

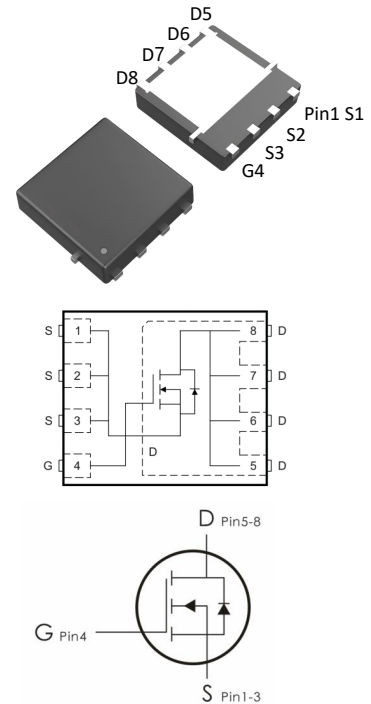
Description:

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) $V_{DS}=30V, I_D=30A, R_{DS(on)} < 10m\Omega @ V_{GS}=10V$ (Typ: $11m\Omega$)
- 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.
- 6) MSL3



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
ZC010NG	C010N	DFN3*3-8	5000 pcs/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 Continuous ($T_C=25^\circ\text{C}$) ¹	30	A
	Continuous Drain Current-($T_C=100^\circ\text{C}$) ¹	21	
I_{DM}	Drain Current – Pulsed ²	120	A
E_{AS}	Single Pulse Avalanche Energy ³	24.2	mJ
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	15.6	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	8	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourtce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	30	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =30V, T _J =25 °C	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	Gate-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	---	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ⁴	V _{GS} =10V, I _D = 15A	---	7.1	10	m Ω
		V _{GS} =4.5V, I _D = 10A	---	11	17	
G _{FS}	Forward Transconductance	V _{DS} =5V, I _D =15A	---	24.4	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	800	---	pF
C _{oss}	Output Capacitance		---	126	---	
C _{rss}	Reverse Transfer Capacitance		---	108	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =15V , V _{GS} =10V , R _G =3 Ω , I _D =10A	---	6.4	---	ns
t _r	Rise Time		---	5	---	ns
t _{d(off)}	Turn-Off Delay Time		---	25	---	ns
t _f	Fall Time		---	7	---	ns
Q _g	Total Gate Charge	V _{DS} =15V , V _{GS} =4.5V , I _D =20	---	9.82	---	nC
Q _{gs}	Gate-Source Charge		---	6.54	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	4.54	---	nC
Drain-Source Diode Characteristics						
I _S	Contiuos Source Curent	V _D =V _G =0V	---	---	25	A
I _{SM}	Pulsed Source Curent		---	---	100	A
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V , I _S =40A	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F =20A , di/dt=100A/μs	---	7	---	ns
Q _{rr}	Reverse Recovery Charge		---	6.3	---	nC

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : $T_J=25^{\circ}C, V_{DD}=15V, V_G=10V, L=0.5mH$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

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

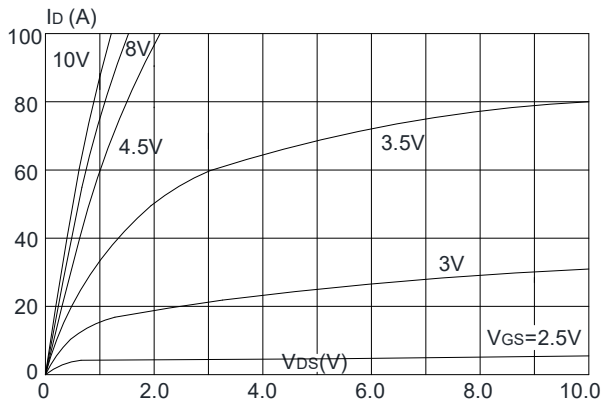


Figure 1: Output Characteristics

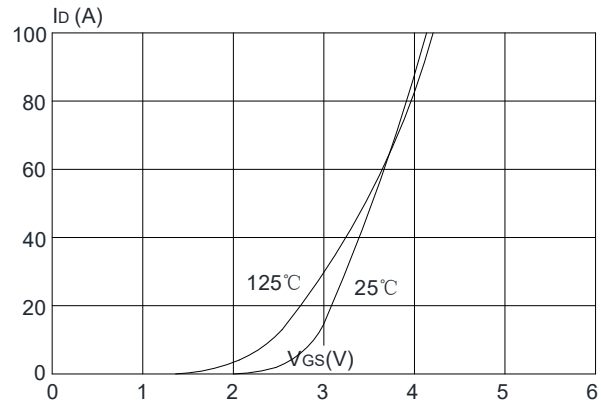


Figure 2: Typical Transfer Characteristics

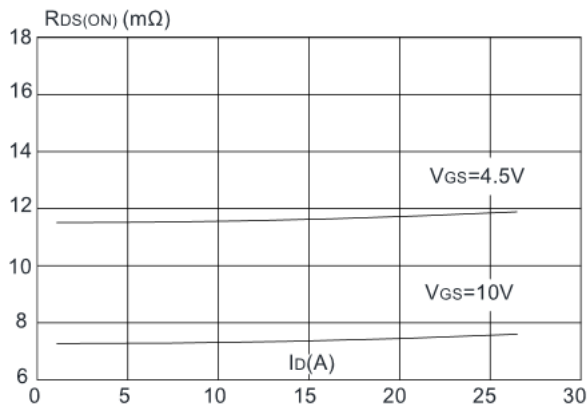


Figure 3: On-resistance vs. Drain Current

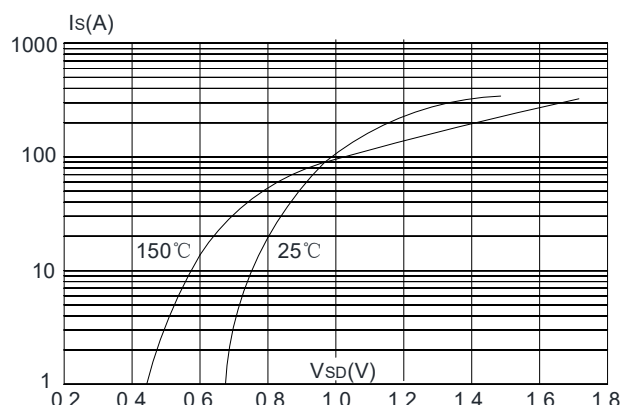


Figure 4: Body Diode Characteristics

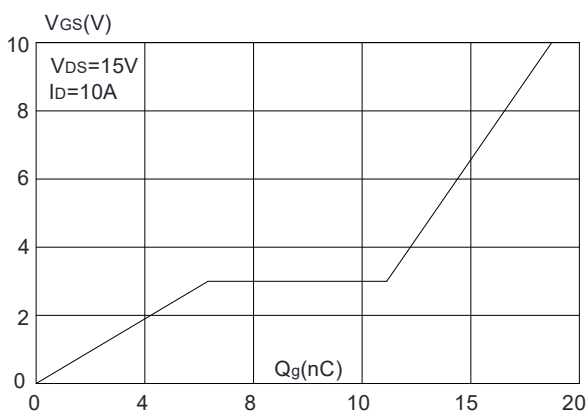


Figure 5: Gate Charge Characteristics

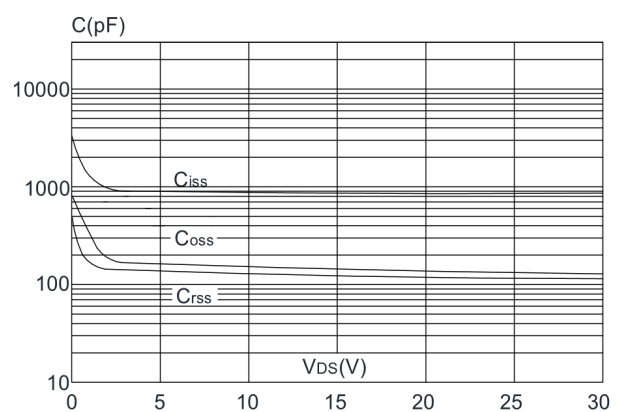


Figure 6: Capacitance Characteristics

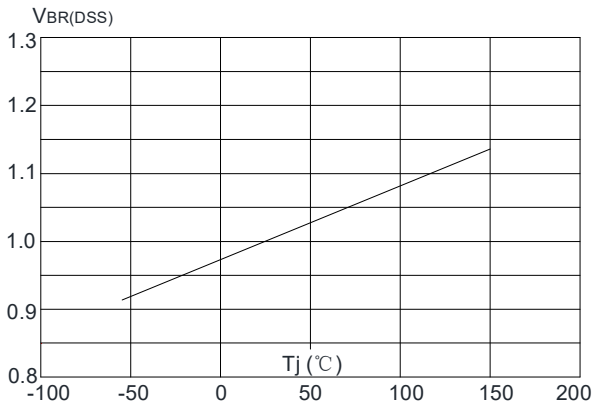


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

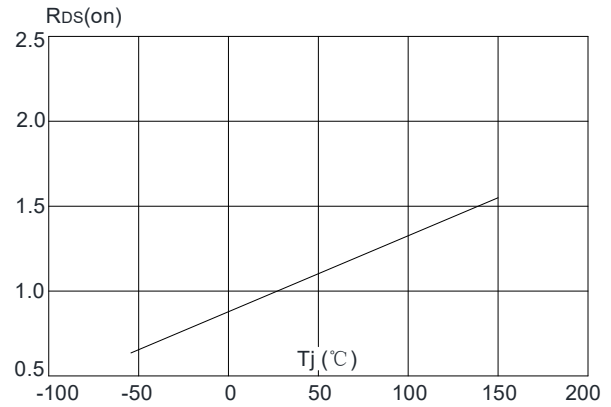


Figure 8: Normalized on Resistance vs. Junction Temperature

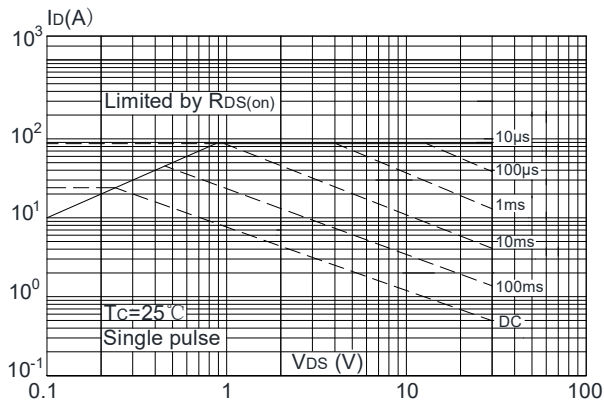


Figure 9: Maximum Safe Operating Area

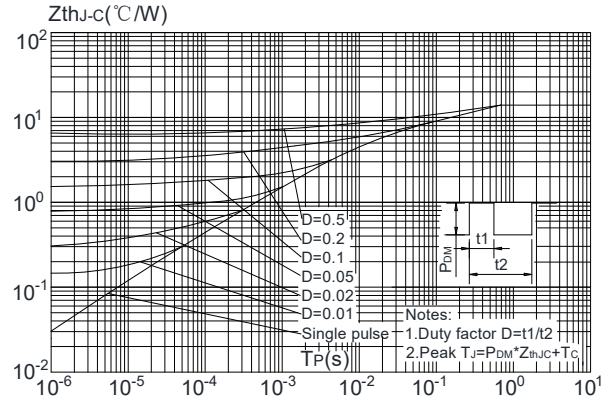
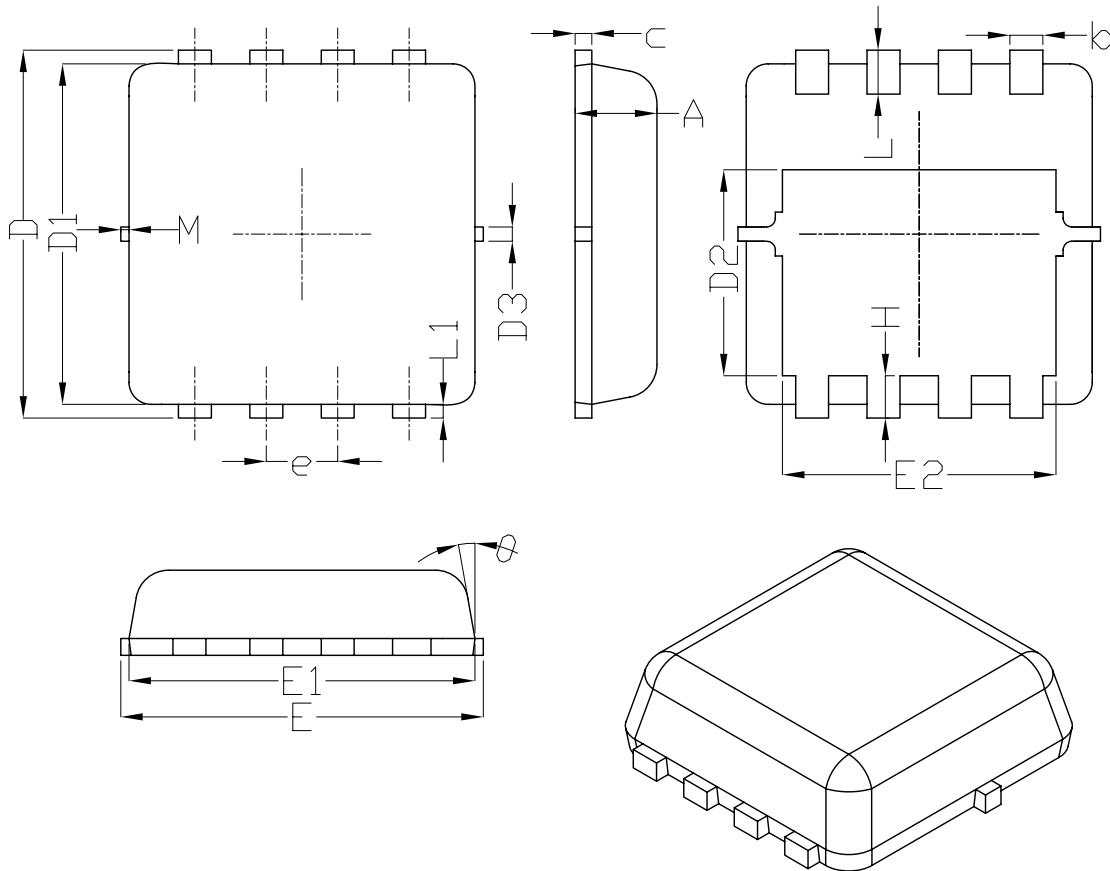
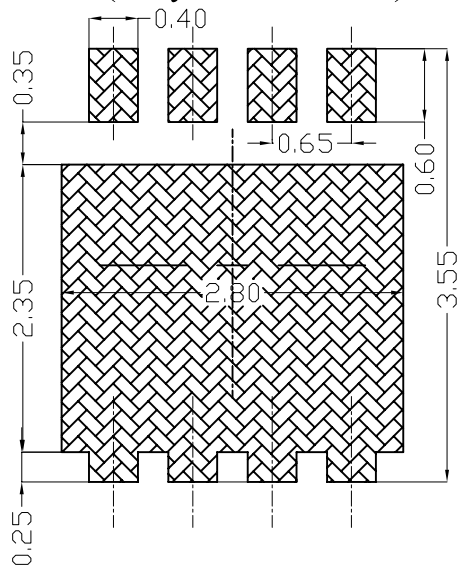


Figure.10: Maximum Effective Transient Thermal Impedance, Junction-to-Case

DFN3X3-8 Package Outline Data



**Land Pattern
(Only for Reference)**



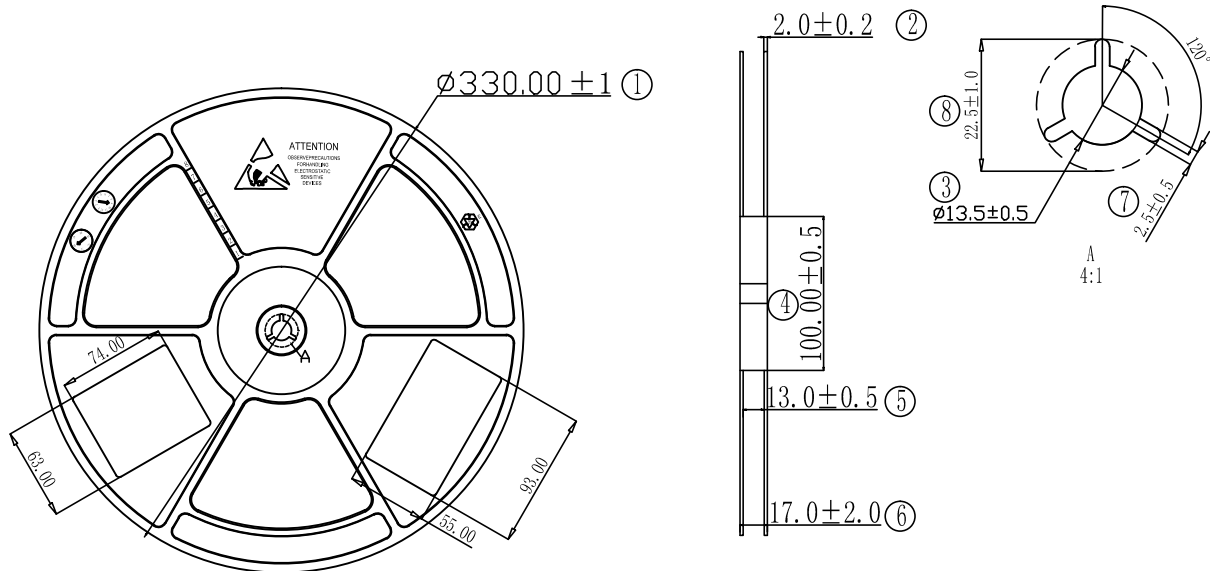
UNIT: mm

SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15

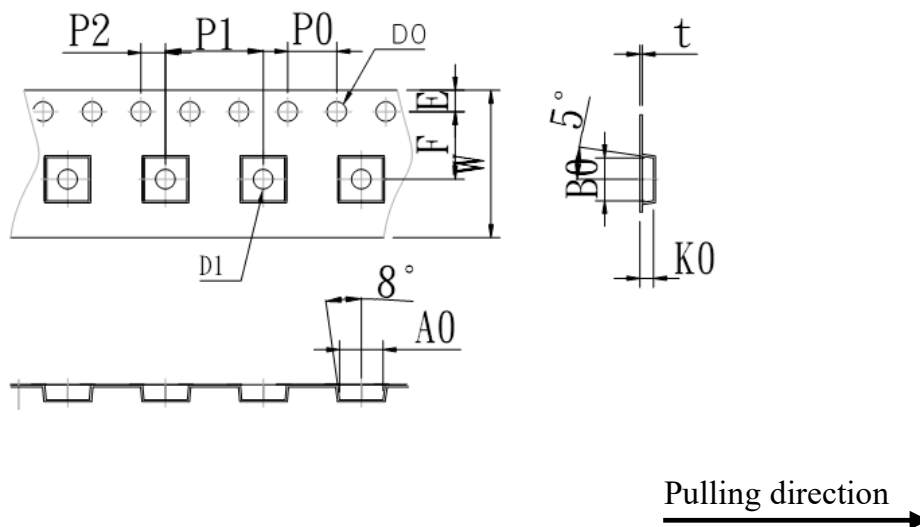
* Not specified

Tape & Reel Information

Dimensions in mm



Symbol	A0	B0	K0	D0	D1	P0	P1	10*P0
Spec	3.55 $\pm$ 0.10	3.45 $\pm$ 0.10	1.13 $\pm$ 0.10	1.55 $\pm$ 0.10	1.55 $\pm$ 0.10	4.00 $\pm$ 0.10	8.00 $\pm$ 0.10	40.0 $\pm$ 0.10
Symbol	W	E	F	P2	t			
Spec	12.00 $\pm$ 0.10	1.75 $\pm$ 0.10	5.50 $\pm$ 0.10	2.00 $\pm$ 0.10	0.20 $\pm$ 0.05			



Marking Information:

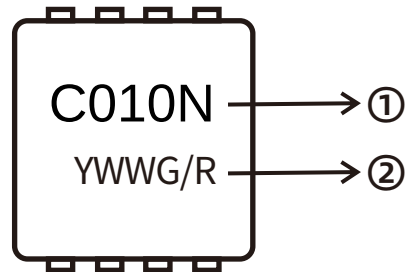
①. Part NO.

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)
2.0	2025-09-10	Release of final version

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