

CSM320N4S23

30V N-Channel Enhancement Mode MOSFET

Voltage 30 V **Current** 4.0A

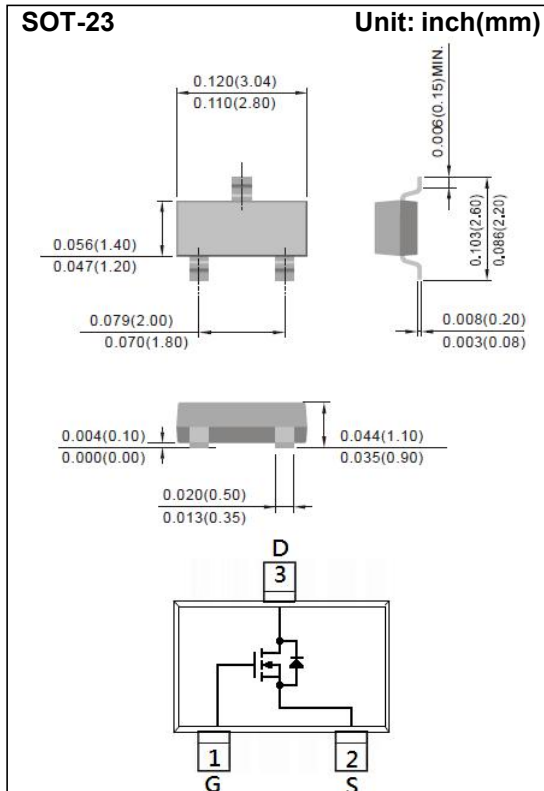
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@4.0A < 75m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@2.8A < 90m\Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Very Low Leakage Current In Off Condition
- Specially Designed for Load Switch, PWM

Applications

Mechanical Data

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V _{DS}	30	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current		I _D	4.0	A
Pulsed Drain Current		I _{DM}	16.0	A
Power Dissipation	T _a =25°C	P _D	1.25	W
	Derate above 25°C		10	mW/ °C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Typical Thermal resistance		R _{θJA}	100	°C/W
- Junction to Ambient ^(Note 3)				

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0	1.37	2.1	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =4.0A	-	55	75	mΩ
		V _{GS} =4.5V, I _D =2.8A	-	71	90	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	0.01	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =+20V, V _{DS} =0V	-	+10	+100	nA
Dynamic						
Total Gate Charge	Q _g	V _{DS} =15V, I _D =4.0A, V _{GS} =10V (Note 1,2)	-	5.8	-	nC
Gate-Source Charge	Q _{gs}		-	1	-	
Gate-Drain Charge	Q _{gd}		-	1	-	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHZ	-	235	-	pF
Output Capacitance	C _{oss}		-	36	-	
Reverse Transfer Capacitance	C _{rss}		-	24	-	
Switching						
Turn-On Delay Time	td _(on)	V _{DD} =15V, I _D =4.0A, V _{GS} =10V, R _G =6Ω (Note 1,2)	-	3	-	ns
Turn-On Rise Time	tr		-	39	-	
Turn-Off Delay Time	td _(off)		-	23	-	
Turn-Off Fall Time	tf		-	28	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	1.5	A
Diode Forward Voltage	V _{SD}	I _S =1.0A, V _{GS} =0V	-	0.77	1.2	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper
4. The maximum current rating is package limited

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TYPICAL CHARACTERISTIC CURVES

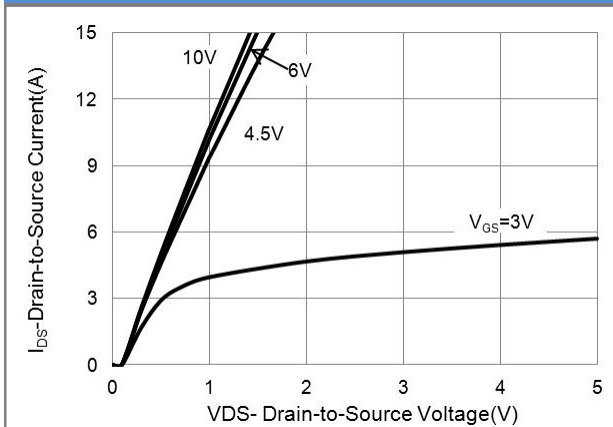


Fig.1 On-Region Characteristics

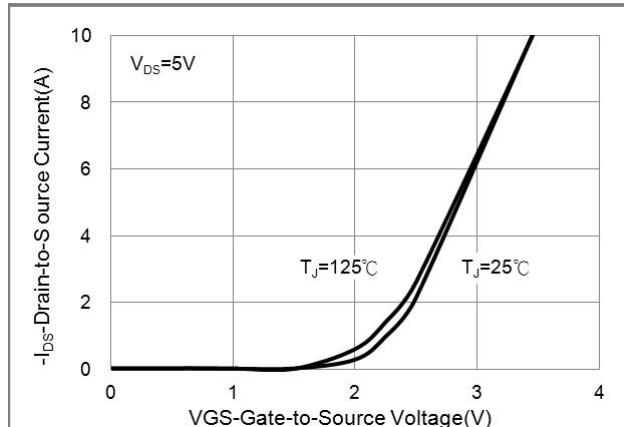


Fig.2 Transfer Characteristics

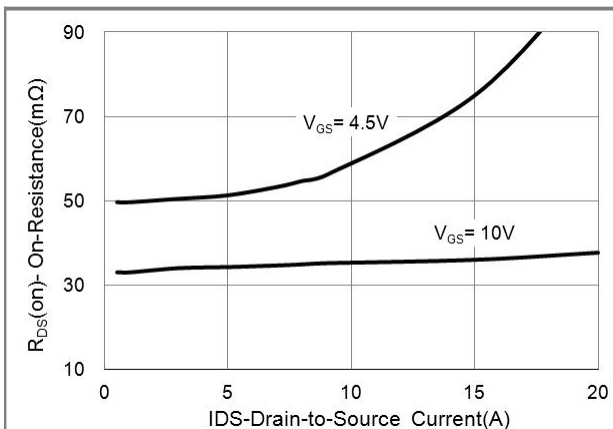


Fig.3 On-Resistance vs. Drain Current

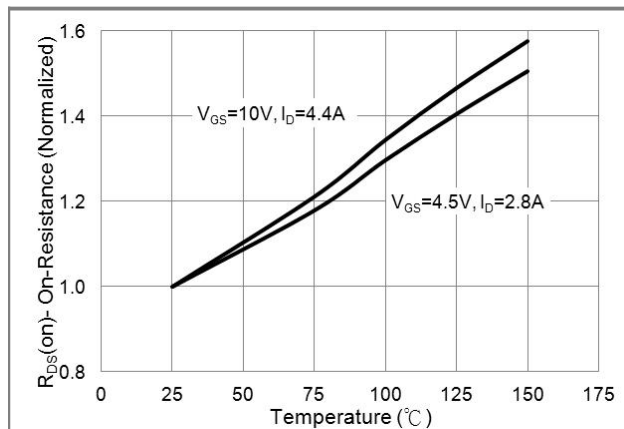


Fig.4 On-Resistance vs. Junction temperature

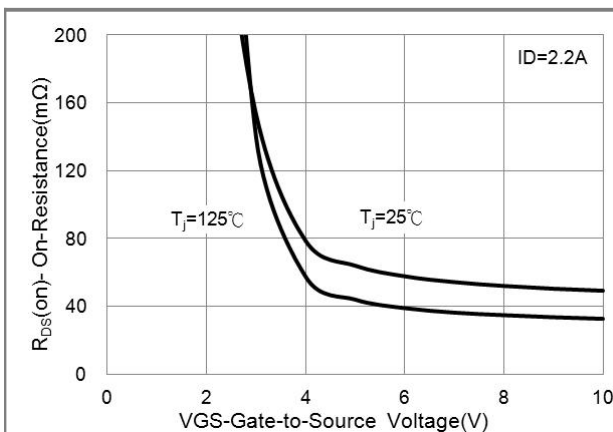


Fig.5 On-Resistance Variation with VGS.

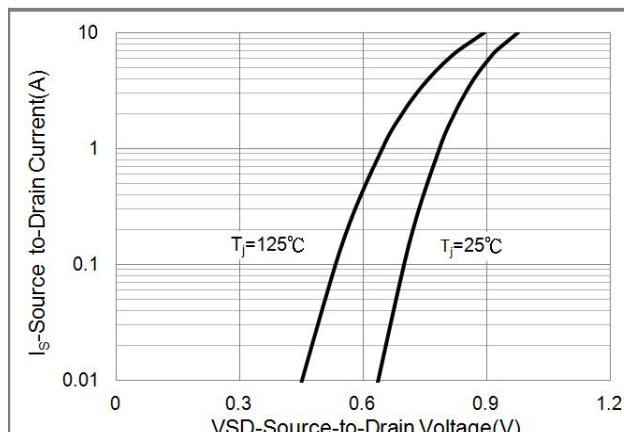


Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

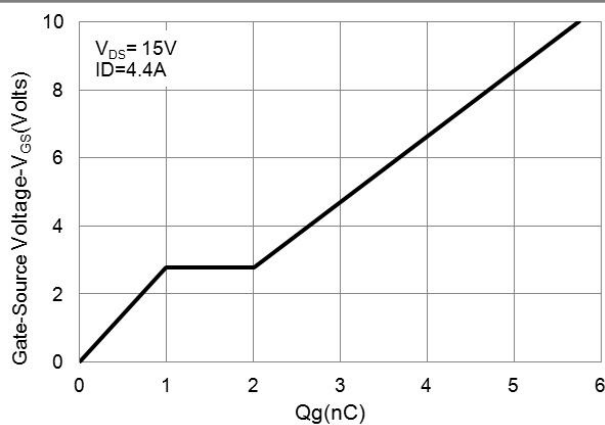


Fig.7 Gate-Charge Characteristics

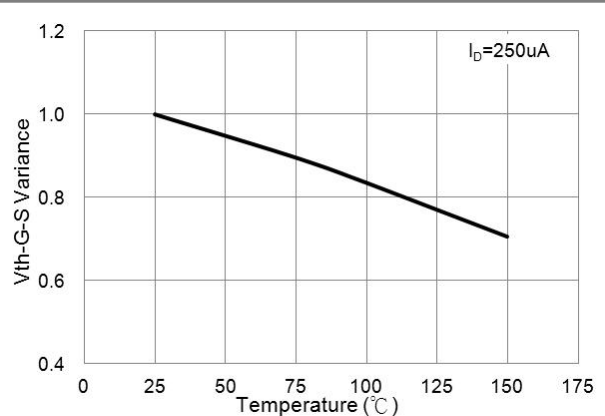


Fig.8 Threshold Voltage Variation with Temperature.

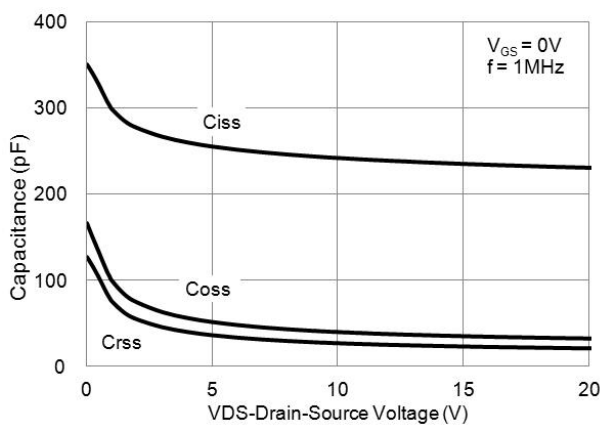


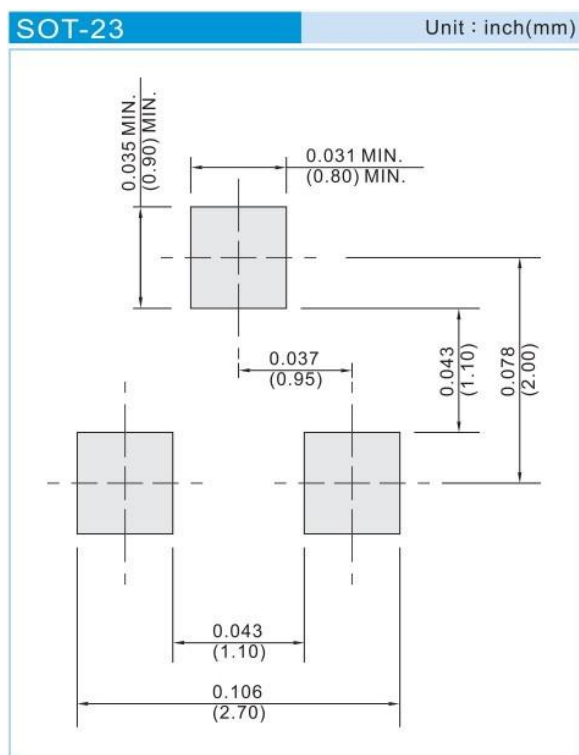
Fig.9 Capacitance vs. Drain-Source Voltage.

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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
CSM320N4S23	SOT-23	3K pcs / 7" reel		Halogen free

MOUNTING PAD LAYOUT



CSM320N4S23

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