

General Description

These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are power switch, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

Features

- $R_{DS(ON)} < 35m\Omega$ @ $V_{GS}=4.5V$
- $R_{DS(ON)} < 45m\Omega$ @ $V_{GS}=2.5V$
- SOT-23-3L Package

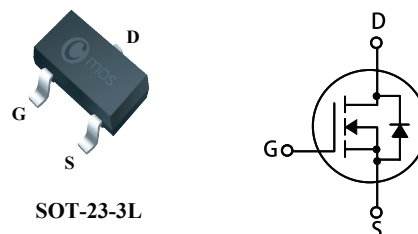
Product Summary

BVDSS	$R_{DS(ON)}$	ID
20V	35m Ω	5A

Applications

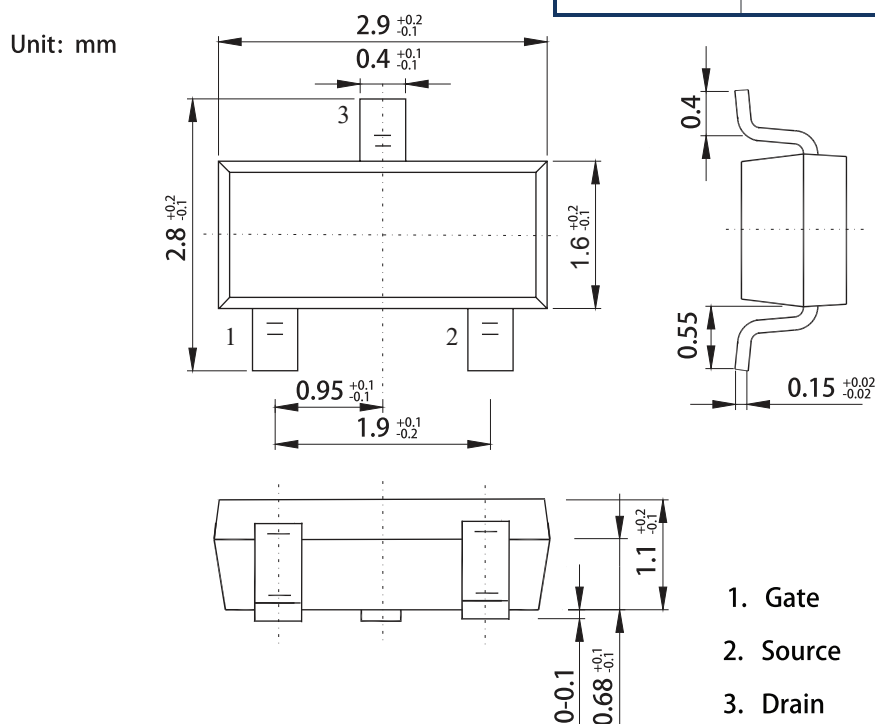
- DC-DC converters
- Load Switch
- Power Management in Notebook Computer
- Portable Equipment and Battery Powered Systems

SOT-23-3L Pin Configuration



SOT-23-3L

Type	Package	Marking
CMN2302M	SOT-23-3L	A2



N-Channel Enhancement Mode Field Effect Transistor

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
$I_D@T_a=25^\circ\text{C}$	Continuous Drain Current	5	A
I_{DM}	Pulsed Drain Current	15	A
$P_D@T_a=25^\circ\text{C}$	Total Power Dissipation	1	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	125	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=4.5\text{V}$, $I_D=4.5\text{A}$	---	---	35	$\text{m}\Omega$
		$V_{GS}=2.5\text{V}$, $I_D=3.5\text{A}$	---	---	45	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu\text{A}$	0.5	---	1.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=16\text{V}$, $V_{GS}=0\text{V}$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 10\text{V}$, $V_{DS}=0\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$I_D=3\text{A}$, $V_{DS}=5\text{V}$	---	6	---	S
Q_g	Total Gate Charge	$I_D=1\text{A}$	---	8.8	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=10\text{V}$	---	1.2	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=4.5\text{V}$	---	2.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=10\text{V}$ $I_D=3.5\text{A}$ $R_{GEN}=10\Omega$	---	12	---	ns
T_r	Rise Time		---	18	---	
$T_{d(off)}$	Turn-Off Delay Time		---	45	---	
T_f	Fall Time		---	30	---	
C_{iss}	Input Capacitance	$V_{DS}=10\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$	---	310	---	pF
C_{oss}	Output Capacitance		---	60	---	
C_{rss}	Reverse Transfer Capacitance		---	50	---	

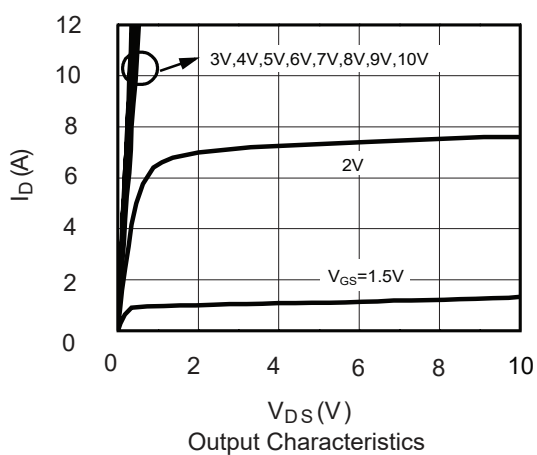
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	$V_{GS}=0\text{V}$, $I_S=0.75\text{A}$	---	0.75	1.3	V

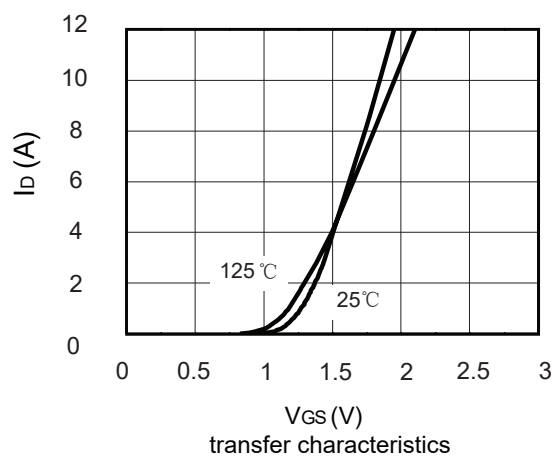
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N-Channel Enhancement Mode Field Effect Transistor

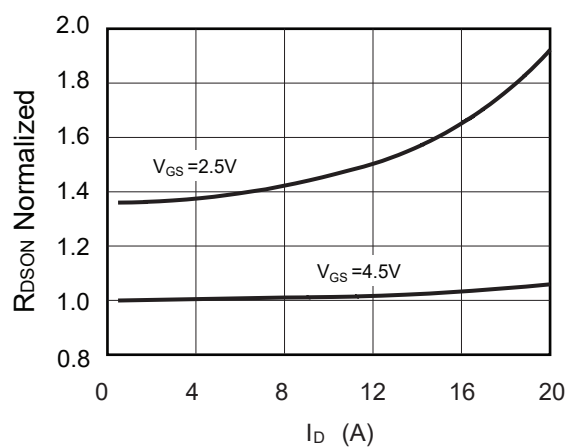
Typical Characteristics



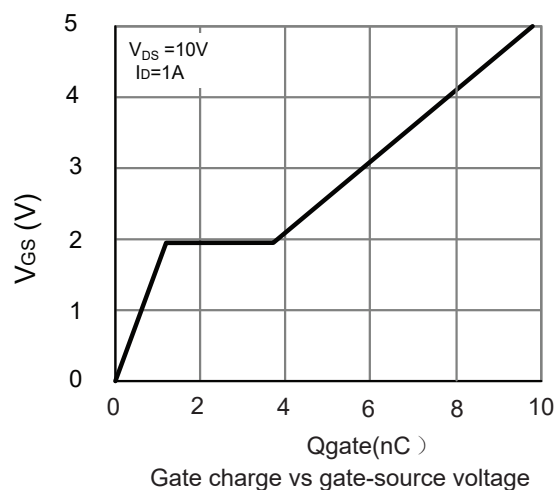
Output Characteristics



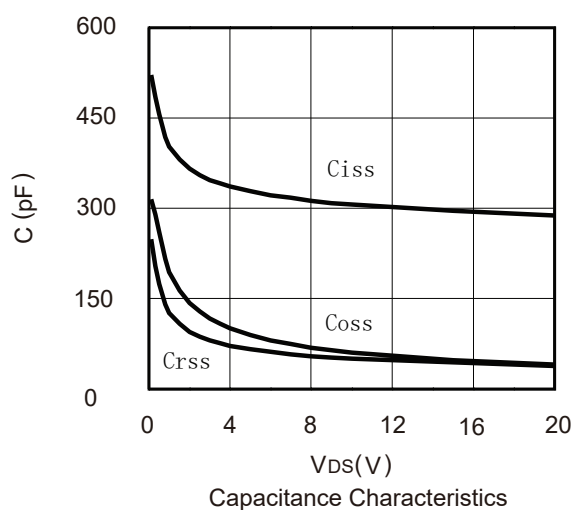
transfer characteristics



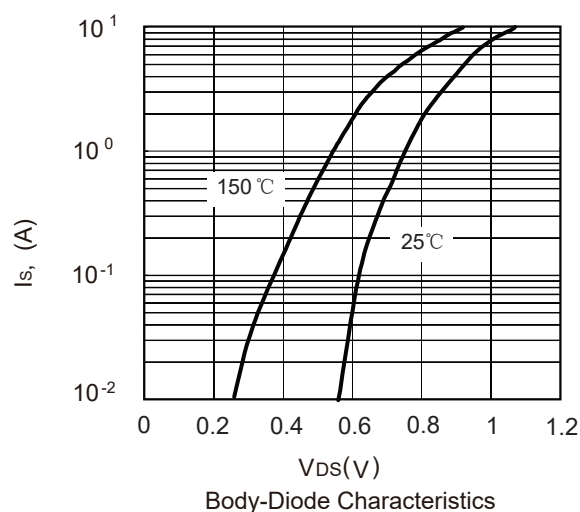
drain-source on-resistance



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics

