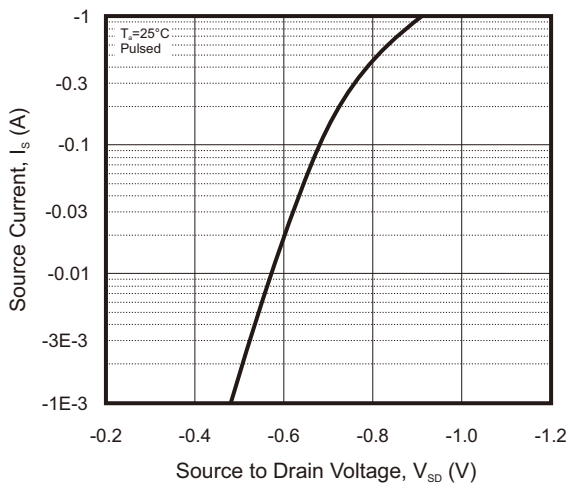
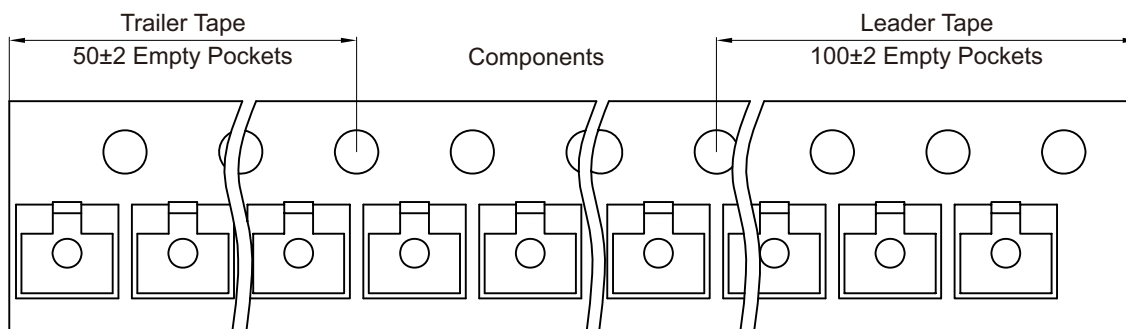
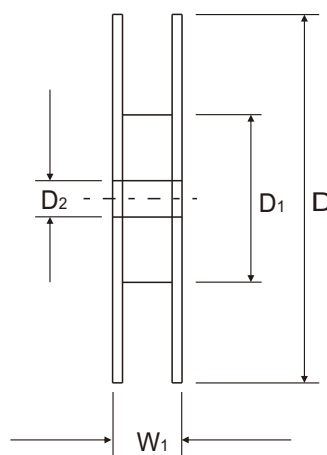
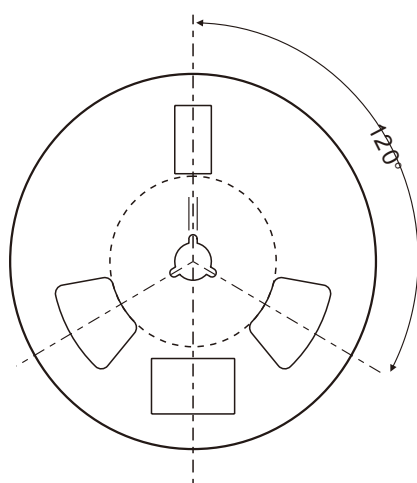
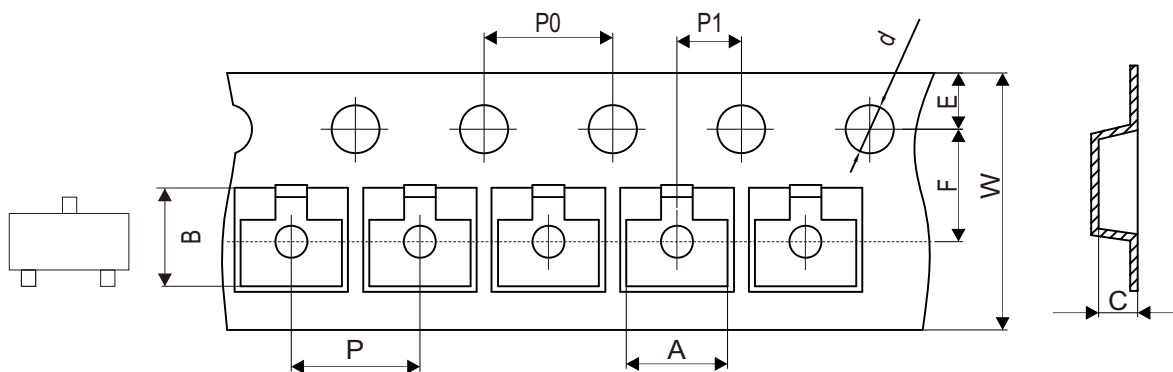


Fig.5 - $I_S - V_{SD}$



Reel Taping Specification



	SYMBOL	A	B	C	d	D	D ₁	D ₂
SOT-23	(mm)	See Note 1			$1.50 + 0.10 - 0.00$	330.00 Max.	50.00 Min.	13.00 ± 0.50
	(inch)	See Note 1			$0.059 + 0.004 - 0.000$	12.992 Max.	1.969 Min.	0.512 ± 0.020

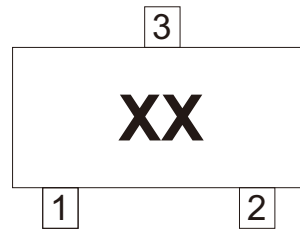
	SYMBOL	E	F	P	P ₀	P ₁	W	W ₁
SOT-23	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.30 Max.	14.40 Max.
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.327 Max.	0.567 Max.

Note: 1. A, B, and C are determined by component size. The clearance between the components and the cavity must be within 0.05mm min. to 0.50mm max.

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

Marking Code

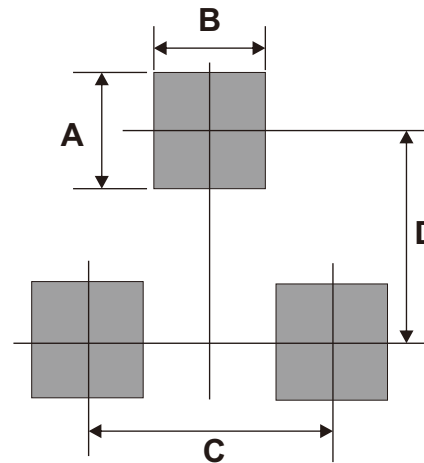
Part Number	Marking Code
CMS2301A-HF	S1



XX = Product type marking code

Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.035
B	0.60	0.031
C	1.90	0.075
D	2.02	0.080



Standard Packaging

Case Type	Qty Per Reel	Reel Size
	(Pcs)	(inch)
SOT-23	3,000	7