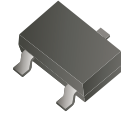


# CMS01P10T-HF

**P-Channel**  
**RoHS Device**  
**Halogen Free**



## Features

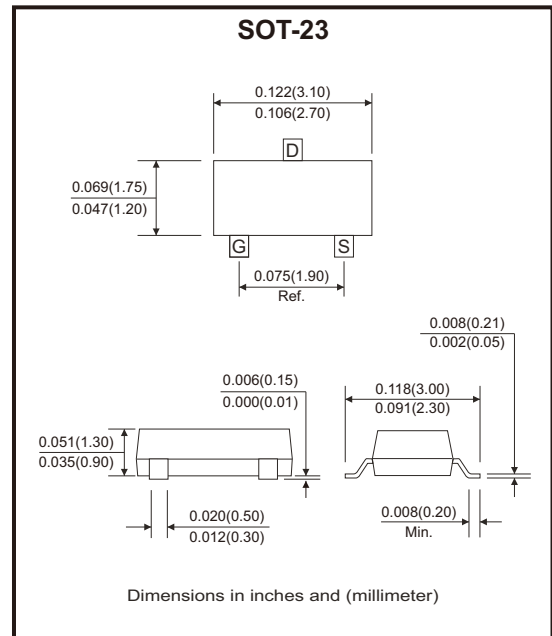
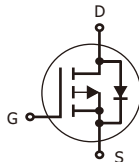
- Advanced high cell density trench technology.
- Super low gate charge.
- Excellent CdV/dt effect decline.
- Green device available.

## Mechanical data

- Case: SOT-23, 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)	$I_D @ T_A = 25^\circ\text{C}$		-1.2	A
	$I_D @ T_A = 70^\circ\text{C}$		-1	
Pulsed drain current (Note 1, 2)	$I_{DM} @ T_A = 25^\circ\text{C}$	$I_{DM}$	-5	A
Total power dissipation (Note 3)	$P_D @ T_A = 25^\circ\text{C}$	$P_D$	1	W
Operating junction and storage temperature range		$T_J, T_{STG}$	-55 to +150	°C
Thermal resistance junction-ambient (Note 1)		$R_{\theta JA}$	125	°C/W
Thermal resistance junction-case (Note 1)		$R_{\theta JC}$	80	°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	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-100			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0		-2.5	
Forward transconductance	$g_{fs}$	$V_{DS} = -5V, I_D = -1A$		3		S
Gate-source leakage current	$I_{GSS}$	$V_{GS} = \pm 20V$			$\pm 100$	nA
Drain-source leakage current ( $T_J=25^{\circ}\text{C}$ )	$I_{DSS}$	$V_{DS} = -80V, V_{GS} = 0V$			-1	$\mu A$
Drain-source leakage current ( $T_J=55^{\circ}\text{C}$ )		$V_{DS} = -80V, V_{GS} = 0V$			-5	
Static drain-source on-resistance (Note 2)	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -1A$			650	m $\Omega$
		$V_{GS} = -4.5V, I_D = -0.5A$			700	
Total gate charge (Note 2)	$Q_g$	$I_D = -1A, V_{DS} = -50V, V_{GS} = -10V$		9.3		nC
Gate-source charge	$Q_{gs}$			1.75		
Gate-drain ("miller") charge	$Q_{gd}$			1.25		
Turn-on delay time (Note 2)	$t_{d(on)}$	$V_{DD} = -50V, V_{GS} = -10V$ $I_D = -0.5A, R_G = 3.3\Omega, R_L = 30\Omega$		2		nS
Rise time	$t_r$			18.4		
Turn-off delay time	$t_{d(off)}$			19.6		
Fall time	$t_f$			19.6		
Input capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = -15V, f = 1\text{MHz}$		513		$\mu F$
Output capacitance	$C_{oss}$			29		
Reverse transfer capacitance	$C_{rss}$			17		
<b>Source-drain diode</b>						
Diode forward voltage (Note 2)	$V_{SD}$	$I_S = -1A, V_{GS} = 0V, T_J=25^{\circ}\text{C}$			-1.2	V
Continuous source current (Note 1, 4)	$I_S$	$V_G = V_D = 0V, \text{Force current}$			-1.2	A
Pulsed source current (Note 2, 4)	$I_{SM}$				-5	A
Reverse recovery time	$t_{rr}$	$I_F = -1A, T_J=25^{\circ}\text{C}$ $dI/dt = 100A/\mu s$		27		nS
Reverse recovery charge	$Q_{rr}$			36		nC

- Notes: 1. The data tested by surface mounted on a 1 inch<sup>2</sup> 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 power dissipation is limited by 150 $^{\circ}\text{C}$  junction temperature.  
 4. 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 (CMS01P10T-HF)

Fig.1 - Typical Output Characteristics

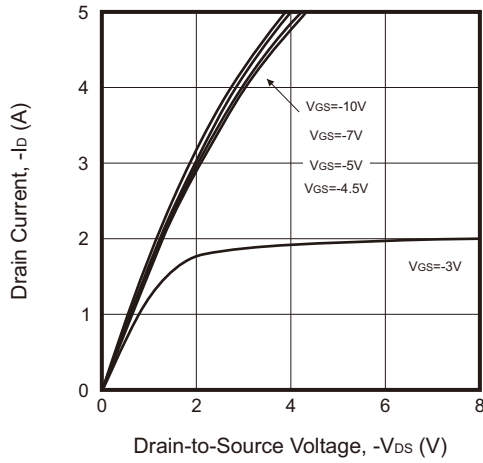


Fig.2 - On-Resistance vs. G-S Voltage

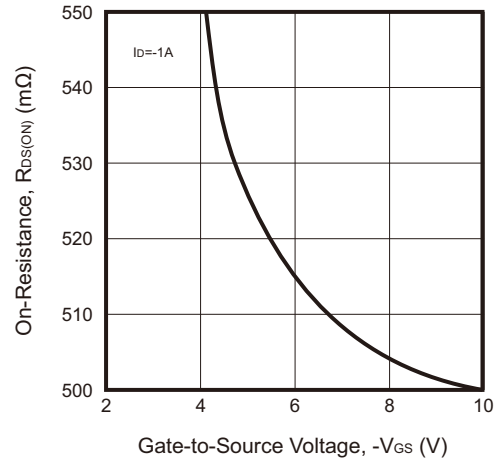


Fig.3 - Normalized  $V_{GS(th)}$  vs.  $T_J$

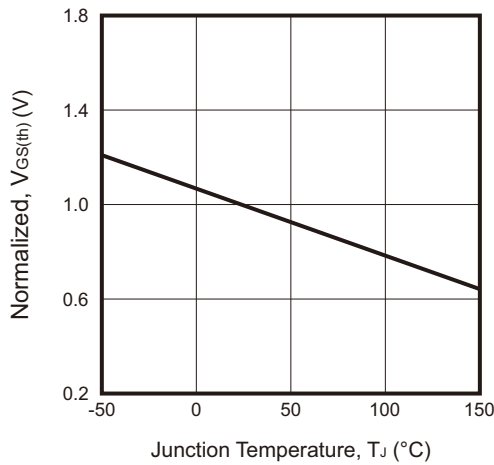


Fig.4 - Normalized  $R_{DS(ON)}$  vs.  $T_J$

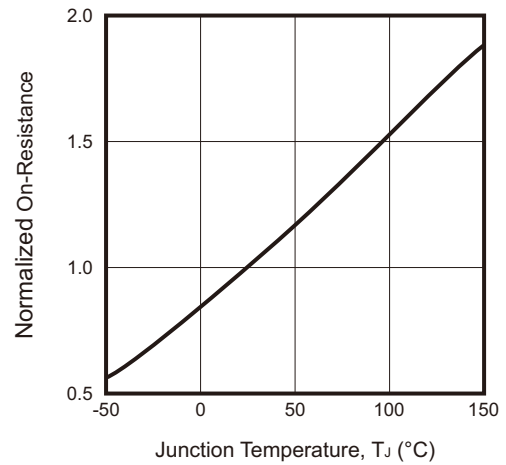


Fig.5 - Safe Operating Area

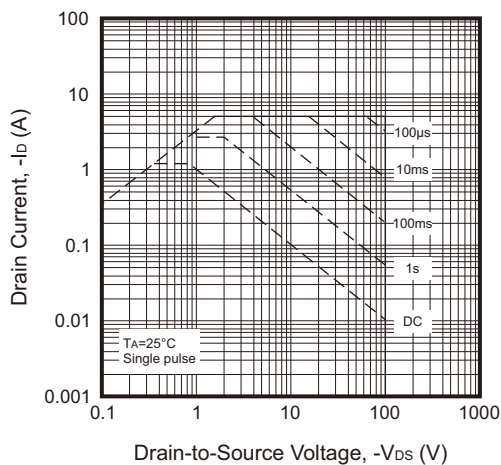
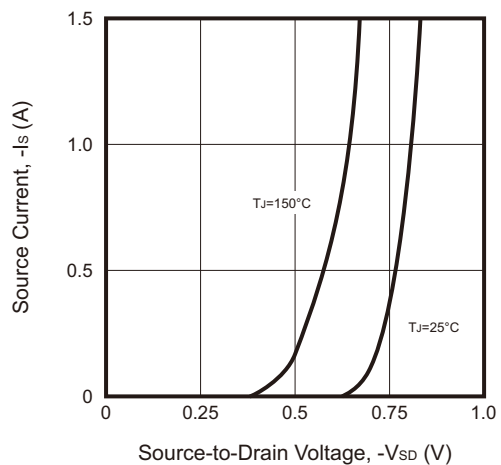


Fig.6 - Forward Characteristics of Reverse



## Rating and Characteristic Curves (CMS01P10T-HF)

Fig.7 - Gate Charge Characteristics

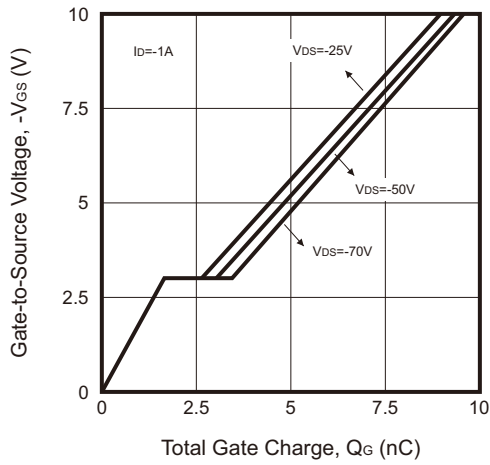
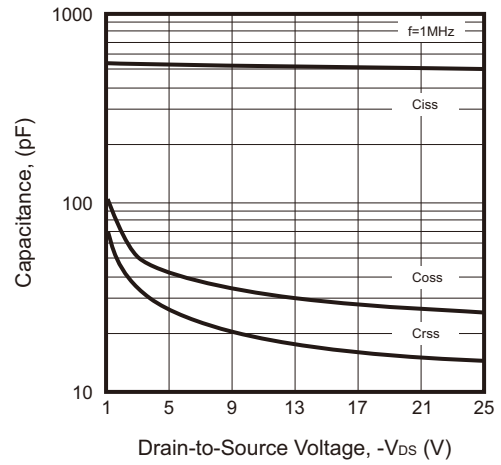
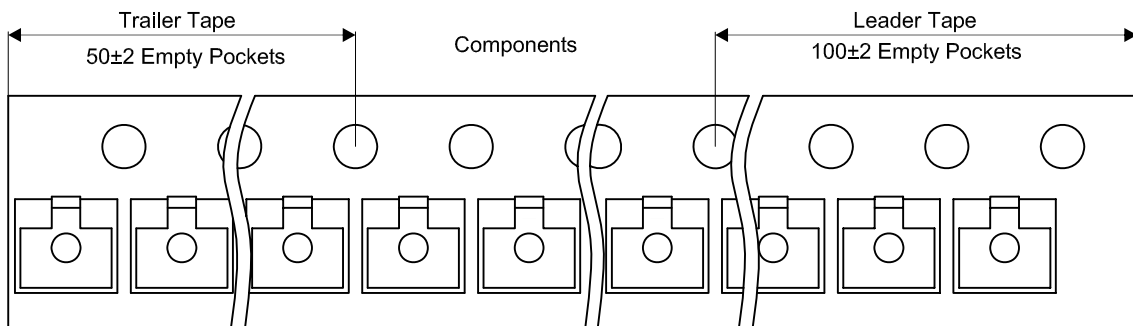
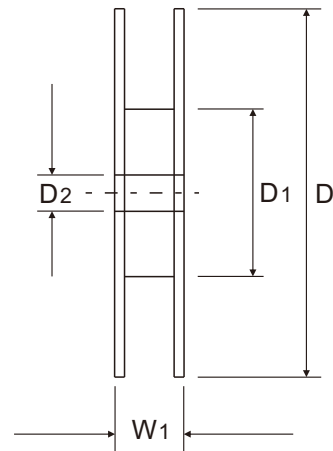
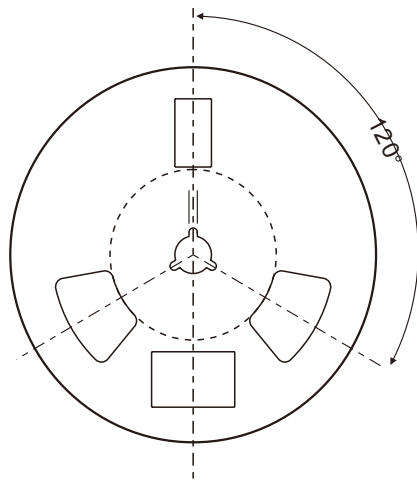
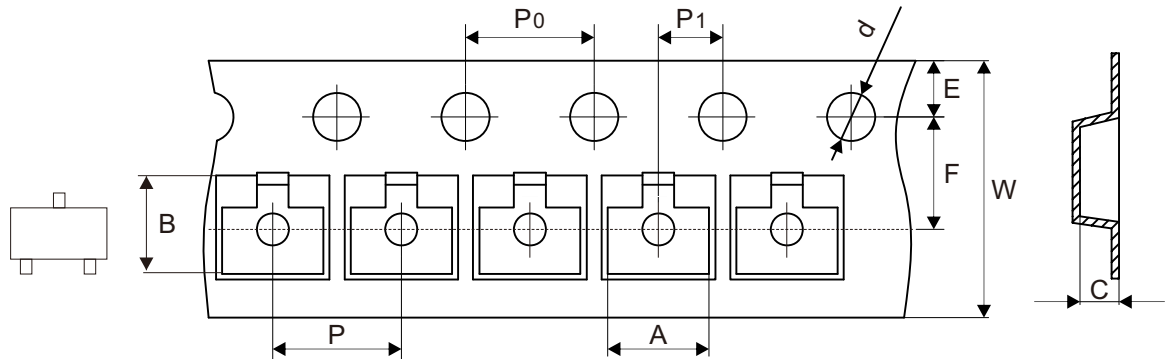


Fig.8 - Capacitance Characteristics



Reel Taping Specification



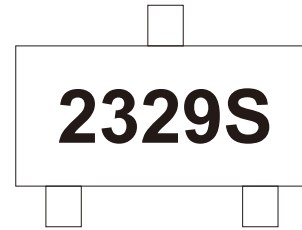
SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.10 ± 0.10	3.20 ± 0.10	1.37 ± 0.10	1.50 + 0.10 - 0.00	178.00 ± 0.50	54.50 + 2.50 - 0.00	13.00 + 0.35 - 0.15
	(inch)	0.122 ± 0.004	0.126 ± 0.004	0.054 ± 0.004	0.059 + 0.004 - 0.000	7.008 ± 0.020	2.146 + 0.098 - 0.000	0.512 + 0.014 - 0.006

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 - 0.10	12.00 + 1.50 - 0.50
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 - 0.004	0.472 + 0.059 - 0.020

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

## Marking Code

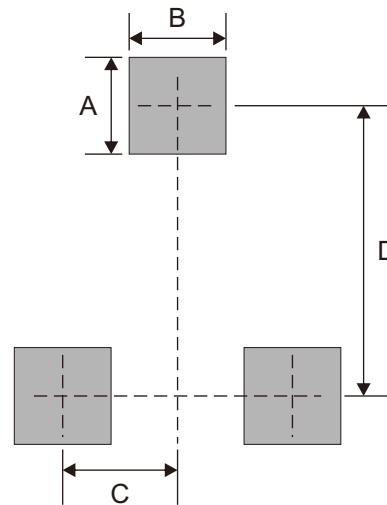
Part Number	Marking Code
CMS01P10T-HF	2329S



## Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.80	0.031
C	0.95	0.037
D	2.40	0.094

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



## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7