

### General Description

The CML10N04 uses advanced technology to provide excellent RDS(ON). This device is suitable for use as a synchronous switch in PWM applications.

### Features

- Low On-Resistance
- Simple Drive Requirements
- Surface mount package.
- RoHS Compliant

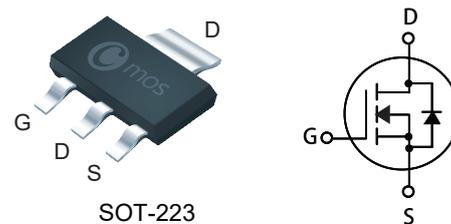
### Product Summary

BVDSS	R <sub>DS(on)</sub> max.	ID
40V	21mΩ	10A

### Applications

- DC/DC Converter
- Synchronous Rectifier
- Load Switch
- Battery protection

### SOT-223 Pin Configuration



Type	Package	Marking
CML10N04	SOT- 223	CML10N04

### Absolute Maximum Ratings (T<sub>A</sub>=25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	40	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub> @T <sub>A</sub> =25 °C	Continuous Drain Current	10	A
I <sub>D</sub> @T <sub>A</sub> =100 °C	Continuous Drain Current	7	A
I <sub>DM</sub>	Pulsed Drain Current	40	A
P <sub>D</sub> @T <sub>A</sub> =25 °C	Total Power Dissipation	1.5	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient	---	83	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-case	---	48	°C/W

**Electrical Characteristics (T<sub>J</sub>=25°C , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	40	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =7A	---	18	21	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =6A	---	23	30	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.0	---	3.0	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =40V , V <sub>GS</sub> =0V	---	---	1	μA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V , I <sub>D</sub> =7A	---	11	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz	---	5.6	---	Ω
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =7A V <sub>DD</sub> =20V V <sub>GS</sub> =0 to 10V	---	14	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	2	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	2.5	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =20V V <sub>GS</sub> =10V R <sub>GEN</sub> =6Ω , I <sub>D</sub> =7A	---	7	---	ns
T <sub>r</sub>	Rise Time		---	3	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	20	---	
T <sub>f</sub>	Fall Time		---	2	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , f=1MHz	---	820	---	pF
C <sub>oss</sub>	Output Capacitance		---	100	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	45	---	

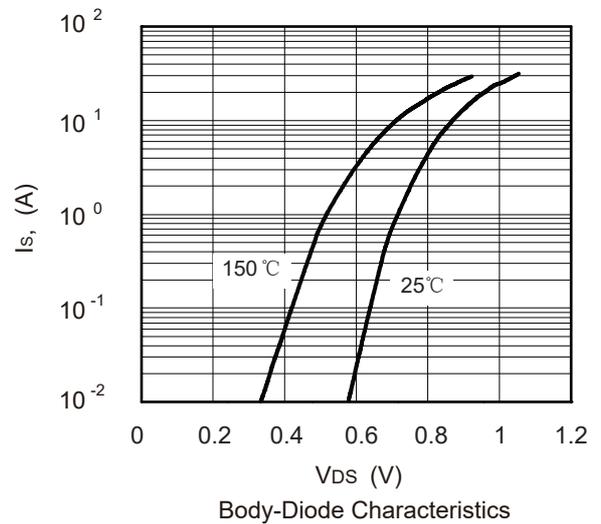
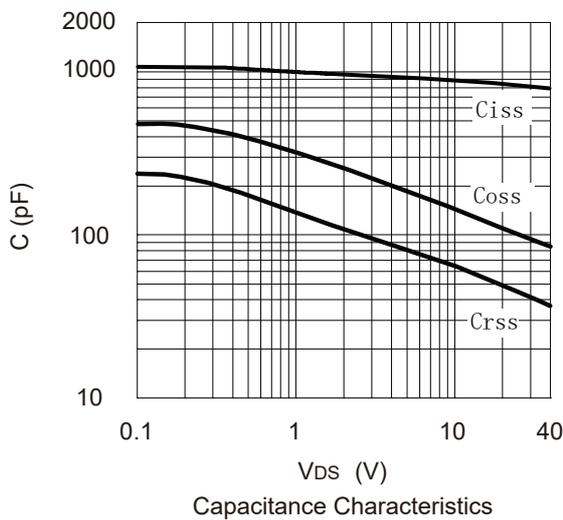
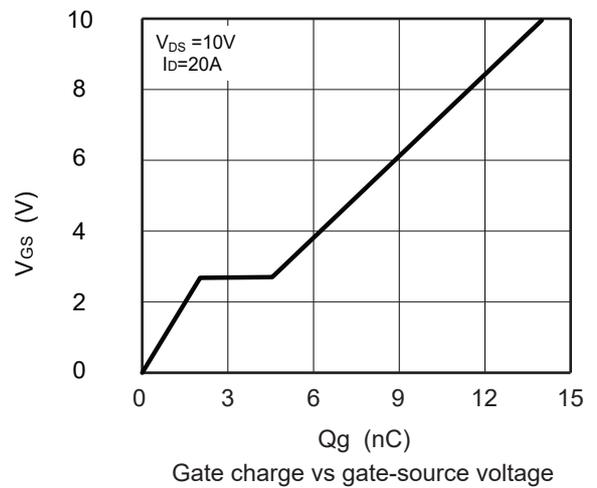
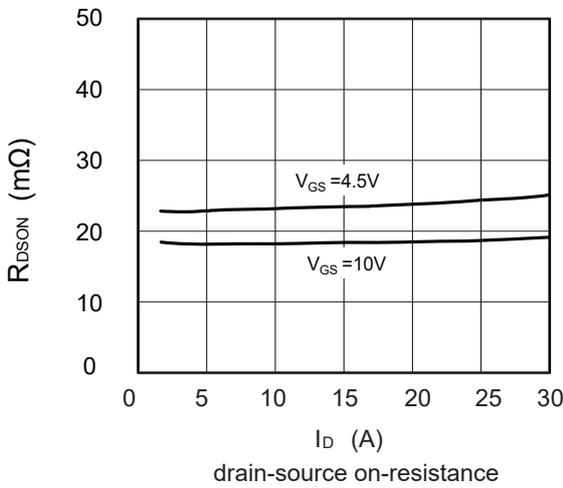
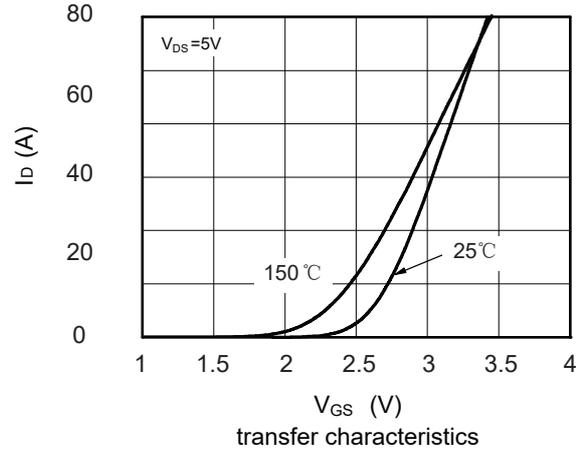
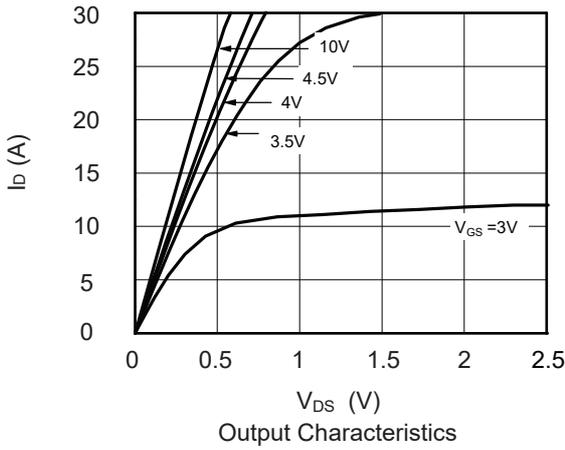
**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Diode continuous forward current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	10	A
I <sub>S,pulse</sub>	Diode pulse current		---	---	40	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>F</sub> =7A , T <sub>J</sub> =25°C	---	0.82	1.2	V

Note :

This product has been designed and qualified for the consumer market.  
 Cmos assumes no liability for customers' product design or applications.  
 Cmos reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

Typical Characteristics



Package Dimension

SOT-223

Unit :mm

