

CSM2302S23

20V N-Channel Enhancement Mode MOSFET

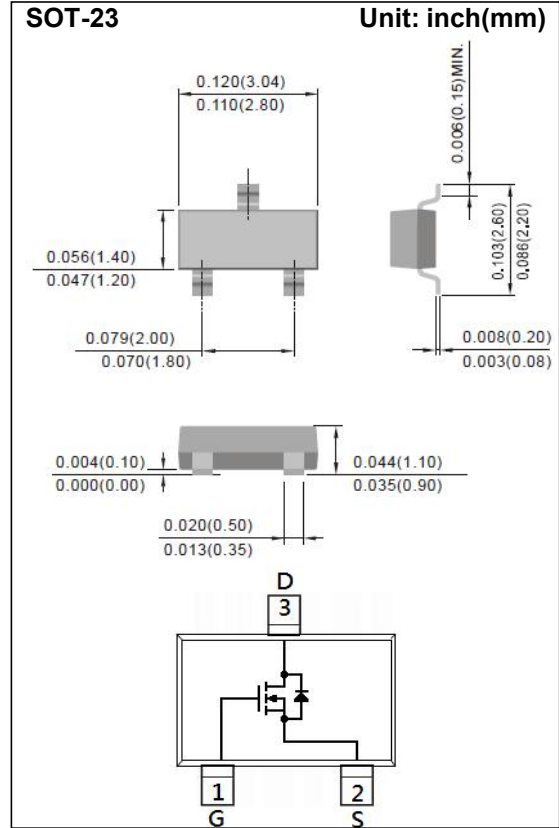
Voltage 20 V **Current** 4.0A

Features

- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@4.0A < 56m\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@2.8A < 68m\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.8V$, $I_D@1.5A < 95m\Omega$
- 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
- Approx. Weight : 0.0003 ounces, 0.0084 grams



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current		I_D	4.0	A
Pulsed Drain Current		I_{DM}	16.4	
Power Dissipation	$T_a=25^\circ C$	P_D	1.25	W
	Derate above $25^\circ C$		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

CSM2302S23

Electrical Characteristics (T_A=25°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	20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.4	0.66	1.2	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =4.0A	-	41	56	mΩ
		V _{GS} =2.5V, I _D =2.8A	-	50	68	
		V _{GS} =1.8V, I _D =1.5A	-	66	95	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =10V, I _D =4.0A, V _{GS} =4.5V (Note 1,2)	-	4.6	-	nC
Gate-Source Charge	Q _{gs}		-	0.8	-	
Gate-Drain Charge	Q _{gd}		-	1	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHZ	-	350	-	pF
Output Capacitance	C _{oss}		-	40	-	
Reverse Transfer Capacitance	C _{rss}		-	29	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, I _D =4.0A, V _{GS} =4.5V, R _G =6Ω (Note 1,2)	-	4	-	ns
Turn-On Rise Time	t _r		-	47	-	
Turn-Off Delay Time	t _{d(off)}		-	18	-	
Turn-Off Fall Time	t _f		-	10	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	1.5	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	0.75	1.2	V

NOTES :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature typical characteristics.
3. R_{θJA} 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.

CSM2302S23

TYPICAL CHARACTERISTIC CURVES

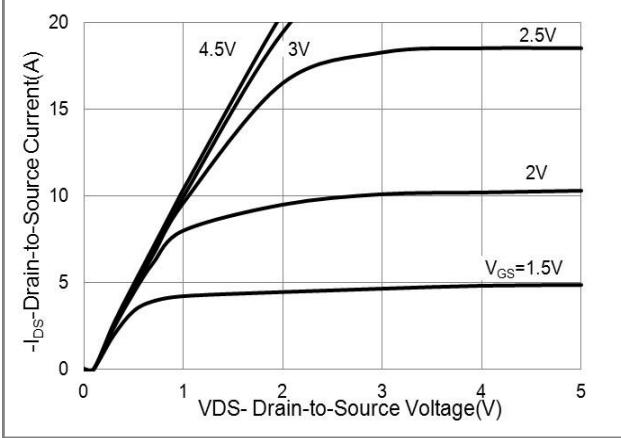


Fig.1 On-Region Characteristics

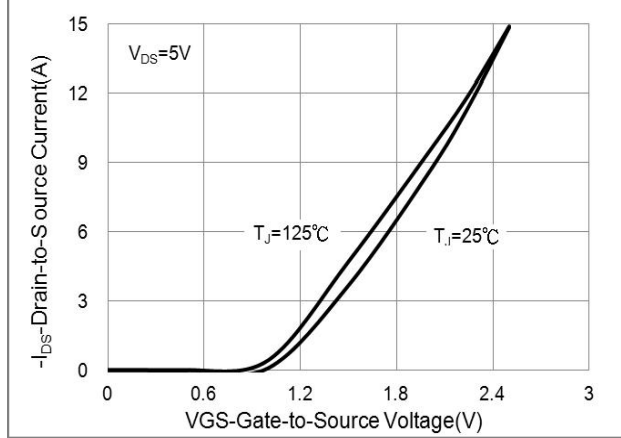


Fig.2 Transfer Characteristics

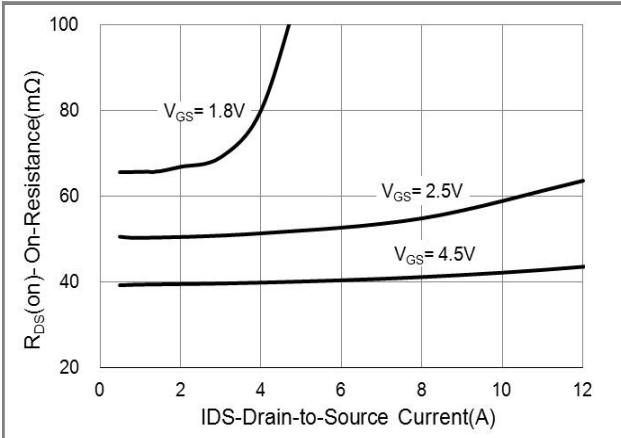


Fig.3 On-Resistance vs. Drain Current

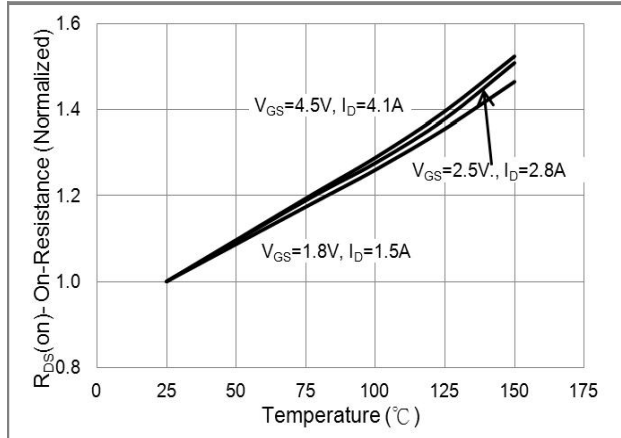


Fig.4 On-Resistance vs. Junction temperature

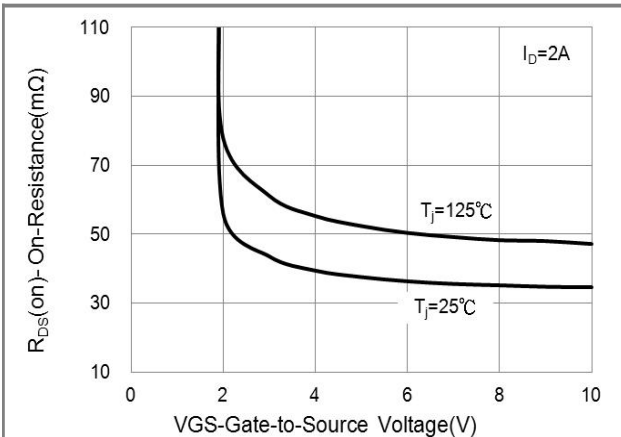


Fig.5 On-Resistance Variation with V_{GS}

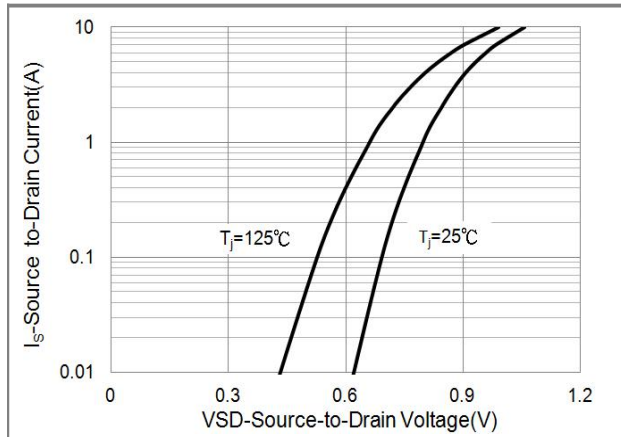


Fig.6 Body Diode Characteristics

CSM2302S23

TYPICAL CHARACTERISTIC CURVES

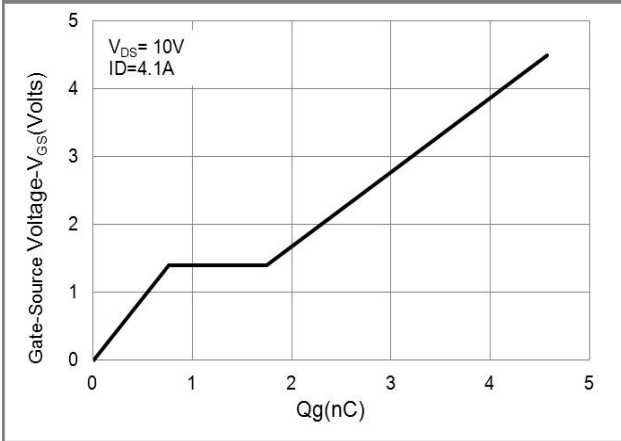


Fig.7 Gate-Charge Characteristics

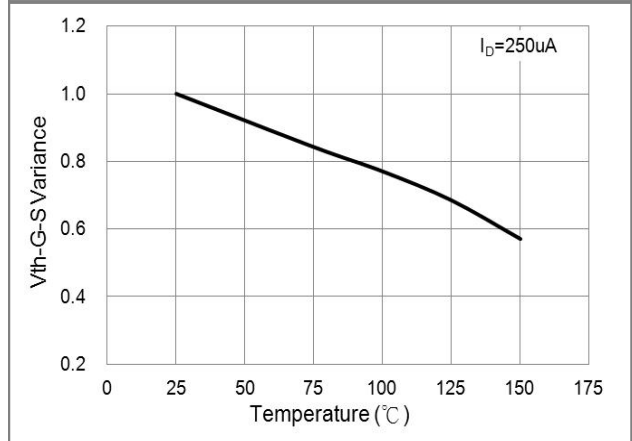


Fig.8 Threshold Voltage Variation with Temperature

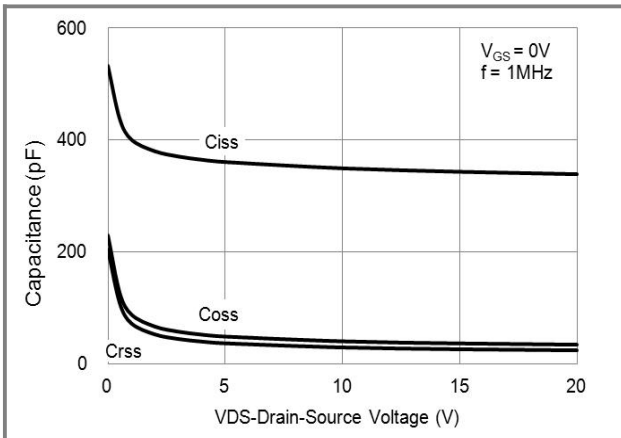


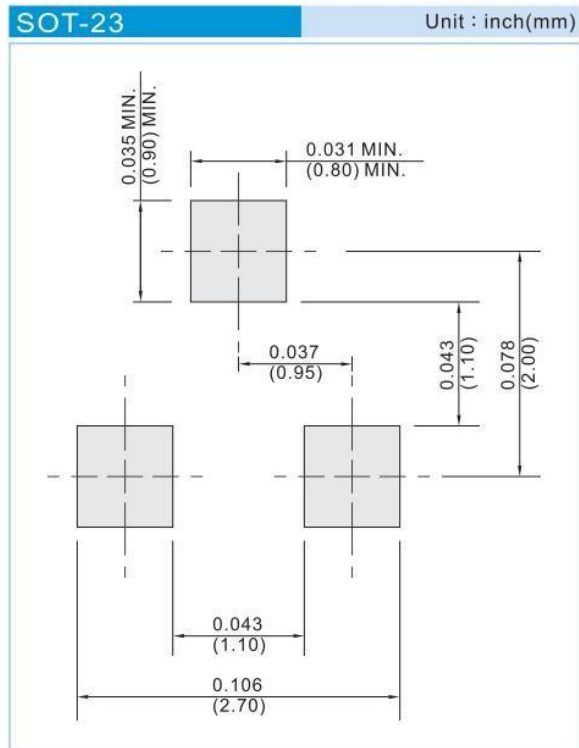
Fig.9 Capacitance vs. Drain-Source Voltage

CSM2302S23

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
CSM2302S23	SOT-23	3K pcs / 7" reel		Halogen free

Mounting Pad Layout



CSM2302S23

Notice

Specifications of the products displayed herein are subject to change without notice. CCS or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in CCS terms and conditions of sale for such products, CCS assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of CCS products including liability or warranties relating to fitness for a particular purpose, merchant ability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications.

Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CCS for any damages resulting from such improper use or sale.