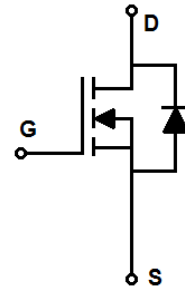
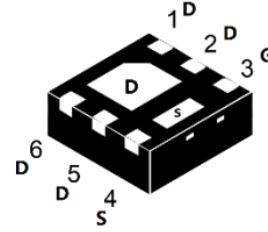


Description:

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) $V_{DS}=30V, I_D=12A, R_{DS(ON)}<12m\ \Omega @V_{GS}=10V$
- 2) Improved dv/dt capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
RC012NG	C012N	DFN2*2-6	3000pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ 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- $T_C=25^\circ\text{C}$	12	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	10	
I_{DM}	Drain Current – Pulsed ¹	48	A
P_D	Power Dissipation - $T_C=25^\circ\text{C}$	2.6	W
E_{AS}	Single pulse avalanche energy ²	20	mJ
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 ³	48	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{GS}=0V, V_{DS}=30V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.7	2.2	V
$R_{DS(on)}$	Drain-Source On Resistance ⁴	$V_{GS}=10V, I_D=10A$	---	9.2	12	m Ω
		$V_{GS}=4.5V, I_D=5A$	---	15	20	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	---	810	---	pF
C_{oss}	Output Capacitance		---	111	---	
C_{rss}	Reverse Transfer Capacitance		---	86	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, V_{GS}=10V, R_G=3\Omega, I_D=5A$	---	6.3	---	ns
t_r	Rise Time		---	15.7	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	21	---	ns
t_f	Fall Time		---	4.2	---	ns
Q_g	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=5A$	---	17.8	---	nC
Q_{gs}	Gate-Source Charge		---	3.3	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	3.5	---	nC
Drain-Source Diode Characteristics						
I_{SD}	Source drain current(Body Diode)	$V_D=V_G=0V$	---	---	12	A
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_{SD}=12A$	---	---	1.2	V
T_{rr}	Reverse Recovery Time	$I_F=5A,$	---	10	---	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/us$	---	4.5	---	nc

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting $T_J=25^\circ\text{C}$, $V_{DD}=15\text{V}$, $V_G=10\text{V}$, $R_G=25\text{ohm}$, $L=0.5\text{mH}$, $I_{AS}=9\text{A}$
3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB
4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

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

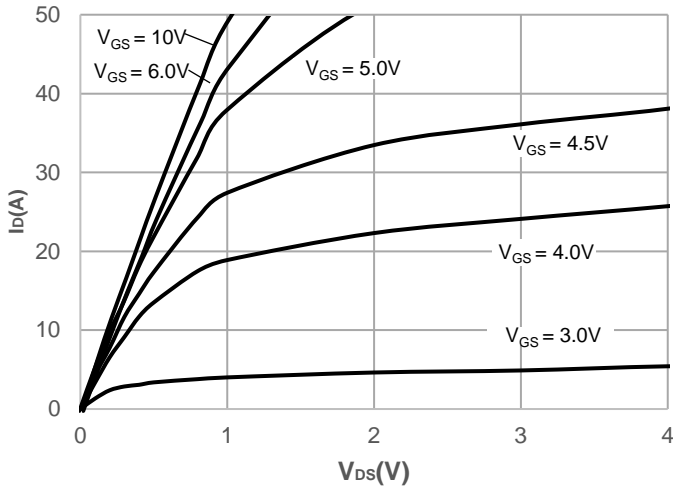


Figure 1: Output Characteristics

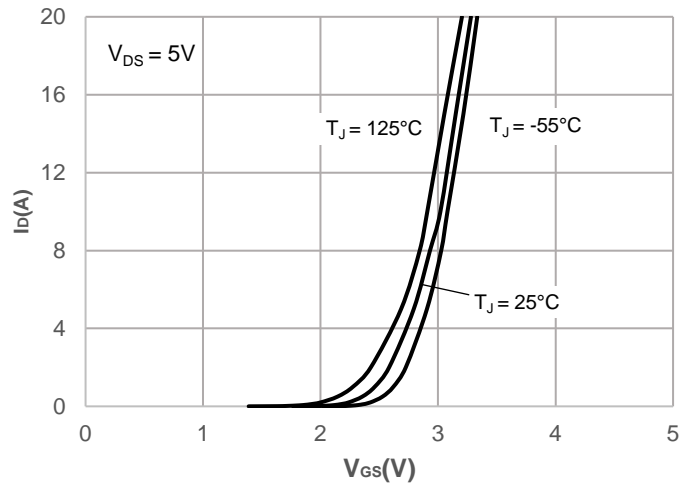


Figure 2: Typical Transfer Characteristics

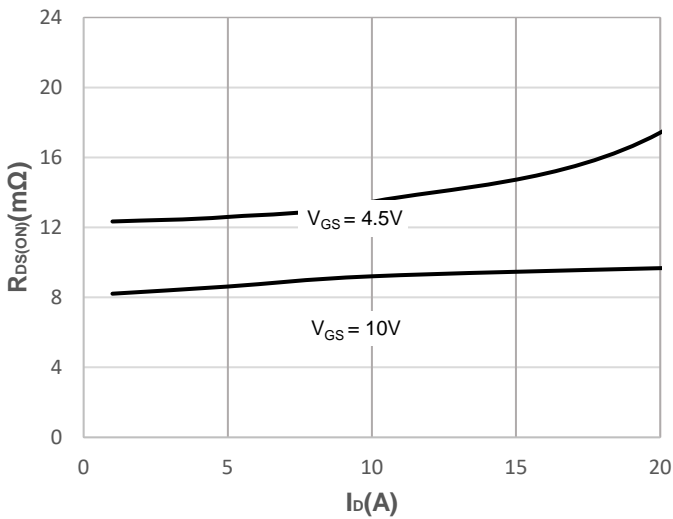


Figure 3: On-resistance vs. Drain Current

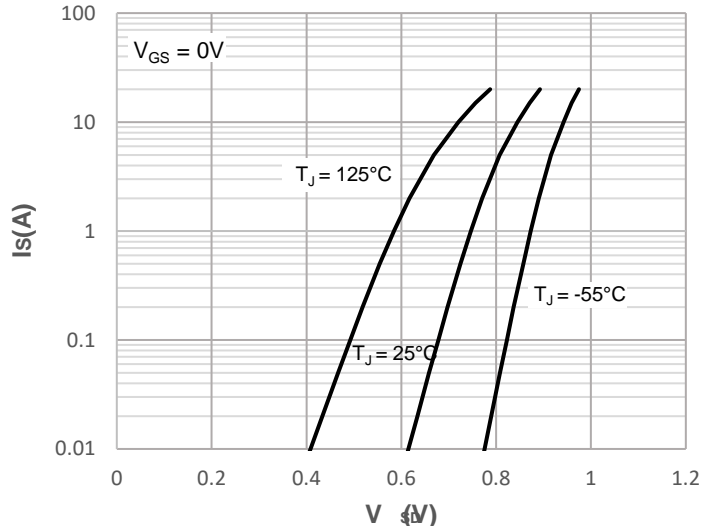


Figure 4: Body Diode Characteristics

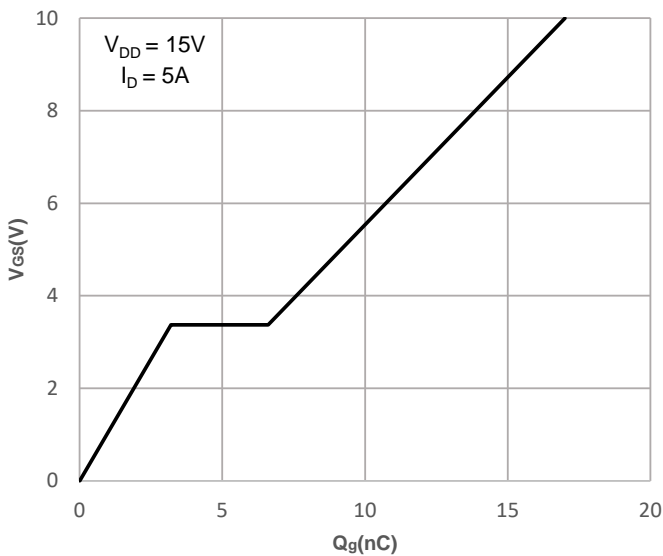


Figure 5: Gate Charge Characteristics

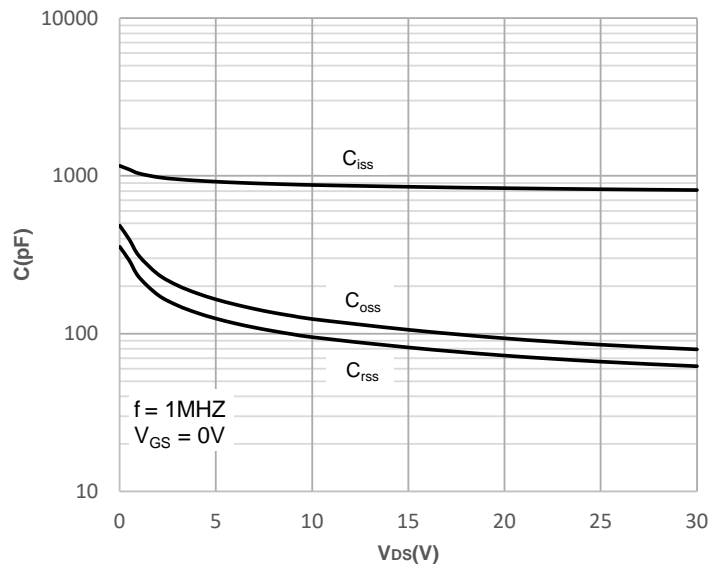


Figure 6: Capacitance Characteristics

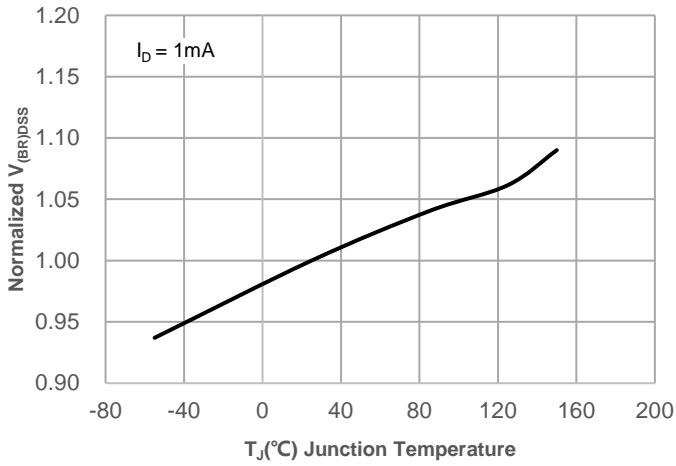


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

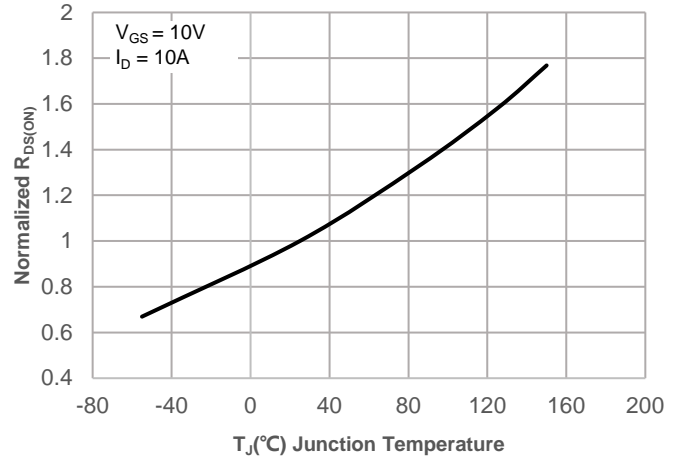


Figure 8: Normalized on Resistance vs. Junction Temperature

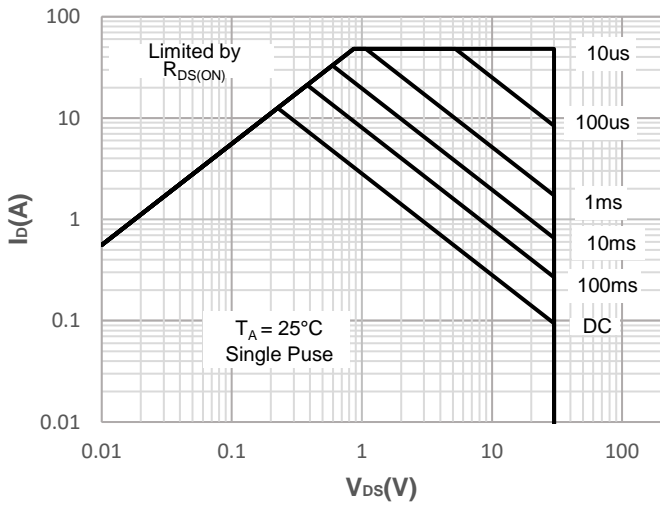


Figure 9: Maximum Safe Operating Area

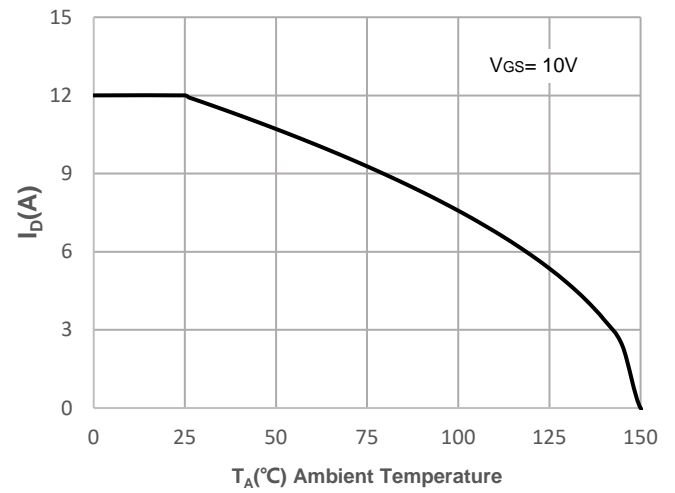


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

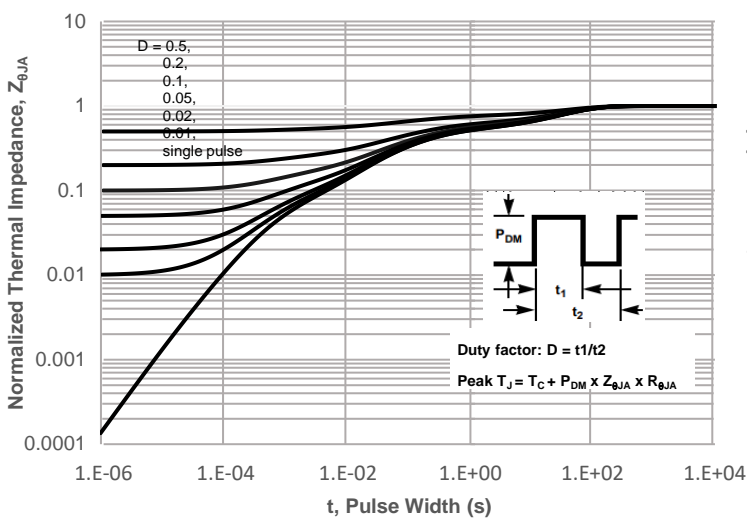


Figure 11: Normalized Maximum Transient Thermal Impedance

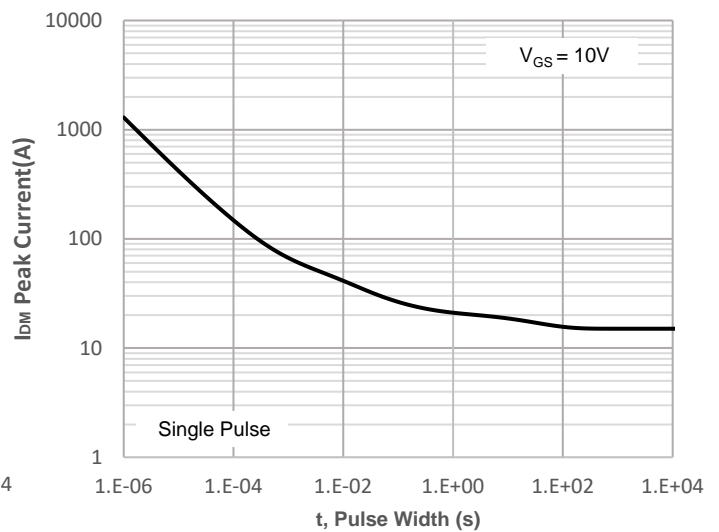
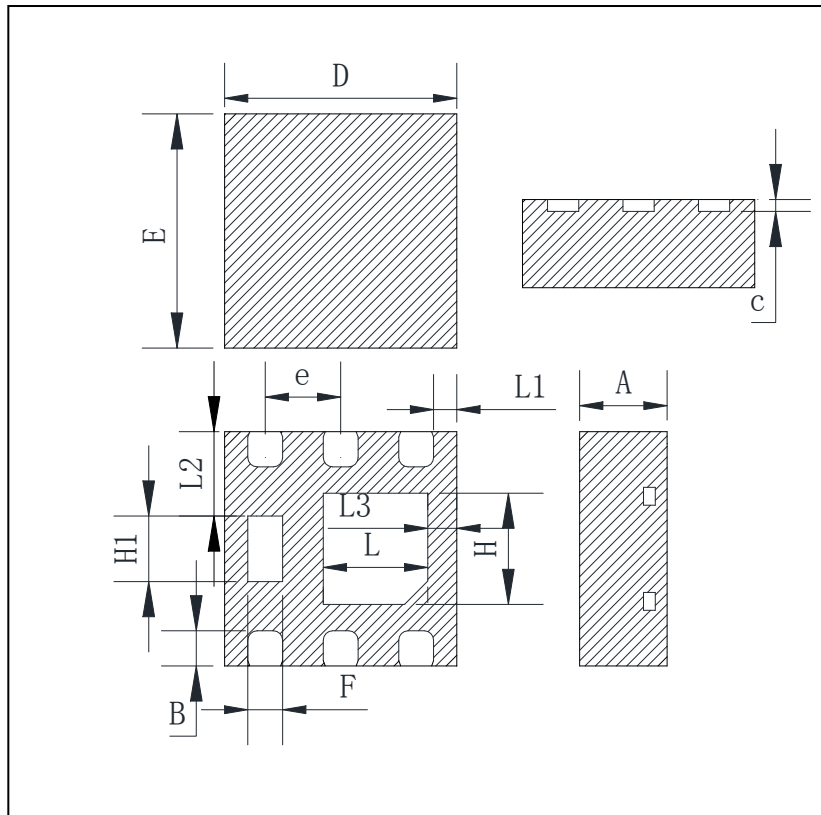


Figure 12: Peak Current Capacity

DFN2X2-6 Package Outline Data



Symbol	Min	Typ	Max
A	0.70	0.75	0.80
B	0.25	0.30	0.35
C	0.153	0.203	0.253
D	1.90	2.00	2.10
E	1.90	2.00	2.10
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	0.90	1.00	1.10
H1	0.50	0.60	0.65
L	0.80	0.90	1.00
L1	0.15	0.20	0.25
L2	0.60	0.70	0.80
L3	0.25	0.30	0.35

UNIT: mm

Marking Information:

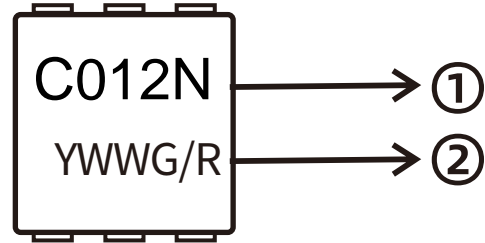
①: Part NO.

②: Date Code (YWWG / R)

Y: Year Code , last digit of the year

WW : Week Code (01-53)


G/R: G(Green) /R(Lead Free)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2024-07-27	Release of final version

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