

## CMS-4200 Series

### Description:

The CMS-4200 series consists of an enhancement-mode MOSFET in series with a depletion mode MOSFET. It can be used as a switchable current source to drive LED's or laser diodes. The CMS-4200 is optimized as a high switching speed, low capacitance current source. This product reduces component count in a variety of applications. The ability to provide a constant current over a wide range of input voltage makes it ideal for battery operated and portable applications.

The CMS-4200 series uses CALMOS TECHNOLOGIES ULTRA REL DMOS Process for reliability and robust performance. These MOSFETs utilize lateral construction to achieve low capacitance and ultra-fast switching speeds. Input protection provides a high ESD rating.

## SWITCHABLE CURRENT SOURCE

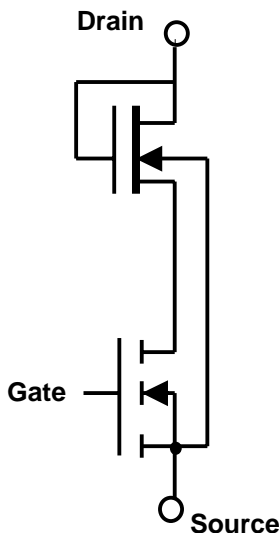
### FEATURES:

- Constant current over wide voltage range
- Low threshold <1.5V max
- Low capacitance 0.5pF Typical
- Fast glitch-free switching
- Reduces Component Count

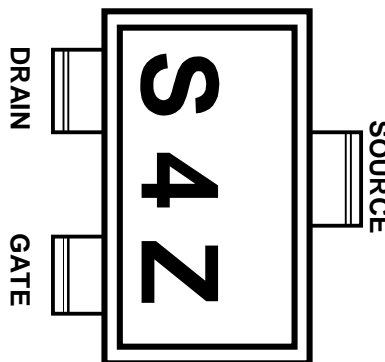
### APPLICATIONS:

- LED Indicators
- Laser Diode Drivers
- Switchable Current Source
- Current Controlled Drivers

### INTERNAL CONFIGURATION



### SOT 23 PACKAGE



## Electrical Specifications ( $T_C = +25^\circ\text{C}$ unless otherwise noted)

	Parameter	Symbol	Test Conditions	CMS-4200			Units
				Min	Typ	Max	
STATIC	Drain-Source Breakdown Voltage	$BV_{DS}$	$I_D=1\ \mu\text{A}$ $V_{GS}=V_{BS}=0$	15	25		V
		$I_{D(OFF)}$	$V_{GS/BS}=-5$ $V_{GS/BS}=0$	$V_{DS}=10\text{V}$	1	10	nA
				$V_{DS}=15\text{V}$			$\mu\text{A}$
	Source - Drain Leakage	$I_{S(OFF)}$	$V_{GD/BS}=-5$ $V_{GS/BS}=0$	$V_{DS}=10\text{V}$	1	10	nA
				$V_{DS}=15\text{V}$			$\mu\text{A}$
	Gate Leakage	$I_{GBS}$	$V_{DB/SB}=0$	$V_{GS}=20\text{V}$	1	10	$\mu\text{A}$
	Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=1\ \mu\text{A}$ $V_{SB}=0$	0.3	0.7	1.5	V
	Drain-Source ON Resistance	$r_{DS(ON)}$	$I_D=1\ \text{mA}$ $V_{SB}=0\text{V}$	$V_{GS}=2.4\text{V}$	140	175	Ohm
				$V_{GS}=4.5\text{V}$	40	60	Ohm

	Parameter	Symbol	Test Conditions	CMS-4200			Units
				Min	Typ	Max	
DYNAMIC	Gate Node Capacitance	$C_{(gs+gd+gb)}$	$V_{DS}=10\text{V}$ $V_{GS}=V_{BS}=0\text{V}$ $f=1\text{MHz}$		8.5	12.0	pF
	Drain Node Capacitance	$C_{(gd+db)}$			2.0	3.0	pF
	Source Node Capacitance	$C_{(gs+sb)}$			5.5	7.0	pF
	Reverse Transfer Capacitance	$C_{(dg)}$			0.3	0.5	pF
	Turn On Delay Time	$t_{d(on)}$	$V_{\infty}=10\text{V}$ $V_{G(on)}=2.5\text{V}$		2.0		ns
	Rise Time	$t_r$			2.0		ns
	Turn Off Delay Time	$T_{d(off)}$			4.0		ns

CALMOS P/N	TYPICAL I DRAIN
CMS-4205	0.5 MA
CMS-4210	1.0 MA
CMS-4220	2.0 MA
CMS-4250	5.0 MA
CMS-4290	9.0 MA
Test Conditions	$V_G = 2V$ $V_D = 0.5 - 12V$

### Absolute Maximum Ratings, $T_c = +25^\circ C$

Parameter	Unit	Absolute Maximum <sup>[1]</sup>
		SOT-23
Drain-Source Voltage	V	+15
Gate-Source Voltage	V	-0.3 / +20
Gate-Drain Voltage	V	-0.3 / +20
Continuous Drain Current	mA	50
Power dissipation $T_c=25$	mW	300
Linear Derating Factor	mW/C	3
Junction Temperature	$^\circ C$	-55 to +125
Storage Temperature	$^\circ C$	-55 to +125

Notes:

1. Operation in excess of any one of these conditions may result in permanent damage to the device
2.  $T_c = +25^\circ C$ , where  $T_c$  is defined to be the temperature at the package pins where contact is made to the circuit board.

**ESD WARNING: Handling Precautions Should Be Taken To Avoid Static Discharge.**

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Data subject to change

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