

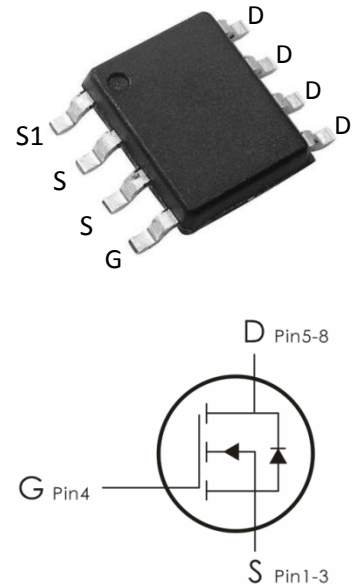
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=30V, I_D=12A, R_{DS(on)} < 8\text{ m}\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ\text{C}$	12	A
	Continuous Drain Current- $T_A=70^\circ\text{C}$	9	
	Pulsed Drain Current ¹	50	
P_D	Power Dissipation	2.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ²	50	$^\circ\text{C}/\text{W}$

Package Marking and Ordering Information:

Part NO.	Marking	Package
SC008NG	C008N	SOP-8

Electrical Characteristics: ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _{DS} =250 μ A	30	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V , V _{GS} =0V	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V,V _{DS} =0V	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	1.5	2.5	V
R _{DS(ON)}	Static Drain-Source On Resistance	V _{GS} =10V,I _D =12A	---	7	8	m Ω
		V _{GS} =4.5V,I _D =8A	---	11	15	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	1010	---	pF
C _{OSS}	Output Capacitance		---	198	---	
C _{rss}	Reverse Transfer Capacitance		---	161	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V, I _D =2A R _{GEN} =3 Ω ,V _{GS} =10V	---	7	---	ns
t _r	Rise Time		---	20	---	ns
t _{d(off)}	Turn-Off Delay Time		---	24	---	ns
t _f	Fall Time		---	24	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =20V, I _D =20A	---	22	---	nC
Q _{gs}	Gate-Source Charge		---	3.9	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	7	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V,I _S =12A	---	0.85	1.2	V
I _S	Continuous Diode forward current		---	---	12	A
T _{rr}	Body Diode Reverse Recovery Time	I _F =15A	---	5	---	nS
Q _{rr}	Body Diode Reverse Recovery Charge	di/dt=100A/ μ s	---	0.2	---	nC

Notes:

1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. $R_{\theta JA}$ is the sum of the junction-to-Lead and Lead-to-ambient thermal resistance, where the Lead thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JL}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

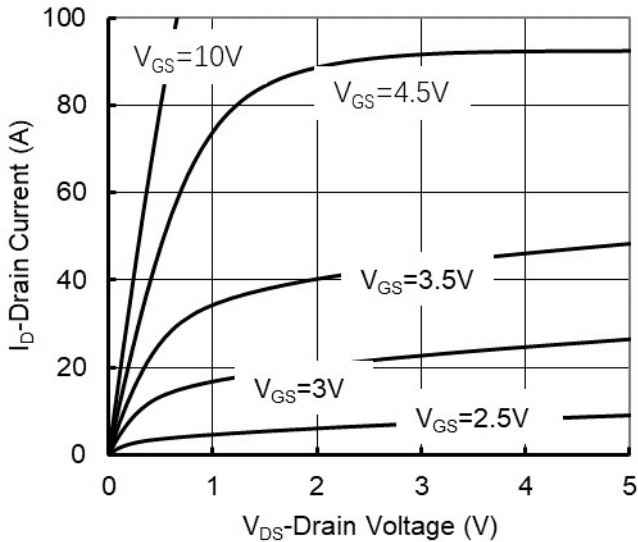


Figure1. Output Characteristics

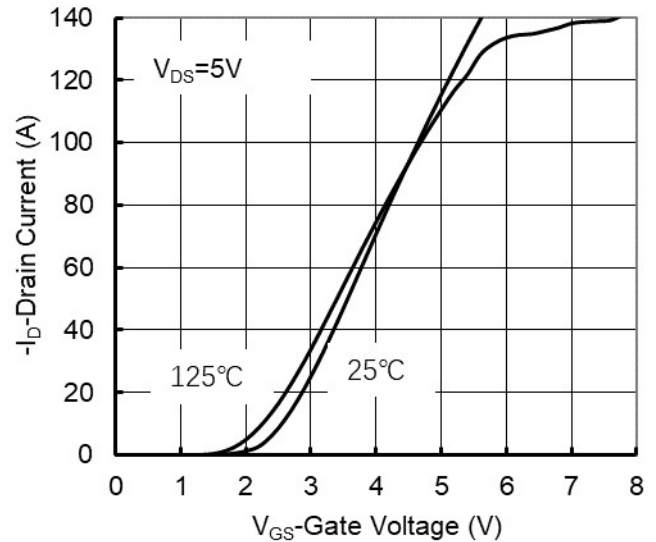


Figure2. Transfer Characteristics

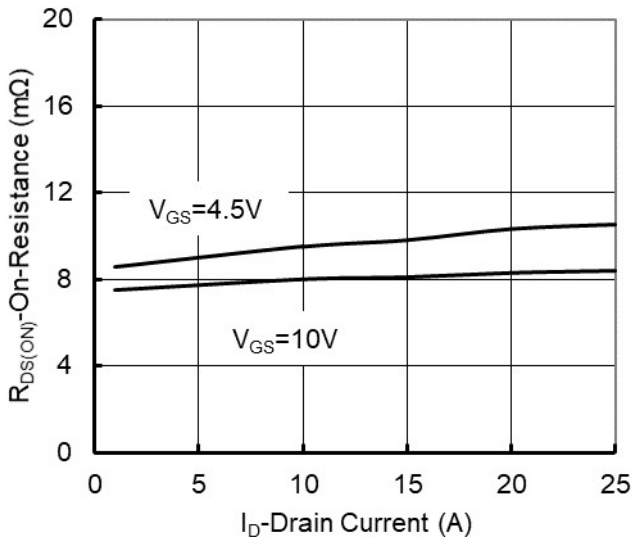


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

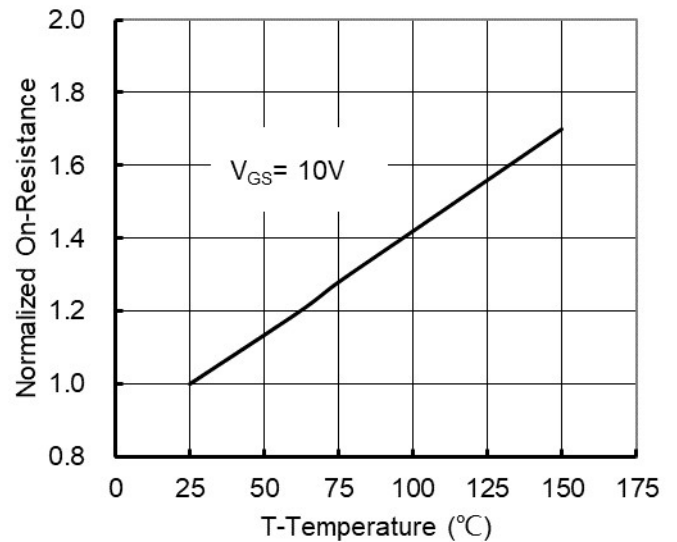


Figure 4: On-Resistance vs. Junction Temperature

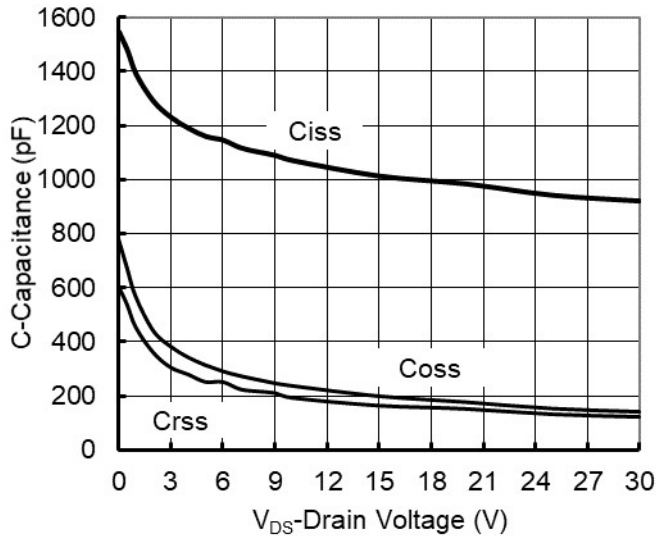


Figure5. Capacitance Characteristics

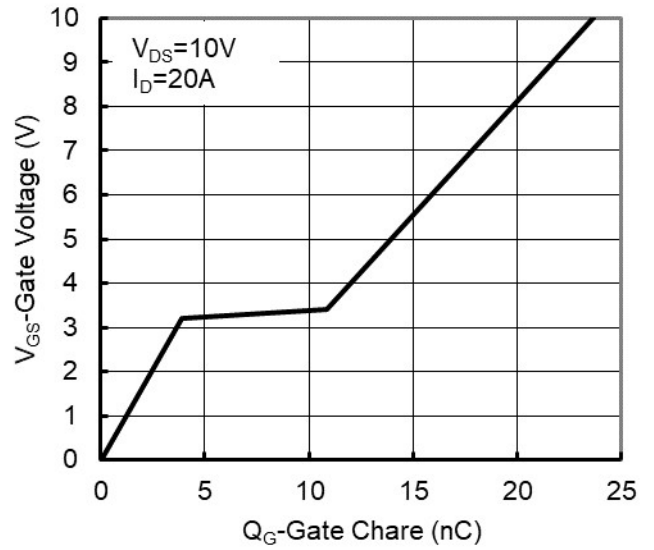


Figure6. Gate Charge

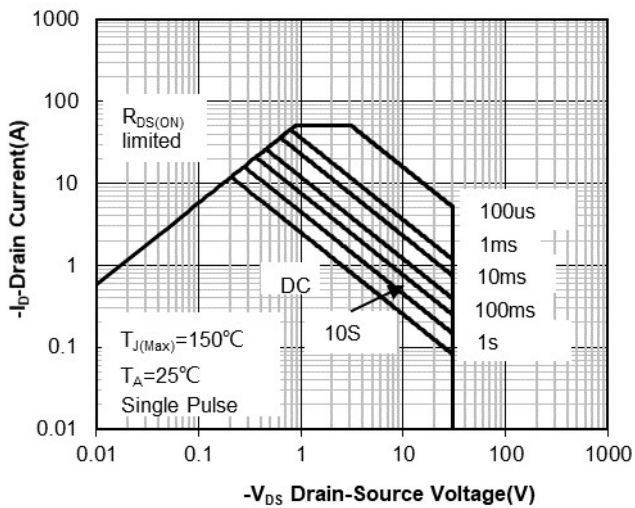


Figure7. Safe Operation Area

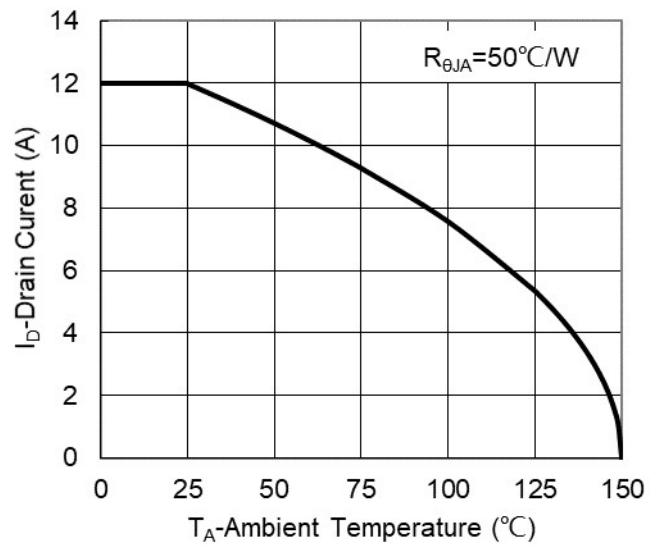


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

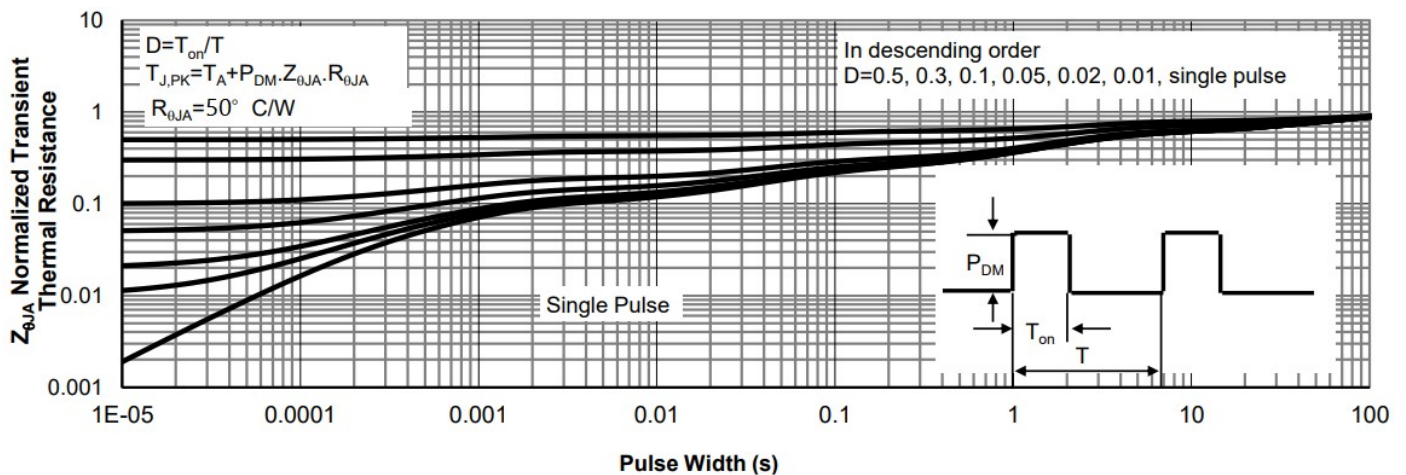


Figure9. Normalized Maximum Transient Thermal Impedance