

CSM2300S23

20V N-Channel Enhancement Mode MOSFET

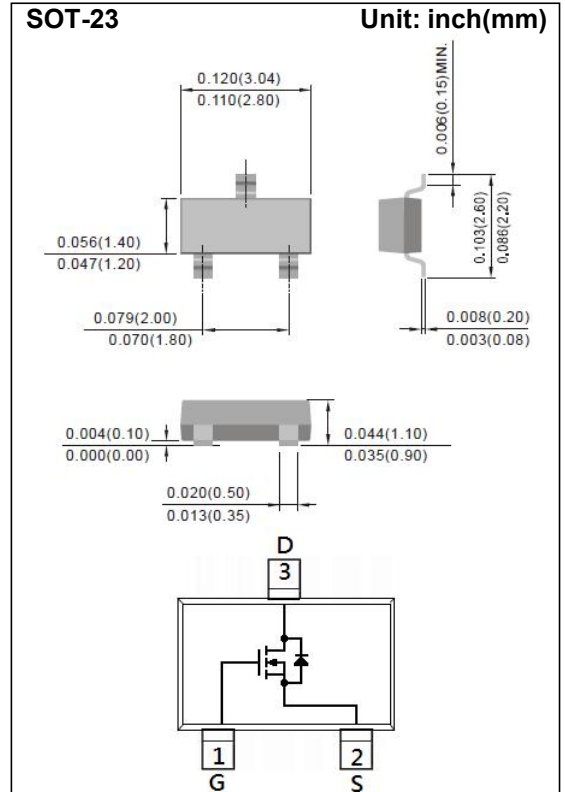
Voltage 20 V **Current** 5.5A

Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@5.5A < 23m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@3.5A < 30m\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.

Mechanical Data

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current		I_D	5.5	A
Pulsed Drain Current		I_{DM}	22	A
Power Dissipation	$T_a=25^\circ\text{C}$	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 Junction to Ambient (Note 3)		$R_{\theta JA}$	100	°C/W

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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}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.57	2.1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.6A$	-	20	23	m Ω
		$V_{GS}=4.5V, I_D=3.5A$	-	24	30	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Dynamic (Note 5)						
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=5.6A,$ $V_{GS}=10V$ (Note 1,2)	-	12.8	-	nC
Gate-Source Charge	Q_{gs}		-	1.6	-	
Gate-Drain Charge	Q_{gd}		-	2.5	-	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	602	-	pF
Output Capacitance	C_{oss}		-	90	-	
Reverse Transfer Capacitance	C_{rss}		-	67	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=5.6A,$ $V_{GS}=10V,$ $R_G=3\Omega$ (Note 1,2)	-	4.7	-	ns
Turn-On Rise Time	t_r		-	34	-	
Turn-Off Delay Time	$t_{d(off)}$		-	15	-	
Turn-Off Fall Time	t_f		-	17	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	1.5	A
Diode Forward Voltage	V_{SD}	$I_S=1.0A, V_{GS}=0V$	-	0.76	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
5. Guaranteed by design, not subject to production testing

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TYPICAL CHARACTERISTIC CURVES

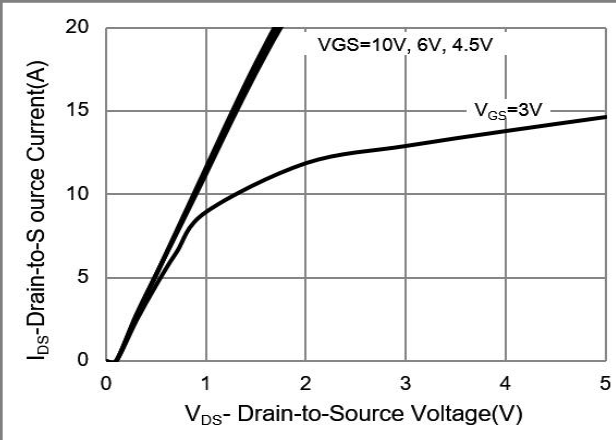


Fig.1 On-Region Characteristics

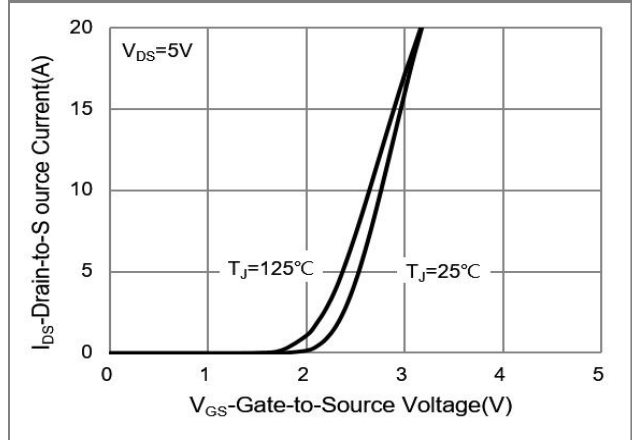


Fig.2 Transfer Characteristics

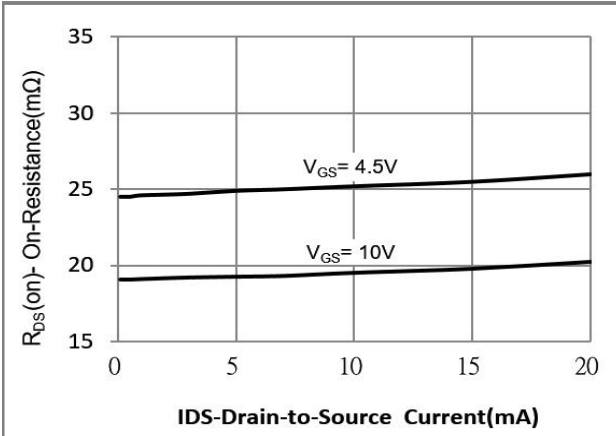


Fig.3 On-Resistance vs. Drain Current

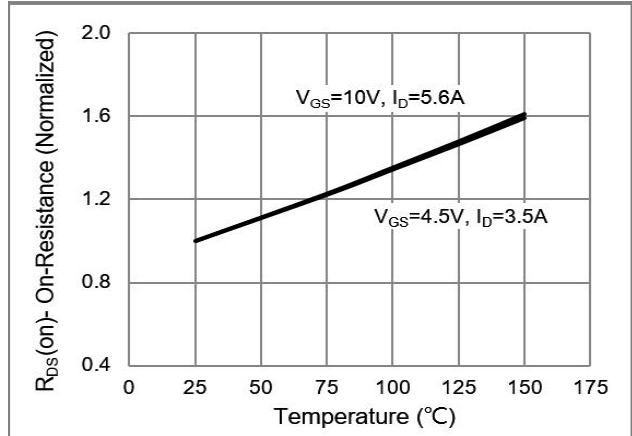


Fig.4 On-Resistance vs. Junction temperature

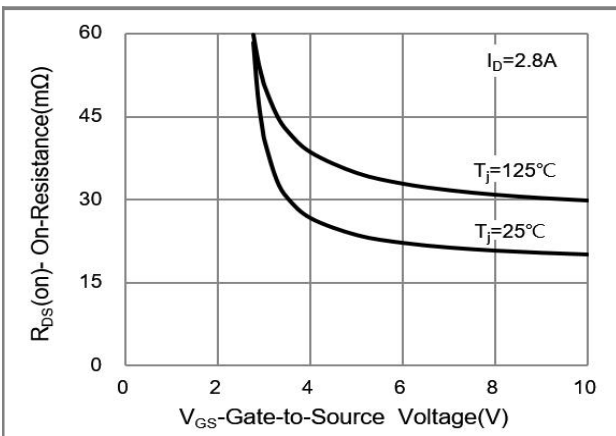


Fig.5 On-Resistance Variation with VGS.

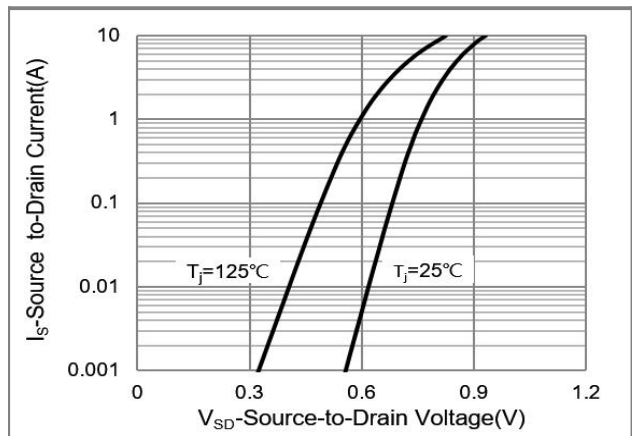


Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

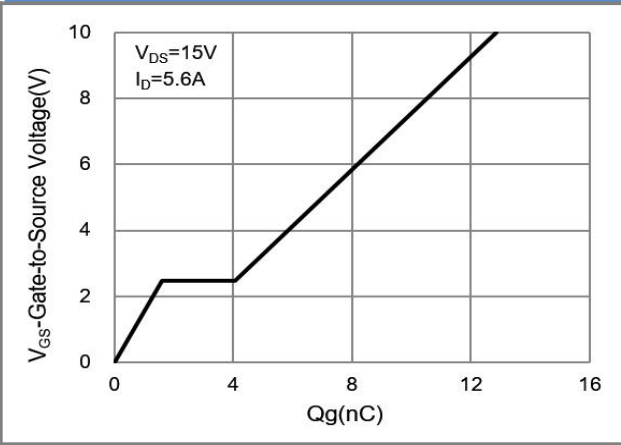


Fig.7 Gate-Charge Characteristics

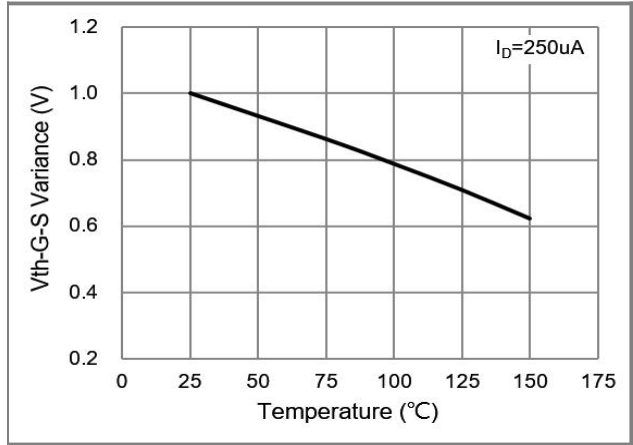


Fig.8 Threshold Voltage Variation with Temperature

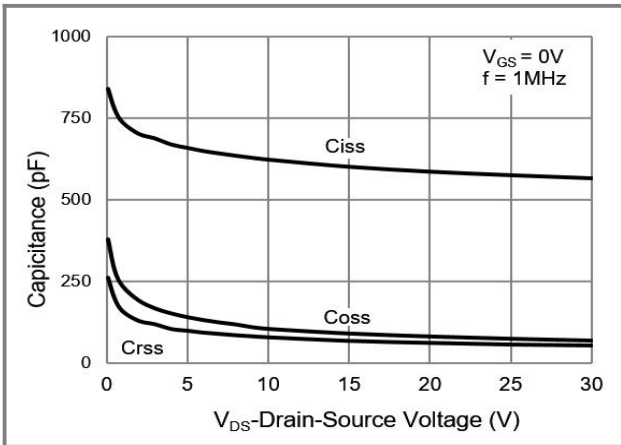


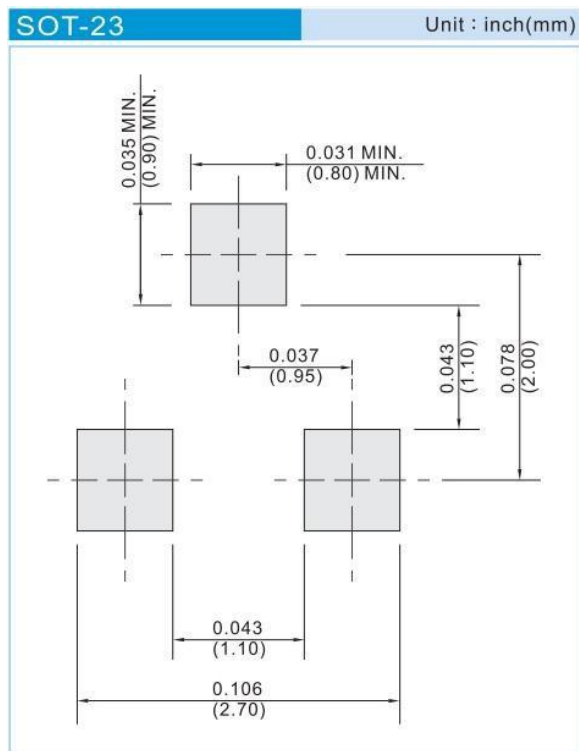
Fig.9 Capacitance vs. Drain-Source Voltage.

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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type
CSM2300S23	SOT-23	3K pcs / 7" reel

MOUNTING PAD LAYOUT



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