

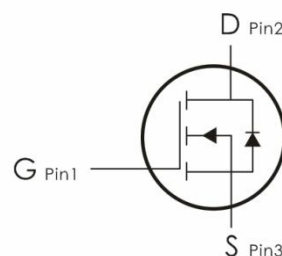
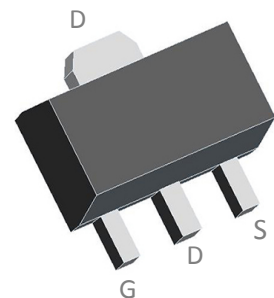
Description:

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) $V_{DS}=30V, I_D=9A, R_{DS(on)} < 23\text{ m}\Omega @ V_{GS}=10V$ (Type: $17\text{ m}\Omega$)
- 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.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
WC022NG	C022N	SOT-89	1000 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	9	A
I_{DM}	Pulsed Drain Current ^(Note 1)	36	
P_D	Power Dissipation	3.5	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 ^(Note 2)	35	$^\circ\text{C}/\text{W}$

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
V _{(BR)DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =30V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	±100	nA
On Characteristics ^(Note 3)						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1.2	1.3	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V,I _D =8A	---	17	23	m Ω
		V _{GS} =4.5V,I _D =6A	---	24	30	m Ω
Dynamic Characteristics ^(Note 4)						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	560	---	pF
C _{oss}	Output Capacitance		---	70	---	
C _{rss}	Reverse Transfer Capacitance		---	60	---	
Switching Characteristics ^(Note 4)						
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V,I _D =1.5A R _{GEN} =1Ω,V _{GS} =10V	---	9	---	ns
t _r	Rise Time		---	10	---	ns
t _{d(off)}	Turn-Off Delay Time		---	15	---	ns
t _f	Fall Time		---	5	---	ns
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _D =8A	---	14	---	nC
Q _{gs}	Gate-Source Charge		---	1.5	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	3.6	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Drain Diode Forward Voltage ^(Note 3)	V _{GS} =0V,I _S =8A	---	---	1.2	V
I _S	Diode Forward Current ^(Note 2)	---	---	---	8	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

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

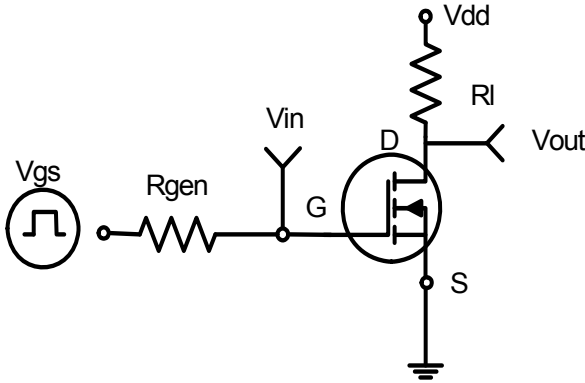


Figure 1 Switching Test Circuit

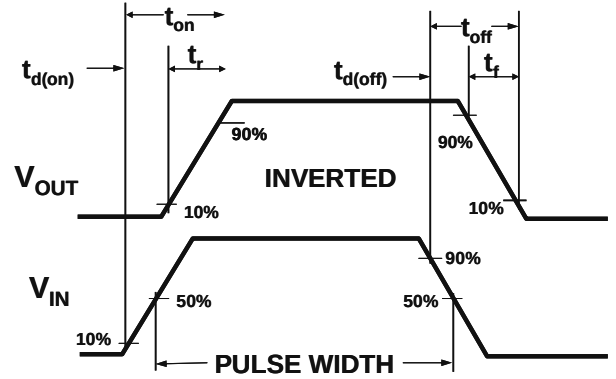


Figure 2 Switching Waveforms

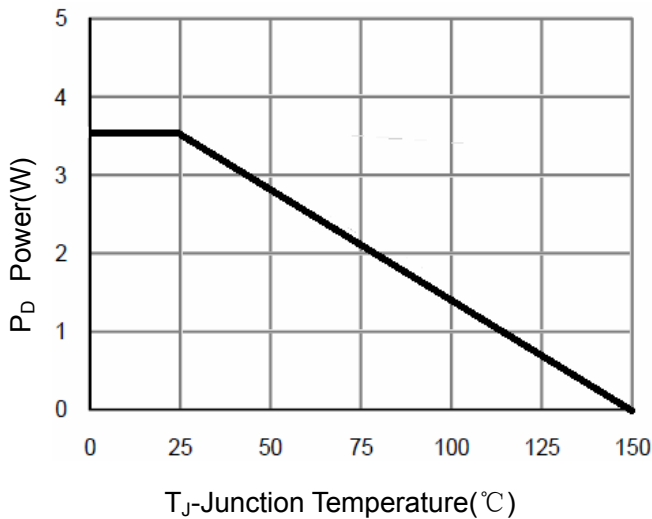


Figure 3 Power Dissipation

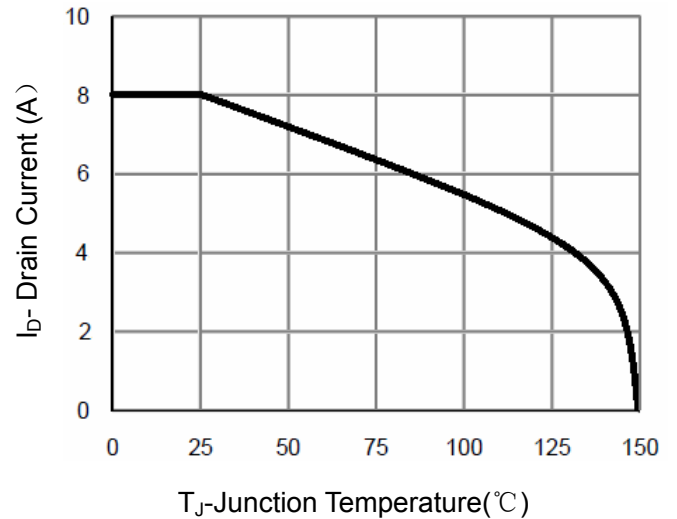


Figure 4 Drain Current

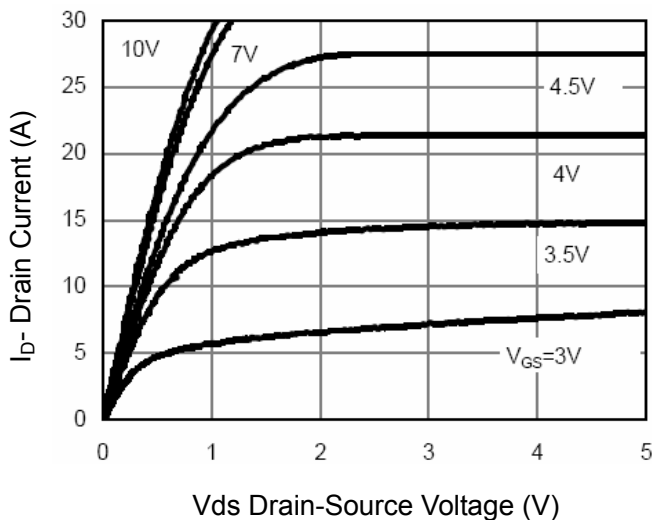


Figure 5 Output Characteristics

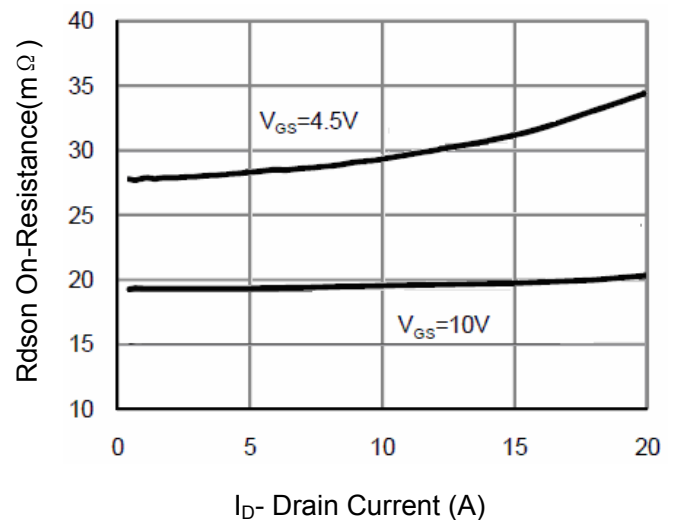


Figure 6 Drain-Source On-Resistance

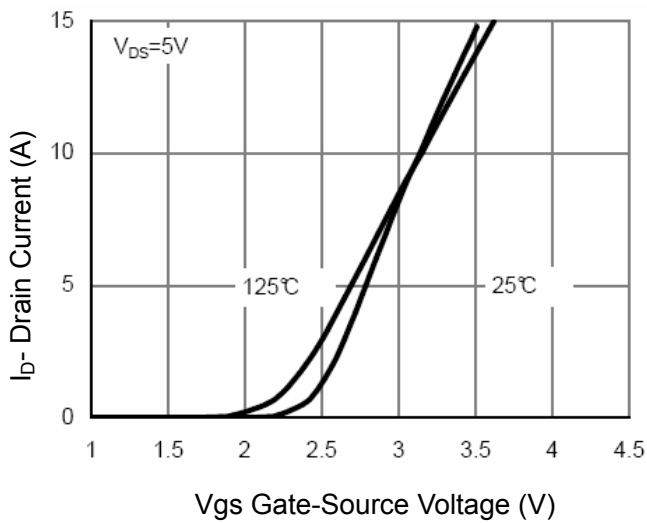


Figure 7 Transfer Characteristics

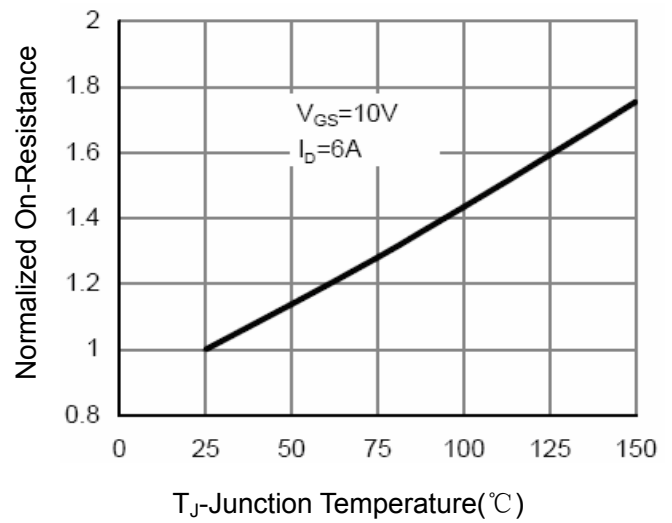


Figure 8 Drain-Source On-Resistance

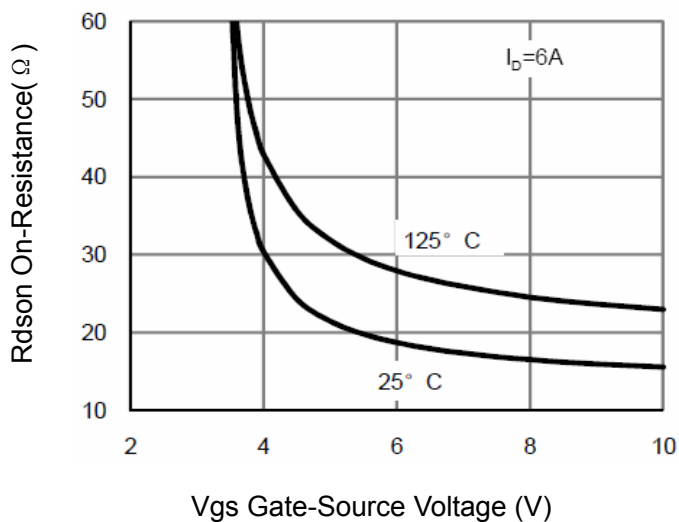


Figure 9 Rdson vs Vgs

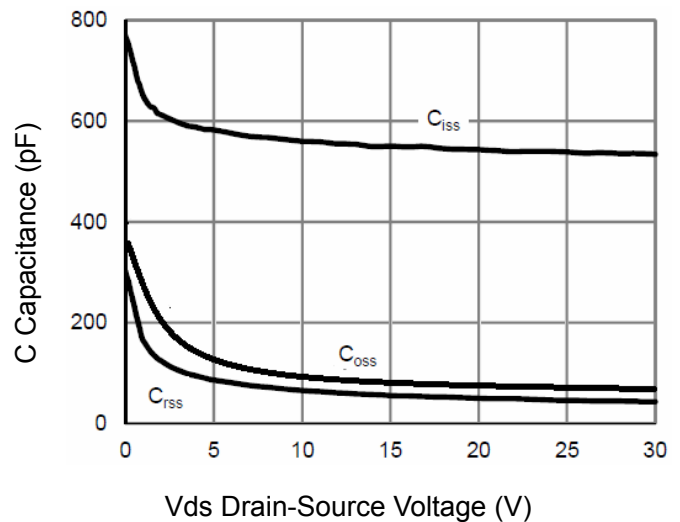


Figure 10 Capacitance vs Vds

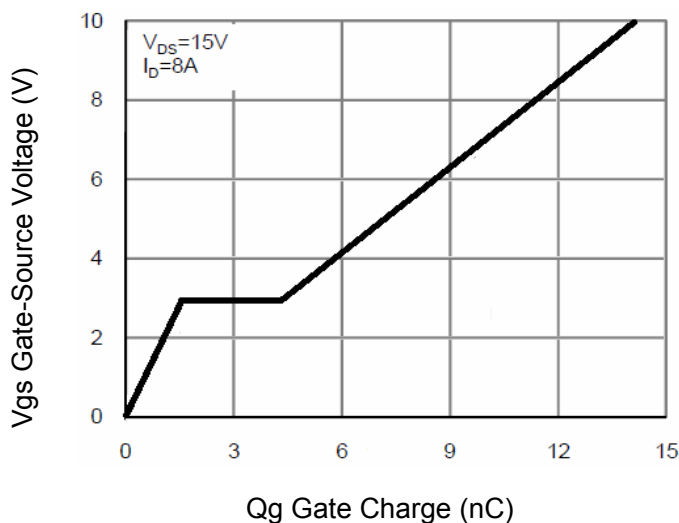


Figure 11 Gate Charge

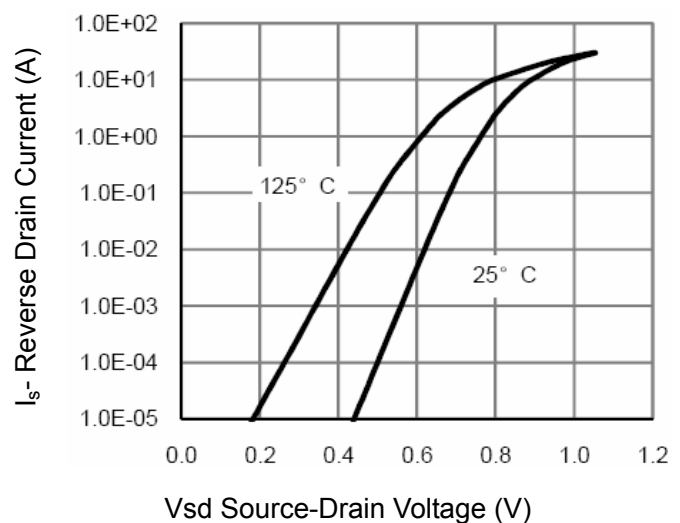


Figure 12 Source- Drain Diode Forward

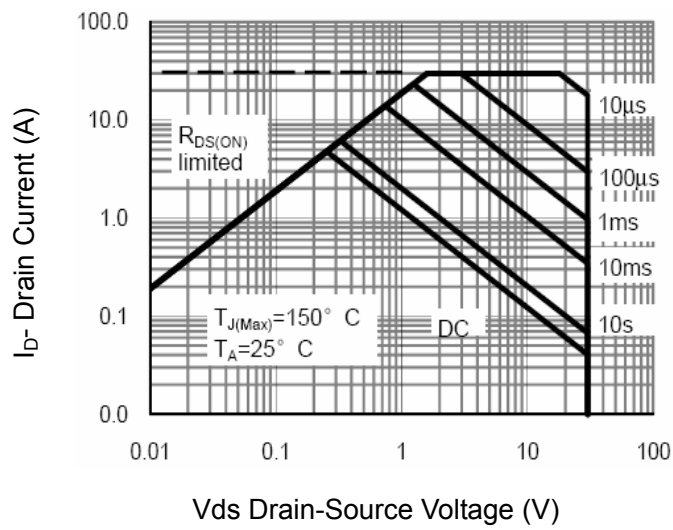


Figure 13 Safe Operation Area

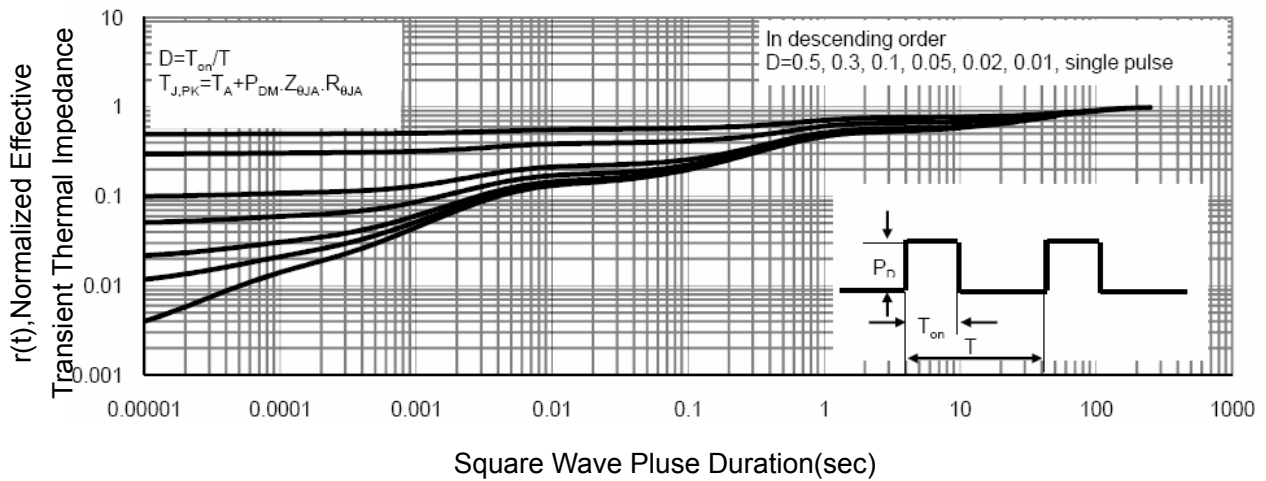
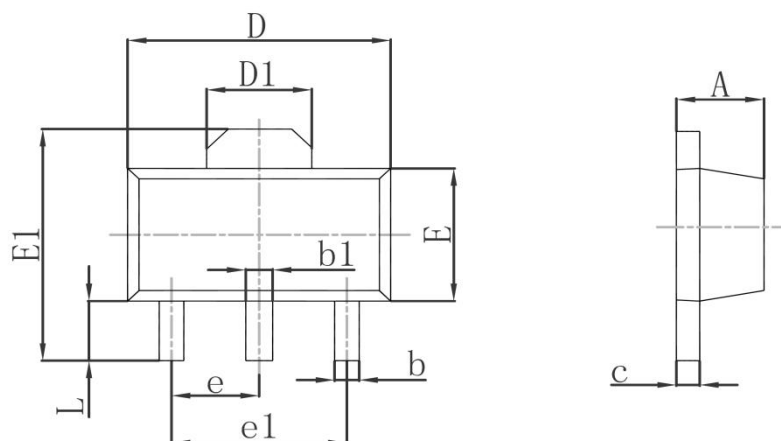


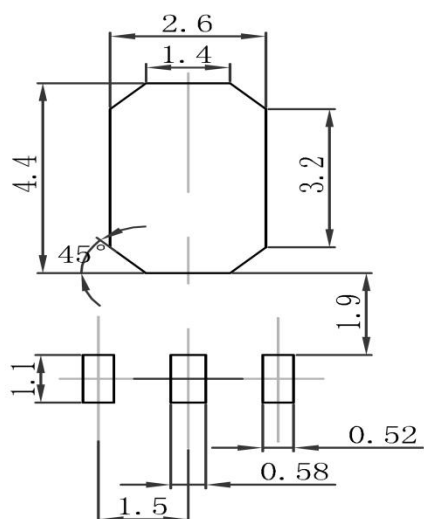
Figure 14 Normalized Maximum Transient Thermal Impedance

SOT-89 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550REF		0.061REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047

SOT-89 Suggested Pad Layout



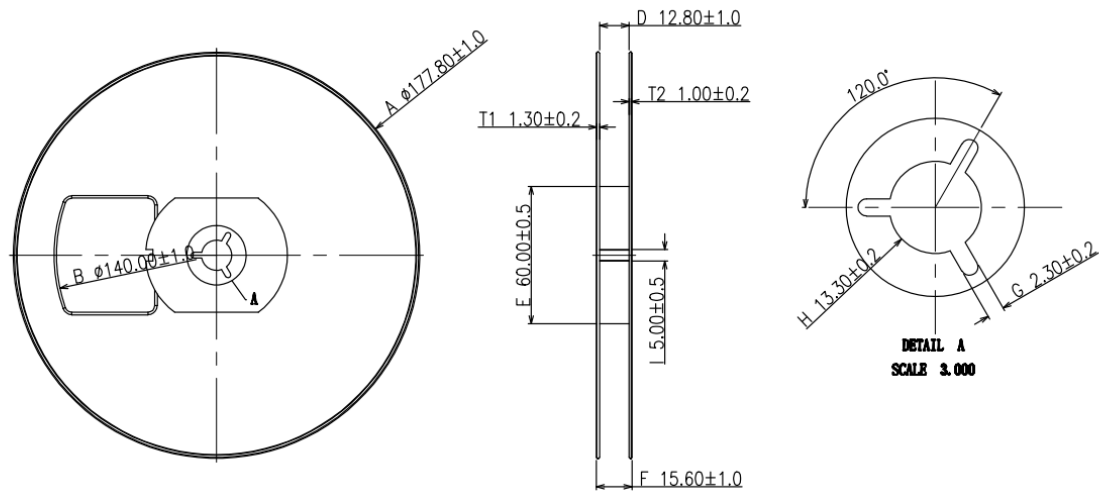
Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

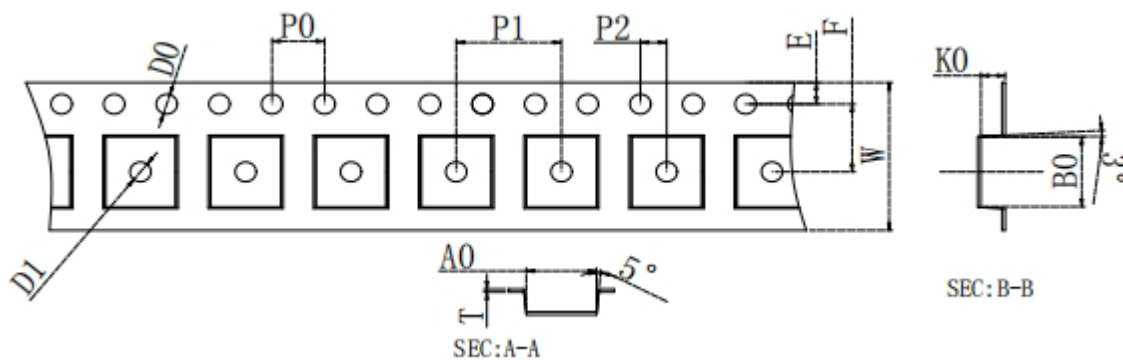
UNIT: mm

Tape & Reel Information

Dimensions in mm



W	12.00 ± 0.10	T	0.22 ± 0.02	D1	1.60 ± 0.10	MM
E	1.75 ± 0.10	F	5.50 ± 0.10	D0	1.60 ± 0.10	PC+PS
PO	4.00 ± 0.10	P1	8.00 ± 0.10	P2	2.00 ± 0.10	SOT89
A0	4.90 ± 0.10	BO	4.50 ± 0.10	K0	1.75 ± 0.10	



Pulling direction →

Marking Information:

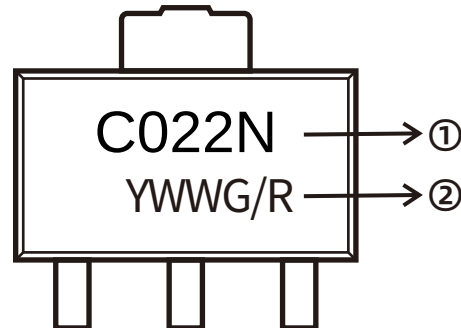
①. Part NO.

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	2026-03-29	Release of final version

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