

CSM2316S23

20V N-Channel Enhancement Mode MOSFET

Voltage

20 V

Current

8 A

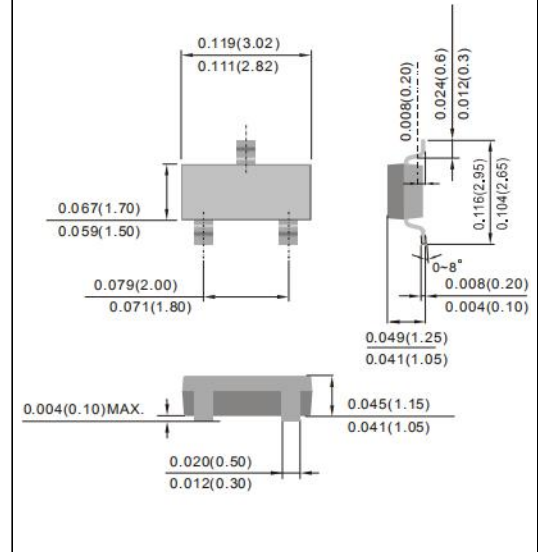
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@8A < 11m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@6A < 15m\Omega$
- Advanced Trench Process Technology
- High density cell design for ultralow on-resistance

Mechanical Data

- Case: SOT23L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0004ounces, 0.0085 grams

SOT-23L



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	8	A
	$T_C=100^\circ\text{C}$		6	
Pulsed Drain Current ^(Note 1)	$T_C=25^\circ\text{C}$	I_{DM}	16	
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	1.5	W
	Derate above 25°C		12	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal Resistance ^(Note 4,5)				$^\circ\text{C/W}$
	Junction to Ambient	$R_{\theta JA}$	80	

Limited only By Maximum Junction Temperature

CSM2316S23

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	1.0	1.75	2.5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A	-	8.5	11	mΩ
		V _{GS} =4.5V, I _D =6A	-	11.5	15	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1.0	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q _g	V _{DS} =20V, I _D =10A, V _{GS} =4.5V (Note 2,3)	-	10	-	nC
Gate-Source Charge	Q _{gs}		-	3.5	-	
Gate-Drain Charge	Q _{gd}		-	3.6	-	
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1.0MHZ	-	1040	-	pF
Output Capacitance	C _{oss}		-	117	-	
Reverse Transfer Capacitance	C _{rss}		-	84	-	
Turn-On Delay Time	t _{d(on)}	V _{DS} =20V, I _D =1A, V _{GS} =10V, R _G =6Ω (Note 2,3)	-	9.4	-	ns
Turn-On Rise Time	t _r		-	19	-	
Turn-Off Delay Time	t _{d(off)}		-	66	-	
Turn-Off Fall Time	t _f		-	67	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	42	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	0.7	1	V

NOTES:

1. Pulse width ≤ 300us, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.
4. The maximum current rating is package limited.
5. 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 inch² with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

CSM2316S23

TYPICAL CHARACTERISTIC CURVES

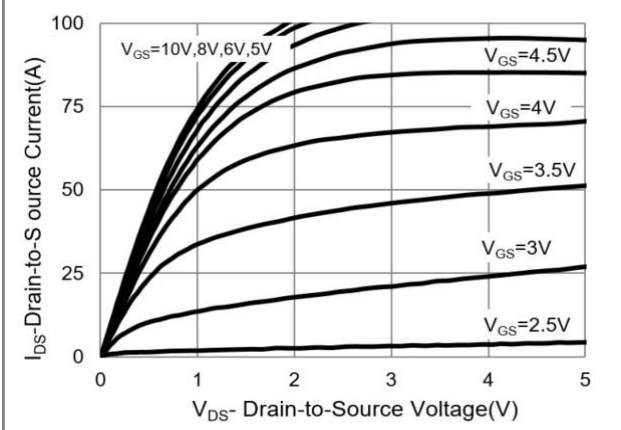


Fig.1 On-Region Characteristics

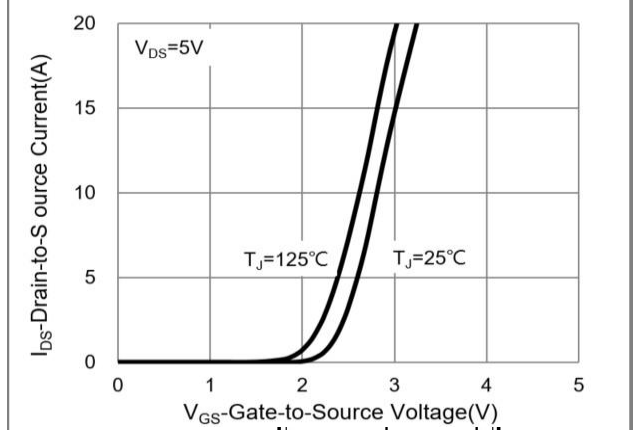


Fig.2 Transfer Characteristics

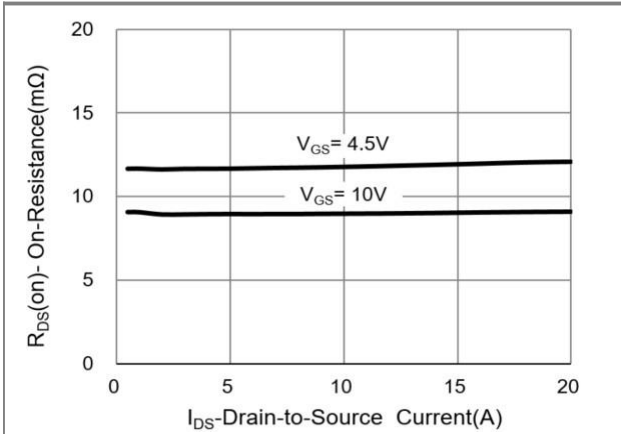


Fig.3 On-Resistance vs. Drain Current

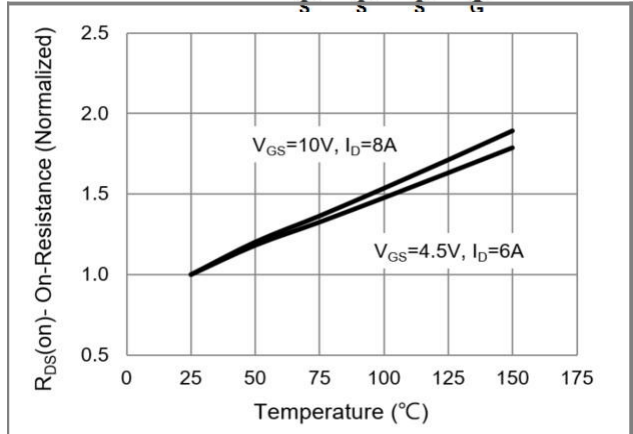


Fig.4 On-Resistance vs. Junction temperature

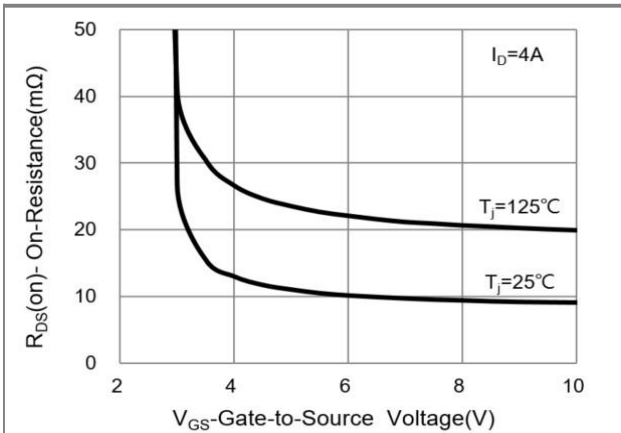


Fig.5 On-Resistance Variation with V_{GS}

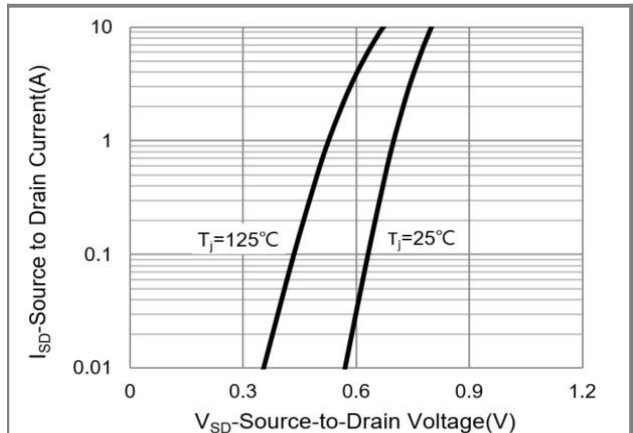
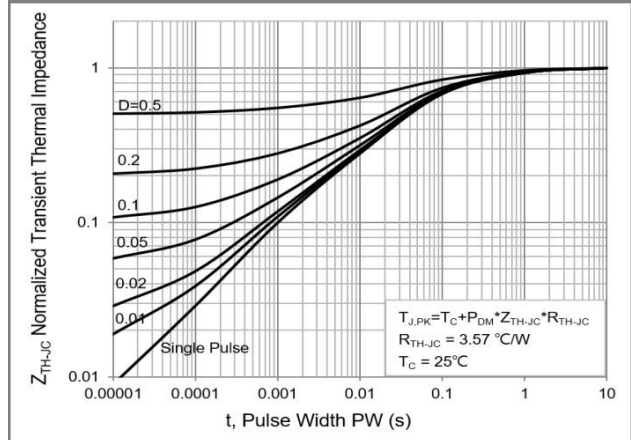
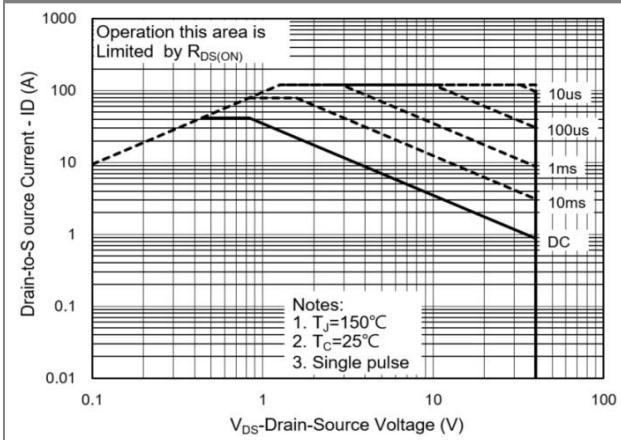
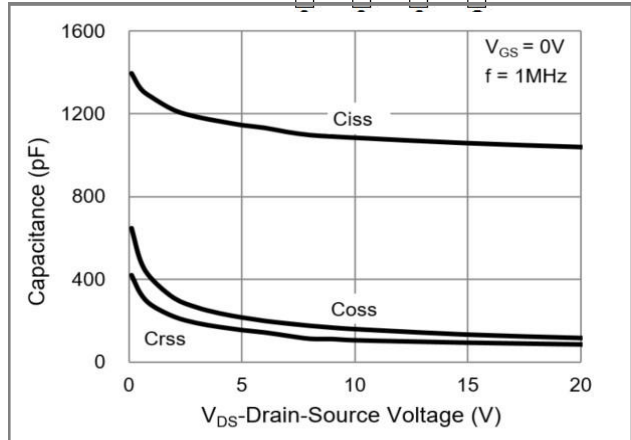
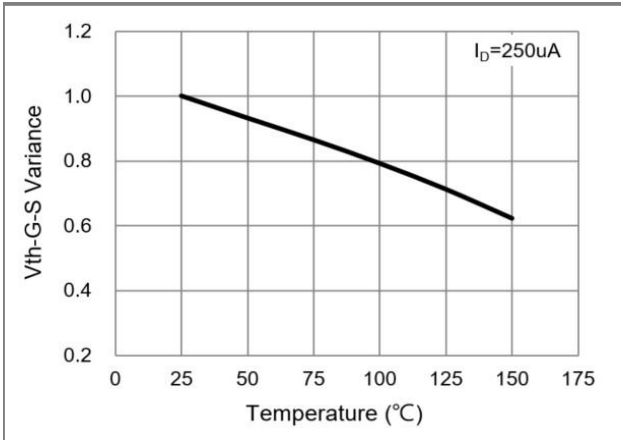
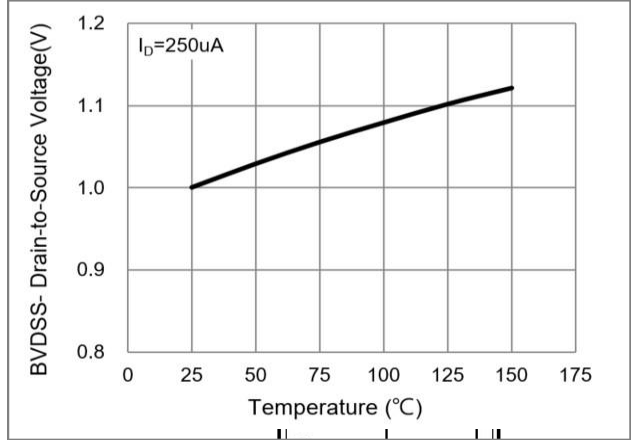
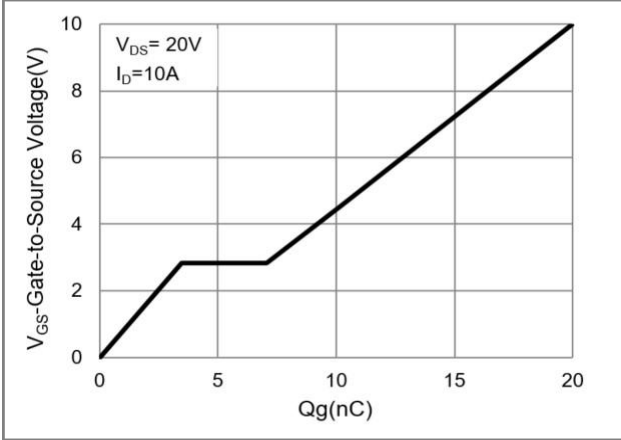


Fig.6 Source-Drain Diode Forward Voltage

CSM2316S23

TYPICAL CHARACTERISTIC CURVES

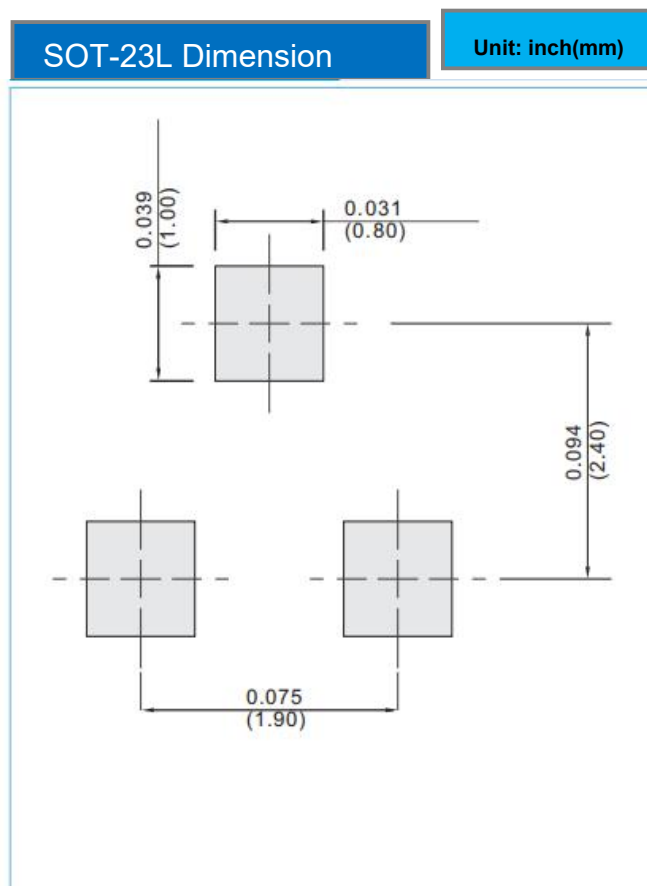


CSM2316S23

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type
CSM2316S23	SOT-23L	3K pcs / 13" reel

Packaging Information & Mounting Pad Layout



CSM2316S23

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