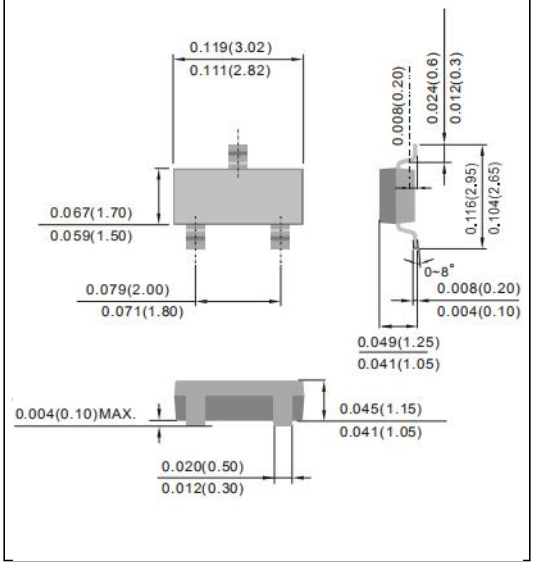
CAN CIRCLE SEMI

CSM1020N5S23L

100V N-Channel MOSFET

Voltage	100 V	Current	5 A

SOT-23L



Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@4.5A<152mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V,I_D@3.0A<160mΩ
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance

Mechanical Data

- Case: SOT-23L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0104 ounces, 0.297grams

Maximum Ratings and Thermal Characteristics (T_A=25 C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	TC=25oC	ID	5	A
Pulsed Drain Current (Note 1)	T_C=25°C	IDM	10	
Power Dissipation	TC=25°C	PD	31	W
Continuous Drain Current	TA=25oC	ID	2.4	A
Power Dissipation	TA=25oC	PD	2.0	W
Single Pulse Avalanche Energy (Note 6)		E_{AS}	1.8	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
	Junction to Ambient	$R_{\theta JA}$	100	

- Limited only By Maximum Junction Temperature

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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	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0	1.72	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=4.5A	-	130	152	mΩ
		V_{GS}=4.5V,I_D=3A	-	135	160	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Dynamic (Note 4)						
Total Gate Charge	Q_g	V_{DS}=60V, I_D=5A, V_{GS}=10V (Note 2,3)	-	19	-	nC
Gate-Source Charge	Q_{gs}		-	2.9	-	
Gate-Drain Charge	Q_{gd}		-	3.2	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	1021	-	pF
Output Capacitance	Coss		-	38	-	
Reverse Transfer Capacitance	Crss		-	17	-	
Turn-On Delay Time	$td_{(on)}$	V_{DS}=50V,RL=5.6Ω, V_{GS}=10V, R_G=6Ω (Note 2,3)	-	6.1	-	ns
Turn-On Rise Time	t_r		-	27	-	
Turn-Off Delay Time	$td_{(off)}$		-	28	-	
Turn-Off Fall Time	t_f		-	11	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	9	A
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V	-	0.74	1.2	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 TJ(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial TJ =25°C.
4. The maximum current rating is package limited
5. $R_{\Theta JA}$ 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 $inch^2$ with 2oz.square pad of copper.
6. The test condition is L=0.1mH, I_{AS}=6A, V_{DD}=25V, V_{GS}=10V
7. Guaranteed by design, not subject to production testing

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TYPICAL CHARACTERISTIC CURVES

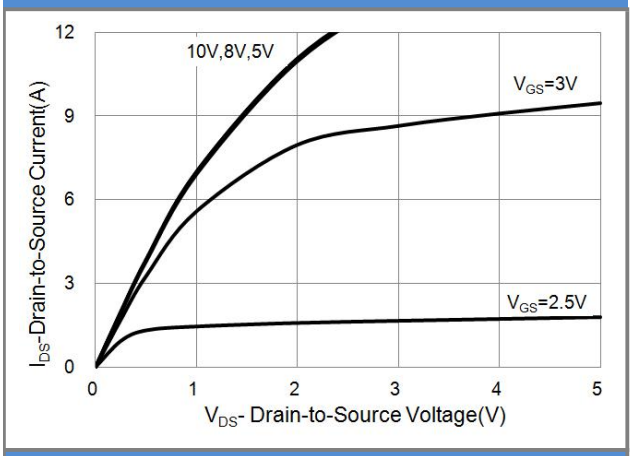

Fig.1 On-Region Characteristics

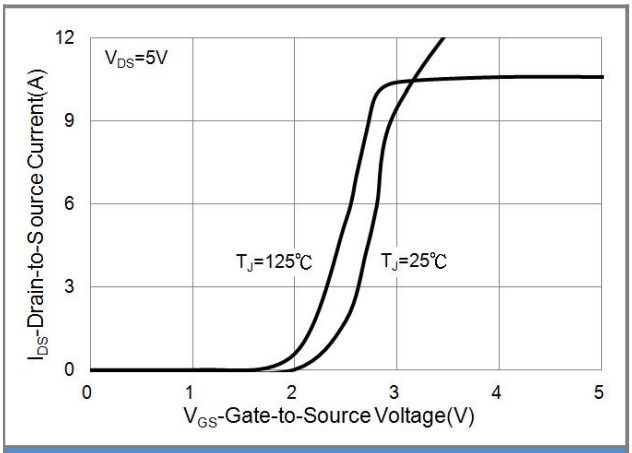

Fig.2 Transfer Characteristics

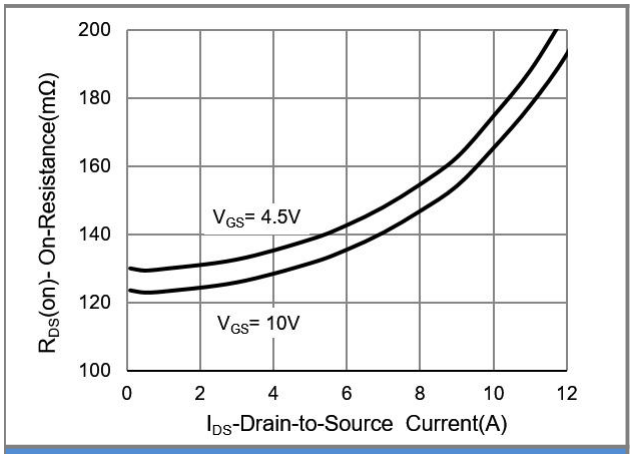

Fig.3 On-Resistance vs. Drain Current

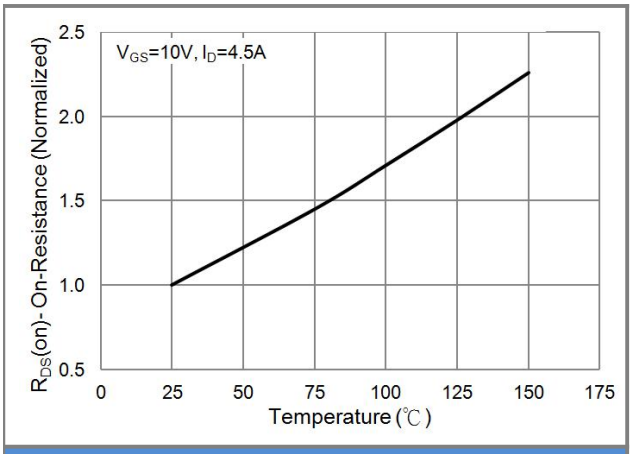

Fig.4 On-Resistance vs. Junction temperature

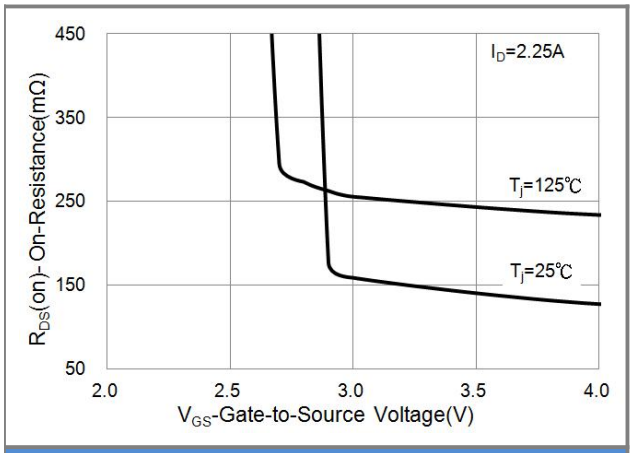

Fig.5 On-Resistance Variation with VGS.

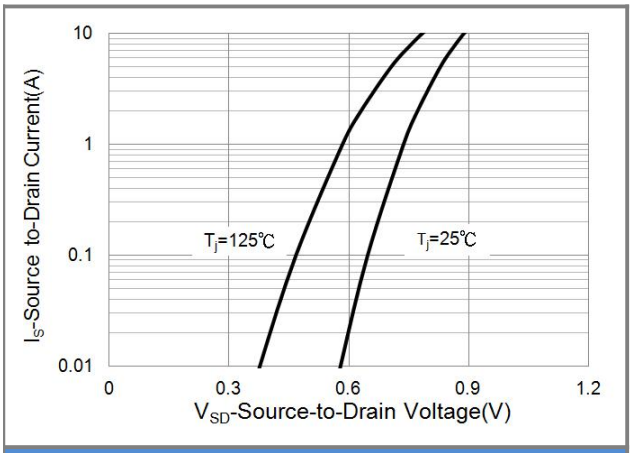

Fig.6 Body Diode Characteristics

CSM1020N5S23L

TYPICAL CHARACTERISTIC CURVES

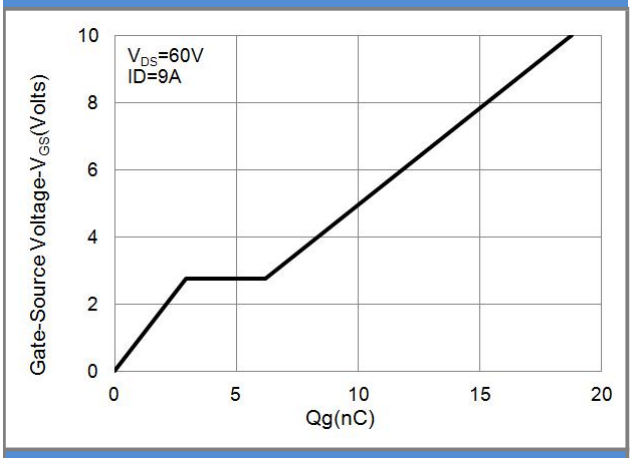

Fig.7 Gate-Charge Characteristics

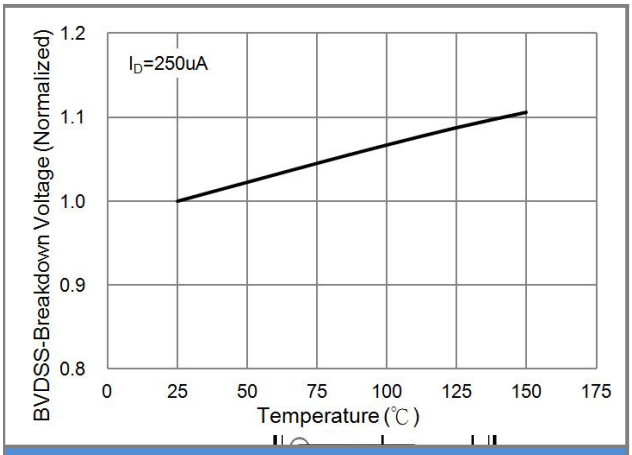

Fig.8 Breakdown Voltage Variation vs. Temperature

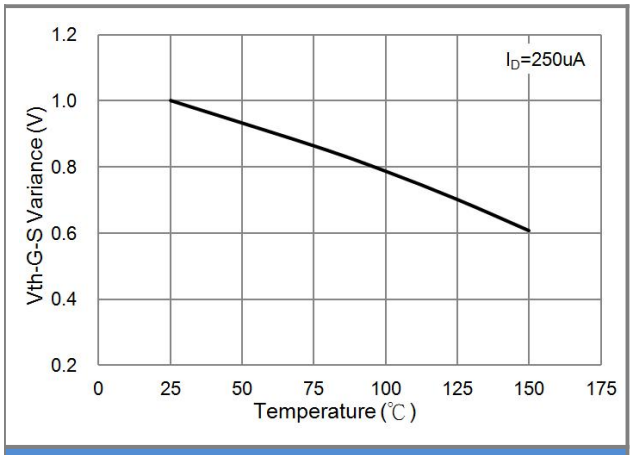

Fig.9 Threshold Voltage Variation with Temperature

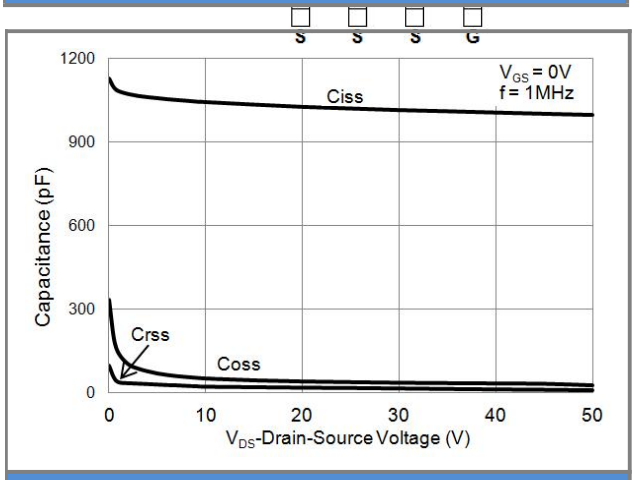

Fig.10 Capacitance vs. Drain-Source Voltage

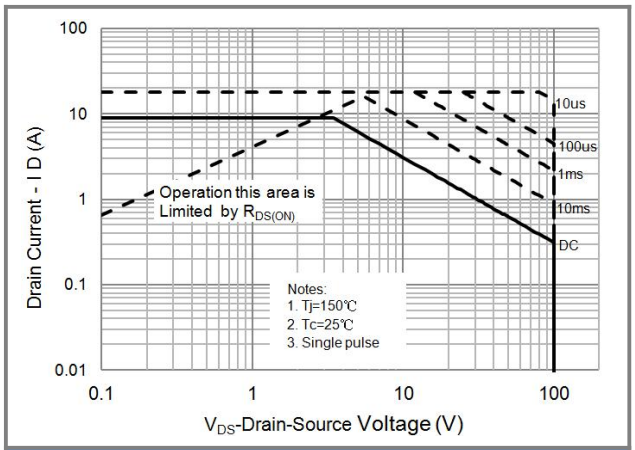

Fig.11 Maximum Safe Operating Area

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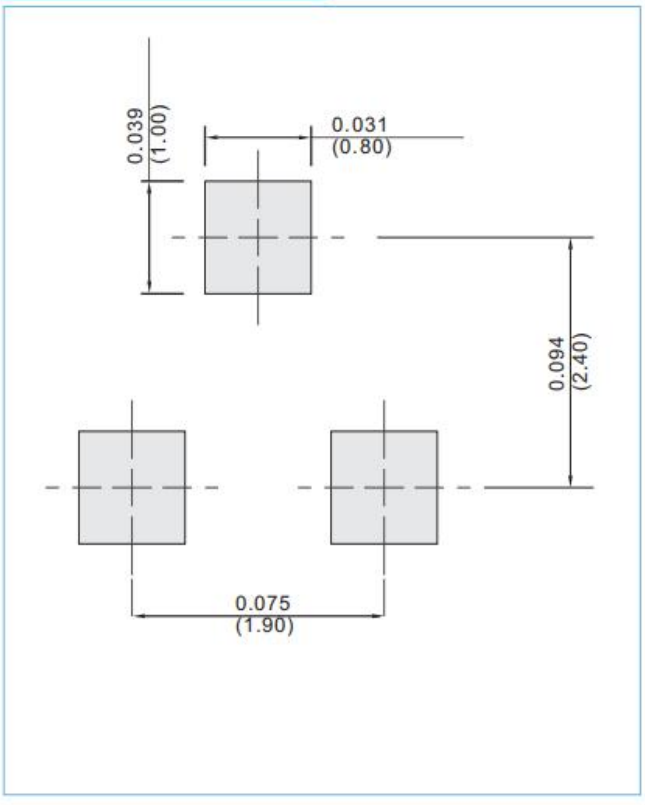
PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type
CSM1020N5S23L	SOT-23L	3,000pcs / 13” reel

MOUNTING PAD LAYOUT

SOT-23L Unit: inch(mm)



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