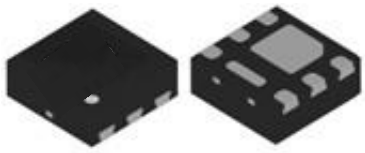
CAN CIRCLE SEMI

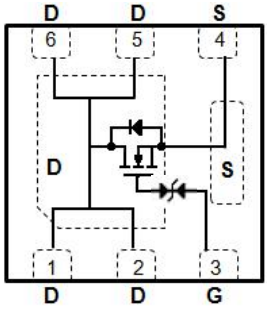
CSM212N8D2-2

20V N-Channel Enhancement Mode MOSFET

Voltage	20 V	Current	8A

DFN2020B-6L





Features

- $R_{DS(ON)}$, V_{GS}@10V, I_D@10A<11.5mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V, I_D@6A<15mΩ
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- ESD Protected 2KV HBM

Mechanical Data

- Case : DFN2020B-6L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0003 ounces, 0.0086 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	
Continuous Drain Current (Note 4)		I_D	8	A
Pulsed Drain Current (Note 1)		I_{DM}	32	
Power Dissipation	T_A=25°C	P_D	2	W
	Derate above 25°C		16	mW/ °C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance - Junction to Ambient (Note 4,5)		$R_{\theta JA}$	62.5	°C/W

CAN CIRCLE SEMI

CSM212N8D2-2

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	1.7	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	-	7.5	11.5	mΩ
		V_{GS}=4.5V, I_D=6A	-	11	15	
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 6)						
Total Gate Charge	Q_g	V_{DS}=15V, I_D=10A, V_{GS}=4.5V (Note 2,3)	-	6.9	-	nC
Gate-Source Charge	Q_{gs}		-	2.7	-	
Gate-Drain Charge	Q_{gd}		-	1.8	-	
Input Capacitance	Ciss	V_{DS}=20V, V_{GS}=0V, f=1MHZ	-	781	-	pF
Output Capacitance	Coss		-	158	-	
Reverse Transfer Capacitance	Crss		-	92	-	
Turn-On Delay Time	$td_{(on)}$	V_{DS}=15V, I_D=10A, V_{GS}=10V, R_G=6Ω (Note 2,3)	-	5.4	-	ns
Turn-On Rise Time	tr		-	86	-	
Turn-Off Delay Time	$td_{(off)}$		-	20	-	
Turn-Off Fall Time	tf		-	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	-	0.73	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. $R_{\Theta JA}$ 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. Guaranteed by design, not subject to production testing.

CSM212N8D2-2

TYPICAL CHARACTERISTIC CURVES

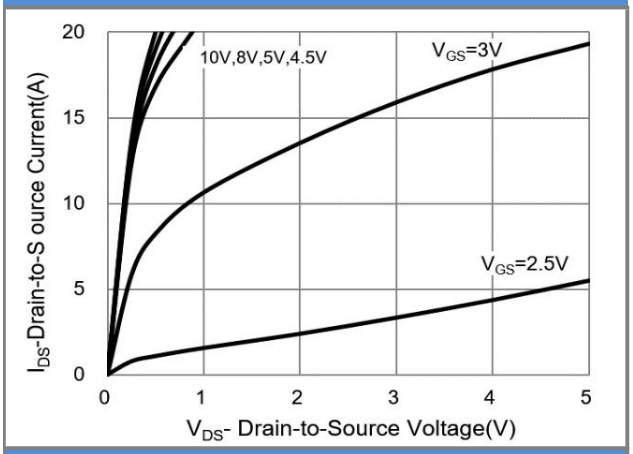


Fig.1 On-Region Characteristics

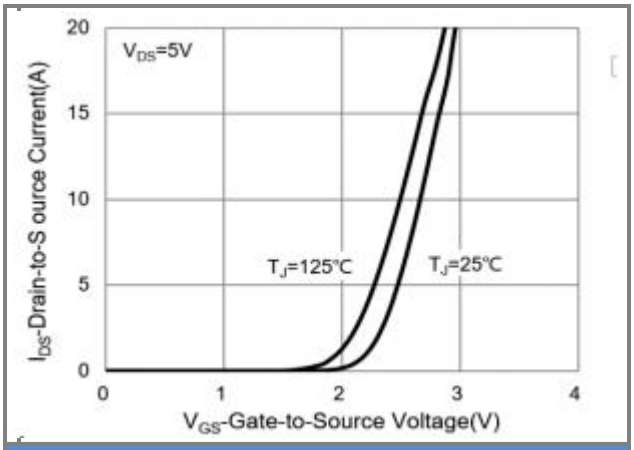


Fig.2 Transfer Characteristics

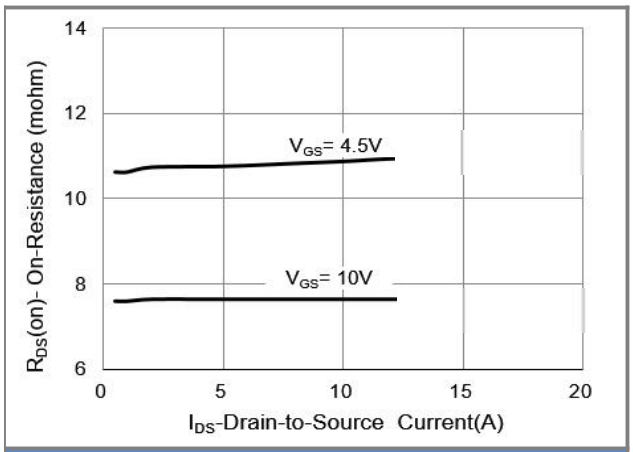


Fig.3 On-Resistance vs. Drain Current

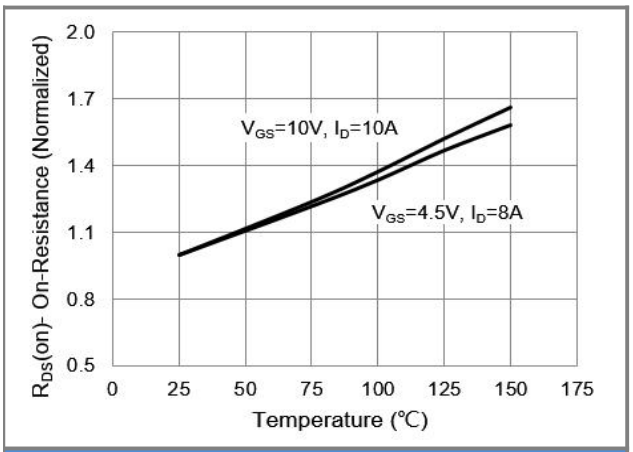


Fig.4 On-Resistance vs. Junction temperature

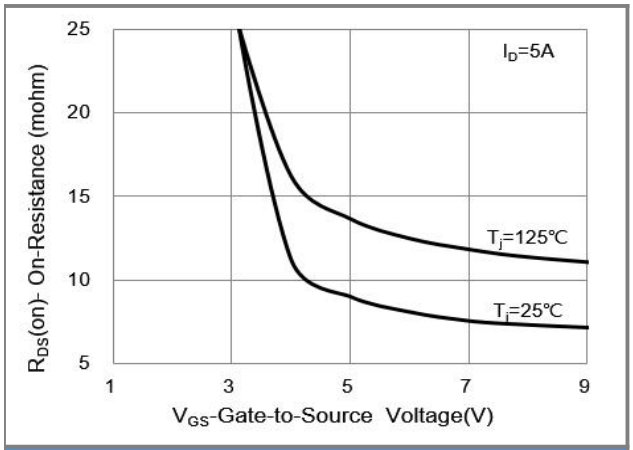


Fig.5 On-Resistance Variation with V_{GS}

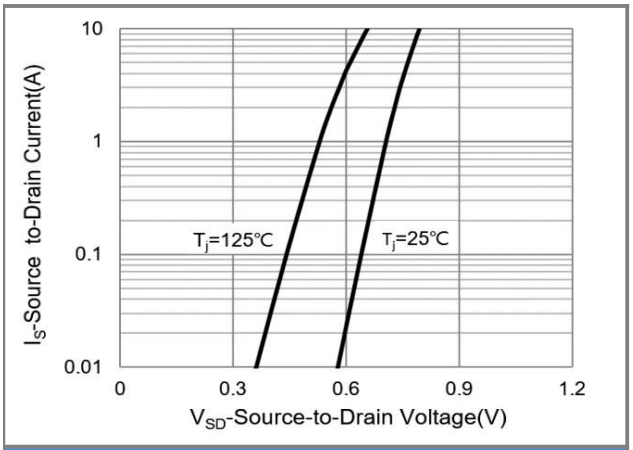


Fig.6 Body Diode Characteristics

TYPICAL CHARACTERISTIC CURVES

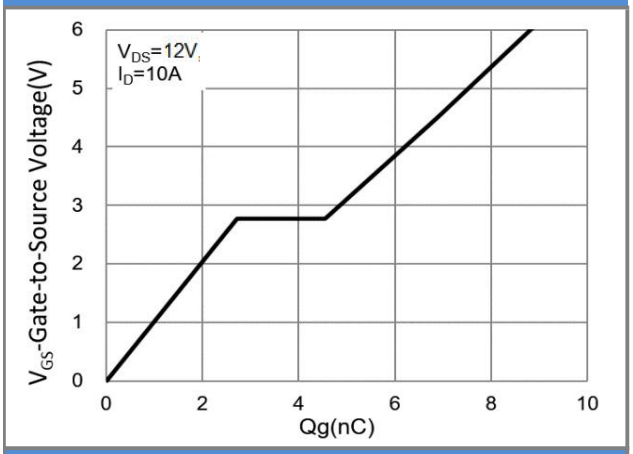


Fig.7 Gate-Charge Characteristics

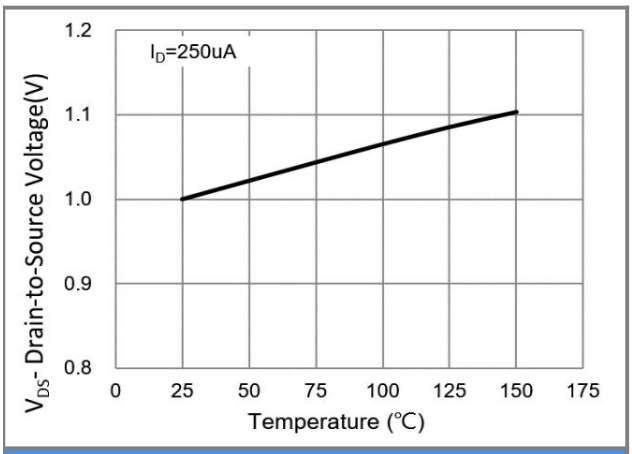


Fig.8 Breakdown Voltage Variation vs. Temperature

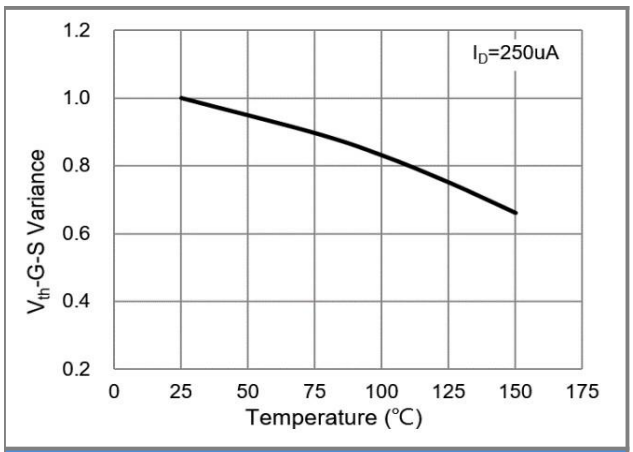


Fig.9 Threshold Voltage Variation with Temperature

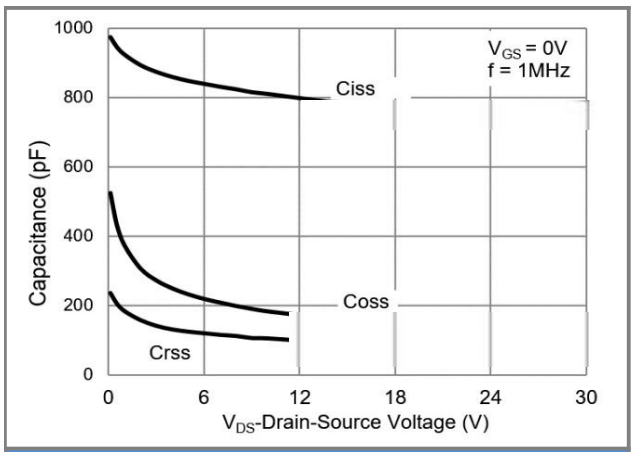


Fig.10 Capacitance vs. Drain-Source Voltage

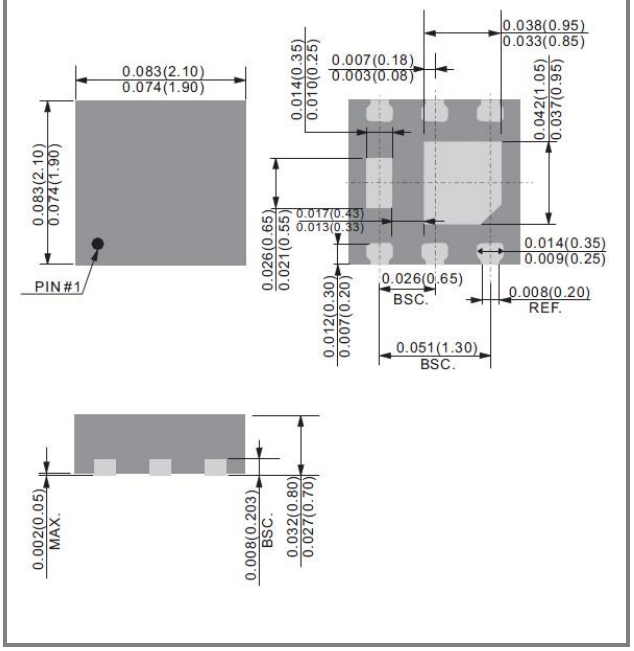
CSM212N8D2-2

Part No Packing Code Version

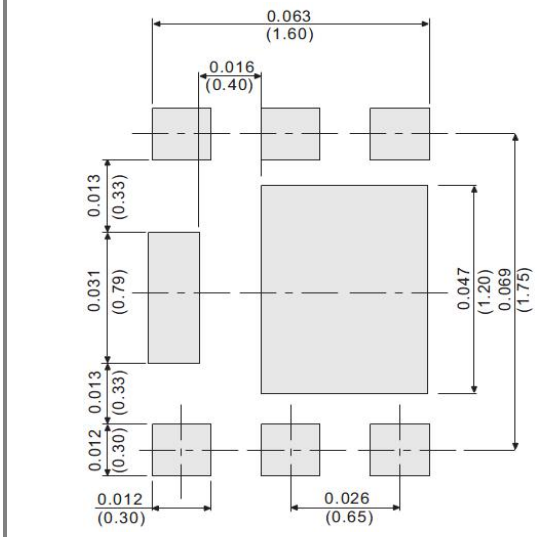
Part No Packing Code	Package Type	Packing Type
CSM212N8D2-2	DFN2020B-6L	3K pcs / 7” reel

Packaging Information & Mounting Pad Layout

DFN2020B-6L Dimension **Unit: inch(mm)**



DFN2020B-6L Pad Layout **Unit: inch(mm)**



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 lice nse, express or implied, to any intellectual property rights is granted by this document. E xcept 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 a nd/or use of CCS products including liability or warranties relating to fitness for a particul ar 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 ow n risk and agree to fully indemnify CCS for any damages resulting from such improper use or sale.