CMN3416ZM

Cmos

20V, 14.6mΩ typ., 6.5A N-Channel MOSFET

General Description

The CMN3416ZM uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications. It is ESD protected.

Features
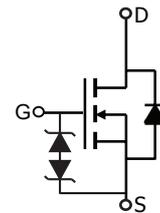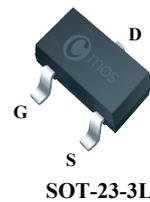
- ESD protected
- SOT-23-3L Package
- RoHS Compliant

Product Summary

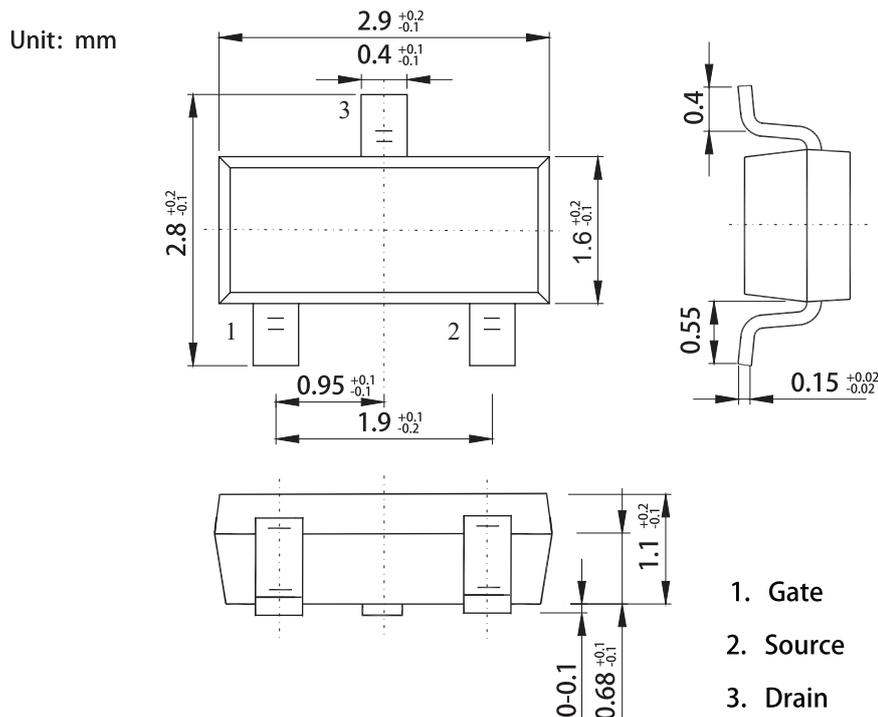| BVDSS	$R_{DS(on)}$ max.	ID
20V	18mΩ	6.5A

Applications

- PWM applications
- Load Switch
- Power Management
- PA Switch

SOT-23-3L Pin Configuration

SOT-23-3L

Type	Package	Marking
CMN3416ZM	SOT-23-3L	3416ZM

Unit: mm

1. Gate
2. Source
3. Drain

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Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±8	V
I_D@T_A=25℃	Continuous Drain Current	6.5	A
I_D@T_A=70℃	Continuous Drain Current	5	A
I_{DM}	Pulsed Drain Current	30	A
P_D @T_A=25℃	Total Power Dissipation	1.4	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(t≤10s)	---	90	℃/W

Electrical Characteristics (T_a=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=6.5A	---	14.6	18	mΩ
		V_{GS}=2.5V , I_D=5.5A	---	18.2	25	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	0.4	---	1.1	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±8V , V_{DS}=0V	---	---	±10	uA
gfs	Forward Transconductance	V_{DS}=5V , I_D =3A	---	10	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.4	---	kΩ
Q_g	Total Gate Charge	I_D=6.5A	---	9	---	nC
Q_{gs}	Gate-Source Charge	V_{DS}=10V	---	1.5	---	
Q_{gd}	Gate-Drain Charge	V_{GS}=4.5V	---	3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V	---	250	---	ns
T_r	Rise Time	R_L=1.5Ω	---	420	---	
$T_{d(off)}$	Turn-Off Delay Time	R_G=3Ω	---	3950	---	
T_f	Fall Time	V_{GS}=5V	---	3700	---	
C_{iss}	Input Capacitance		---	110	---	pF
C_{oss}	Output Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	100	---	
C_{rss}	Reverse Transfer Capacitance		---	60	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S =1A	---	0.75	1.2	V

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Typical Characteristics

Output Characteristics

transfer characteristics

On-Resistance vs. Drain Current

Gate charge vs gate-source voltage

Capacitance Characteristics

Body-Diode Characteristics