

## CSM210N2S323

### 20V N-Channel MOSFET

**Voltage**

**20 V**

**Current**

**2 A**

#### Features

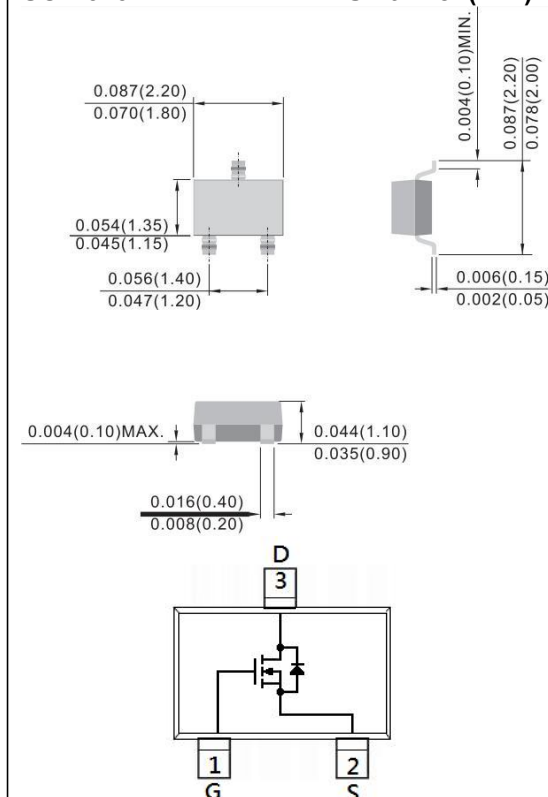
- Switching with Low  $R_{DS(ON)}$
- Lead free in compliance directive
- Green molding

#### Mechanical Data

- Case: SOT-323 Package

#### SOT-323

Unit: inch(mm)



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V <sub>DS</sub>	20	V
Gate-Source Voltage		V <sub>GS</sub>	±10	V
Continuous Drain Current		I <sub>D</sub>	2	A
Pulsed Drain Current		I <sub>DM</sub>	4	A
Power Dissipation	T <sub>a</sub> =25°C	P <sub>D</sub>	150	mW
	Derate above 25°C		1.2	mW/ °C
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C
Typical Thermal resistance		R <sub>θJA</sub>	833	°C/W
- Junction to Ambient <sup>(Note 1)</sup>				

## CSM210N2S323

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b> (Note 2)						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35	0.72	1.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=0.65A$	-	0.15	0.28	$\Omega$
		$V_{GS}=2.5V, I_D=0.55A$	-	0.21	0.35	
		$V_{GS}=1.8V, I_D=0.45A$	-	0.31	0.60	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$	-	0.01	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	-	$\pm 4$	$\pm 50$	$\mu A$
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=0.65A$	-	1.9	-	S
Diode Forward Voltage	$V_{SD}$	$I_S=0.15A, V_{GS}=0V$	-	0.63	1.2	V
<b>Dynamic</b> (Note 3)						
Input Capacitance	$C_{iss}$	$V_{DS}=16V, V_{GS}=0V,$ $f=1.0MHz$	-	62	-	pF
Output Capacitance	$C_{oss}$		-	24	-	
Reverse Transfer Capacitance	$C_{rss}$		-	12	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=500mA,$ $V_{GS}=4.5V,$ $R_G=10\Omega$ (Note 1,2)	-	3	-	ns
Turn-On Rise Time	$t_r$		-	23	-	
Turn-Off Delay Time	$t_{d(off)}$		-	12	-	
Turn-Off Fall Time	$t_f$		-	19	-	

#### NOTES :

1.  $R_{\theta JA}$  is surface mounted on a 1 inch FR-4 with 2oz. square pad of copper
2. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
3. Guaranteed by design, not subject to production testing.

## CSM210N2S323

### TYPICAL CHARACTERISTIC CURVES

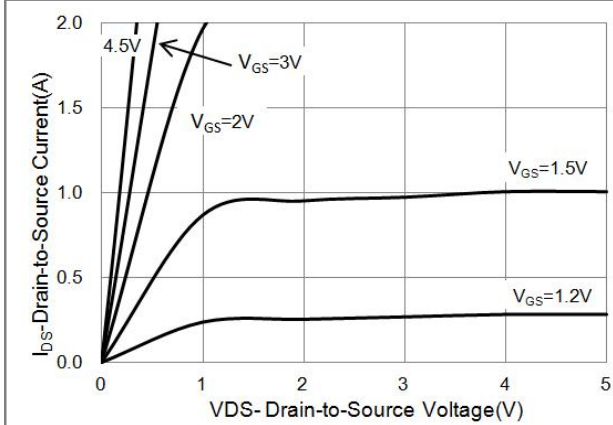


Fig.1 Output Characteristics

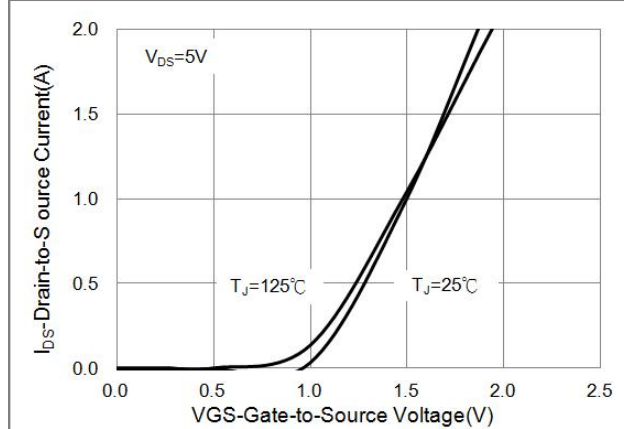


Fig.2 Transfer Characteristics

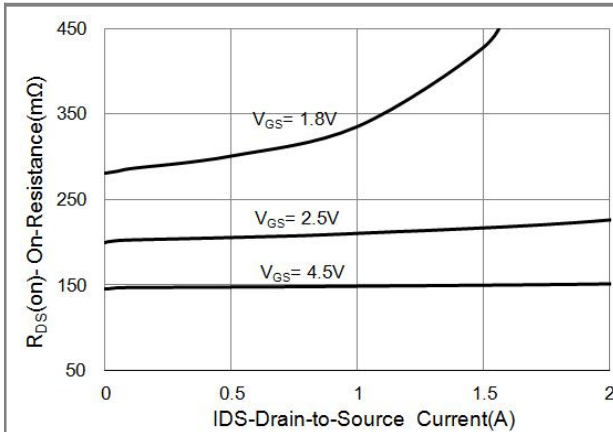


Fig.3 On-Resistance vs. Drain Current

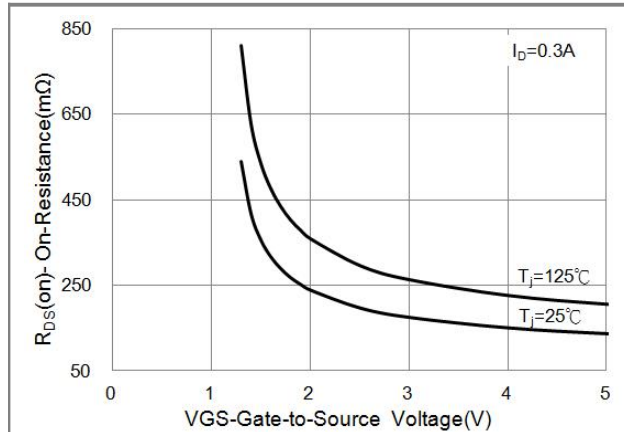


Fig.4 On-Resistance Variation with VGS.

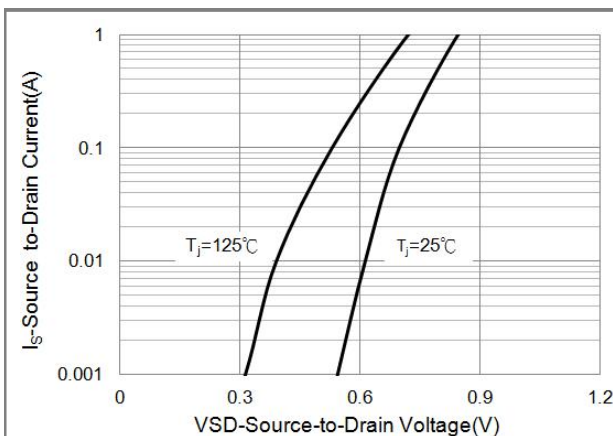


Fig.5 Body Diode Characteristics

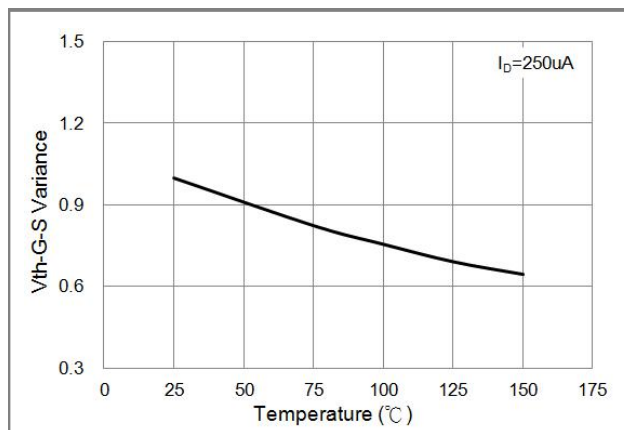


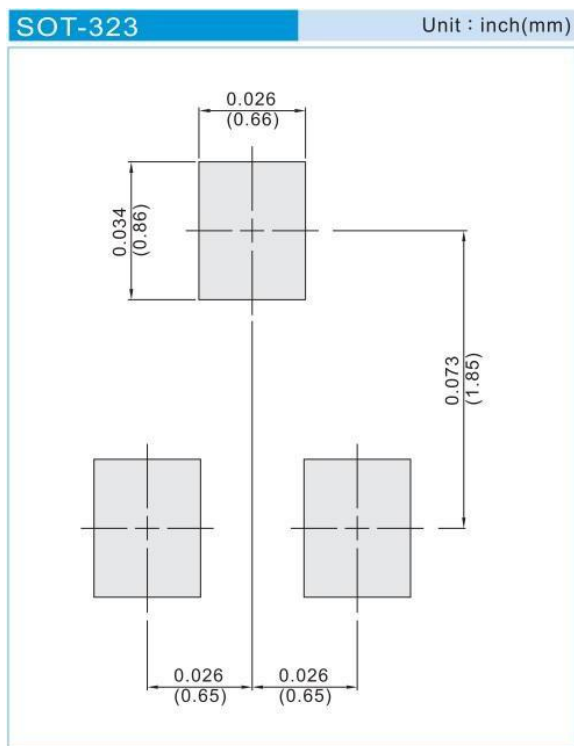
Fig.6 Threshold Voltage

## CSM210N2S323

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type
CSM210N2S323	SOT-323	3K pcs / 7" reel

MOUNTING PAD LAYOUT



## **CSM210N2S323**

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