

CSM3416S23

20V N-Channel Enhancement Mode MOSFET – ESD Protected

Voltage

20 V

Current

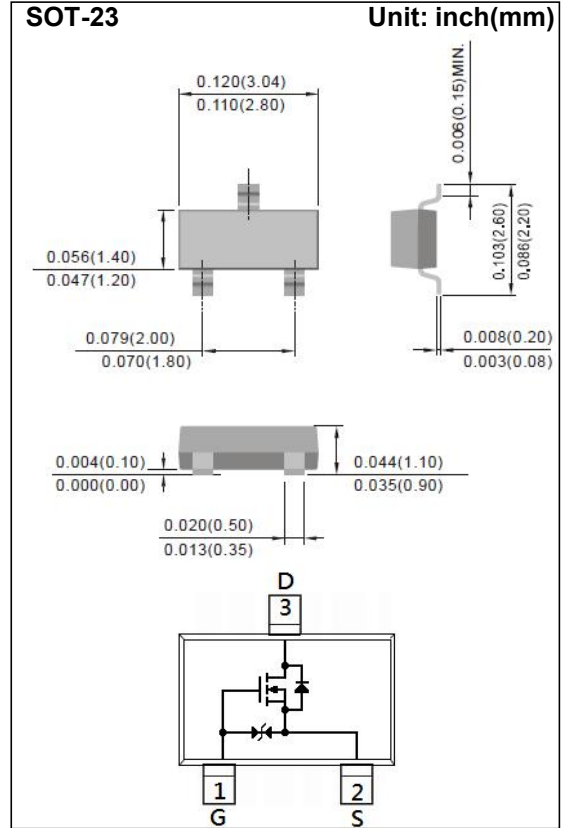
6.0A

Features

- RDS(ON) , VGS@4.5V, ID@6.0A<25mΩ
- RDS(ON) , VGS@2.5V, ID@5.2A<28mΩ
- RDS(ON) , VGS@1.8V, ID@4.5A<34mΩ
- Advanced Trench Process Technology
- ESD Protected 2KV HBM
- 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°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	6.0	A
Pulsed Drain Current (Note 4)	I _{DM}	32	A
Power Dissipation	P _D	T _a =25°C	1.25
		Derate above 25°C	10
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55~150	°C
Typical Thermal resistance Junction to Ambient (Note 3)	R _{θJA}	100	°C/W

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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	0.58	1.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =6.0A	-	18.4	25	mΩ
		V _{GS} =2.5V, I _D =5.2A	-	21.5	28	
		V _{GS} =1.8V, I _D =4.5A	-	26.4	34	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	-	-	±10	uA
Dynamic						
Total Gate Charge	Q _g	V _{DS} =10V, I _D =6.0A, V _{GS} =4.5V (Note 1,2)	-	8.6	-	nC
Gate-Source Charge	Q _{gs}		-	1.06	-	
Gate-Drain Charge	Q _{gd}		-	1.04	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1.0MHZ	-	836	-	pF
Output Capacitance	C _{oss}		-	96	-	
Reverse Transfer Capacitance	C _{rss}		-	80	-	
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, I _D =1A, V _{GS} =4.5V, R _G =3Ω (Note 1,2)	-	24	-	ns
Turn-On Rise Time	t _r		-	46	-	
Turn-Off Delay Time	t _{d(off)}		-	0.22	-	us
Turn-Off Fall Time	t _f		-	0.30	-	
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	-	0.74	1.0	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.

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TYPICAL CHARACTERISTIC CURVES

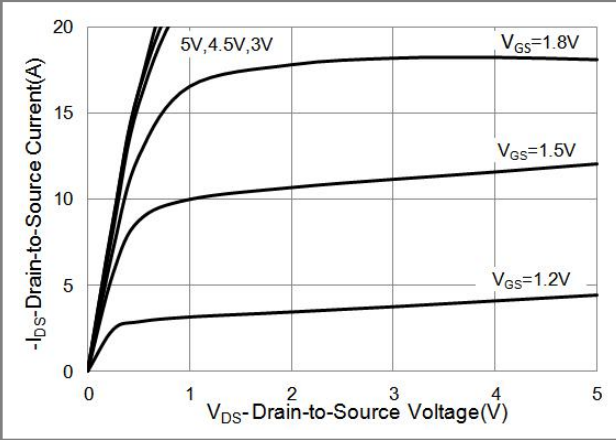


Fig.1 On-Region Characteristics

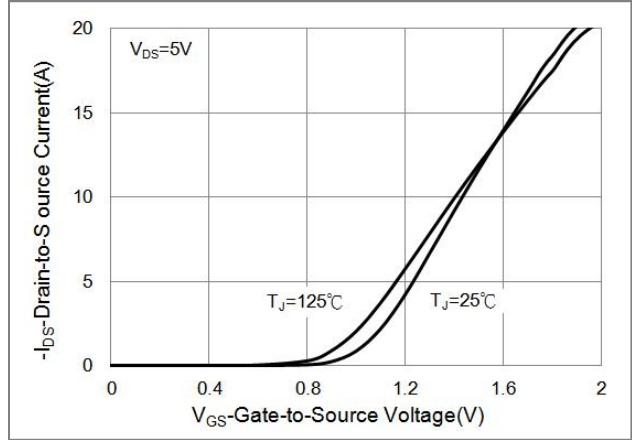


Fig.2 Transfer Characteristics

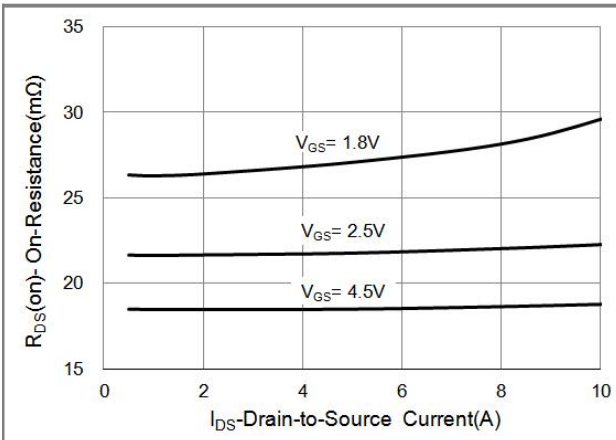


Fig.3 On-Resistance vs. Drain Current

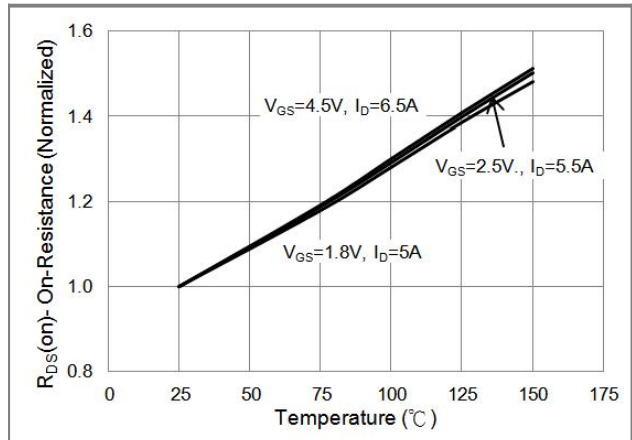


Fig.4 On-Resistance vs. Junction temperature

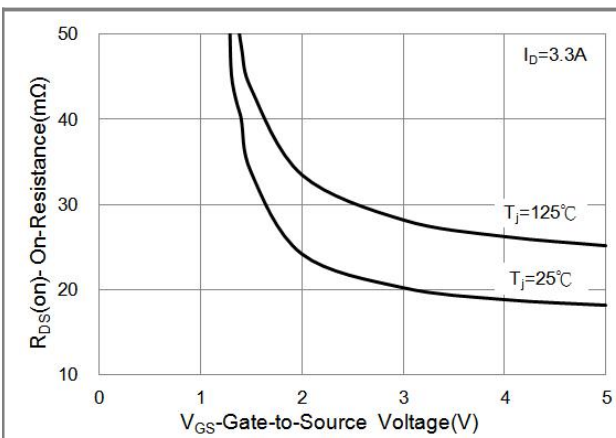


Fig.5 On-Resistance Variation with VGS.

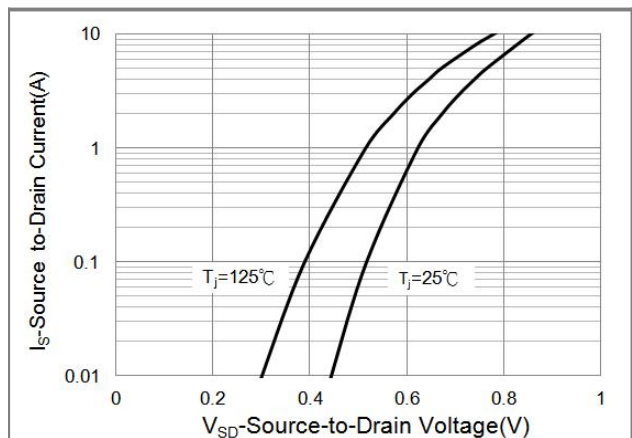


Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

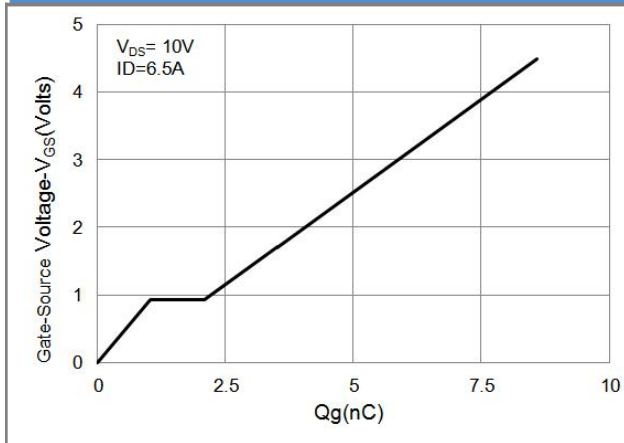


Fig.7 Gate-Charge Characteristics

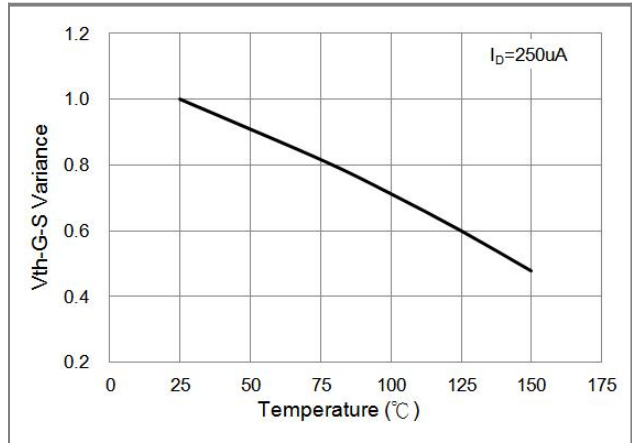


Fig.8 Threshold Voltage Variation with Temperature.

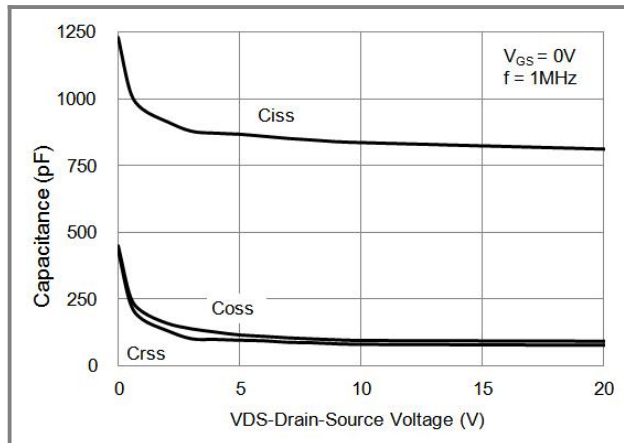


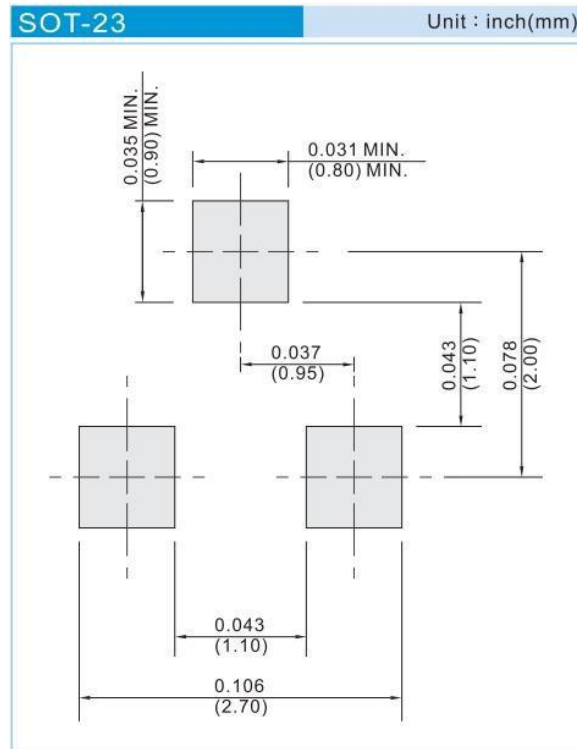
Fig.9 Capacitance vs. Drain-Source Voltage.

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PART NO PACKING CODE VERSION

PART NO PACKING CODE	Package Type	Packing type
CSM3416S23	SOT-23	3K pcs / 7" reel

MOUNTING PAD LAYOUT



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