

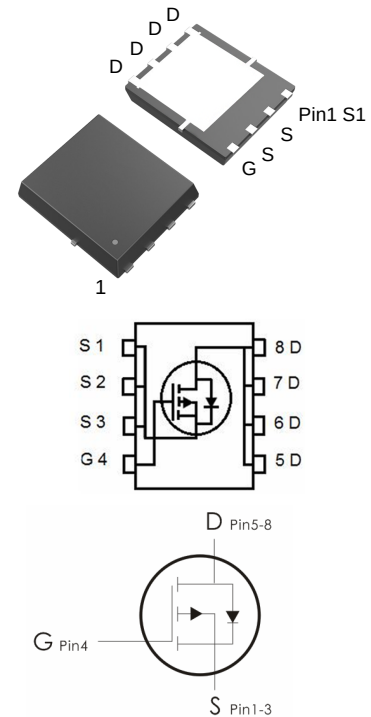
Description:

This P-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) $V_{DS}=-20V, I_D=-60A, R_{DS(ON)}<7.5m\Omega @V_{GS}=-4.5V$ (Typ: $5.8m\Omega$)
- 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
ND009PG	D009P	DFN5*6-8	5000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current ¹	-60	A
	Continuous Drain Current- $T_C=100^{\circ}C$ ¹	-42	
I_{DM}	Pulsed Drain Current ²	-240	
P_D	Power Dissipation	125	W
E_{AS}	Single pulse avalanche energy ³	43	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^{\circ}C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.4	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-20	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-20V	---	---	-1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 12V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	Gate-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-0.5	-0.7	-1	V
R _{DS(ON)}	Drain-Source On Resistance ⁴	V _{GS} =-4.5V, I _D =-20A	---	5.8	7.5	m Ω
		V _{GS} =-2.5V, I _D =-10A	---	7.8	10	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	---	2860	---	pF
C _{OSS}	Output Capacitance		---	390	--	
C _{rss}	Reverse Transfer Capacitance		---	326	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =-10V, I _D =-13A, R _G =3 Ω ,V _{GS} =-10V	---	13	---	ns
t _r	Rise Time		---	110	---	ns
t _{d(off)}	Turn-Off Delay Time		---	152	---	ns
t _f	Fall Time		---	157	---	ns
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-15A	---	56.7	---	nC
Q _{gs}	Gate-Source Charge		---	7	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	14	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =-10A	---	---	-1.2	V
I _S	Continuous Drain Curren	V _D =V _G =0V	---	---	-50	A
I _{SM}	Pulsed Drain Current		---	---	-200	A
T _{rr}	Reverse Recovery Time	I _f =-15A, T _J =25 °C	---	26	---	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/us	---	15	---	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 : $T_J=25^{\circ}C, V_{DD}=-10V, V_G=4.5V, L=0.5mH$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

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

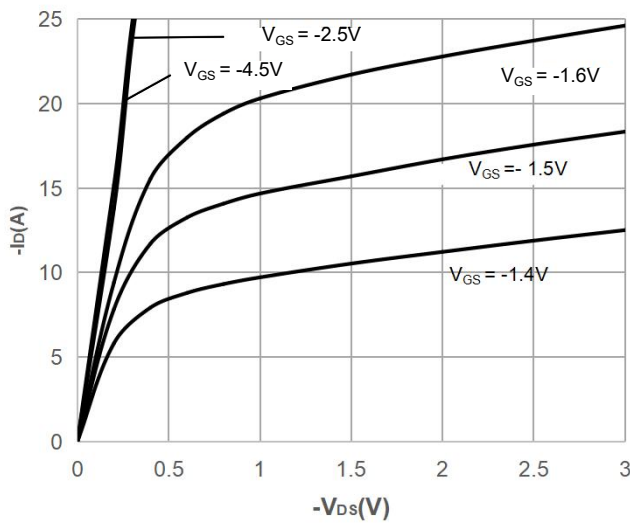


Figure 1: Output Characteristics

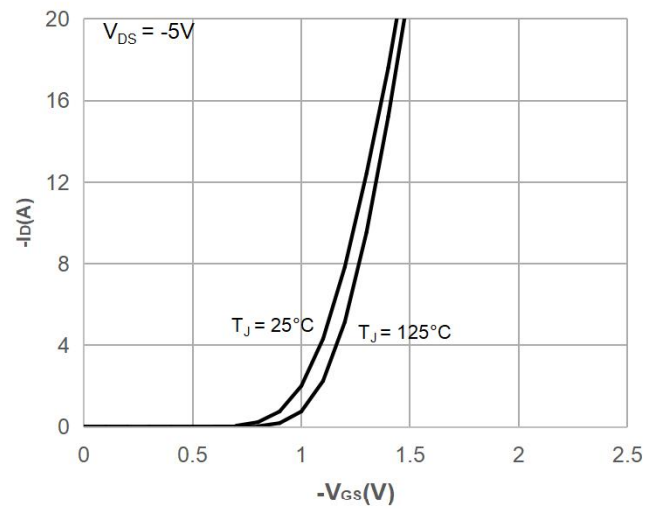


Figure 2: Typical Transfer Characteristics I_{CS}

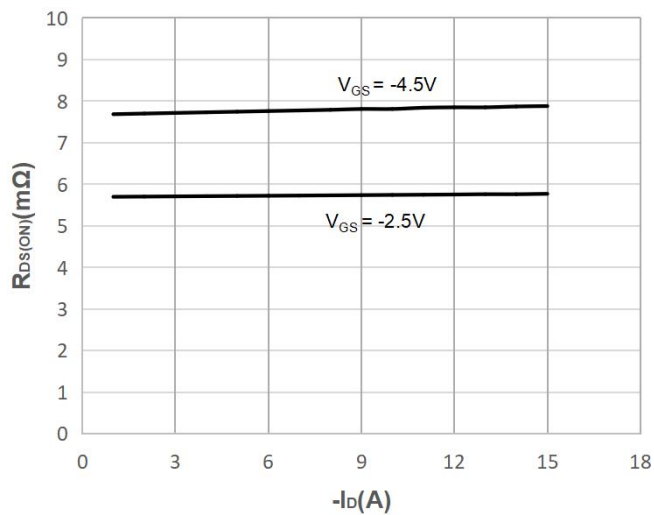


Figure 3: On-resistance vs. Drain Current

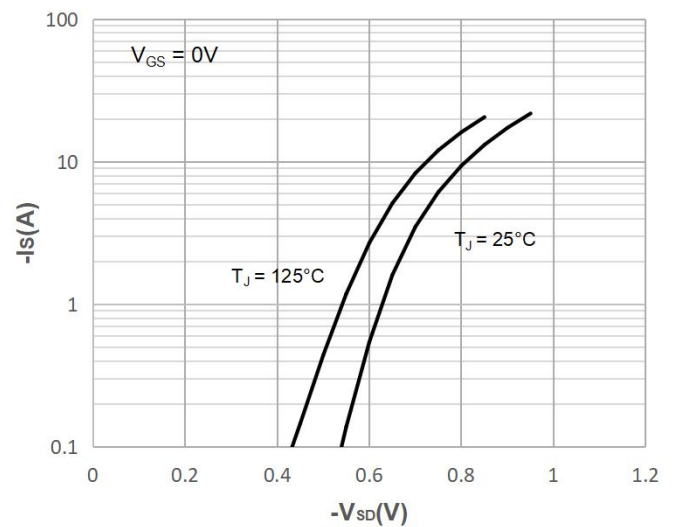


Figure 4: Body Diode Characteristics

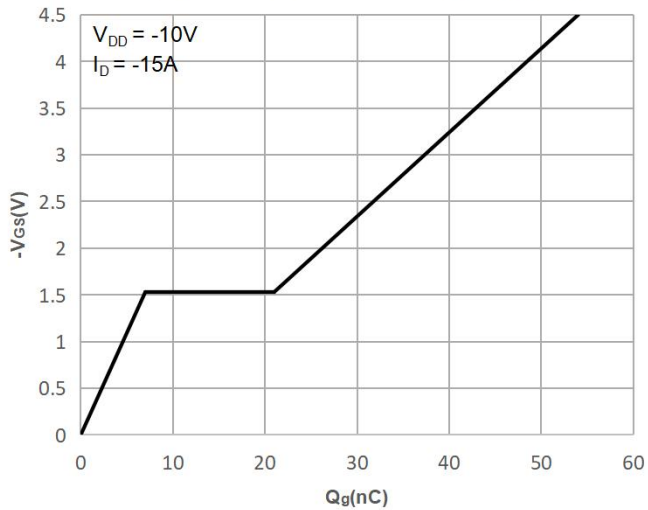


Figure 5: Gate Charge Characteristics

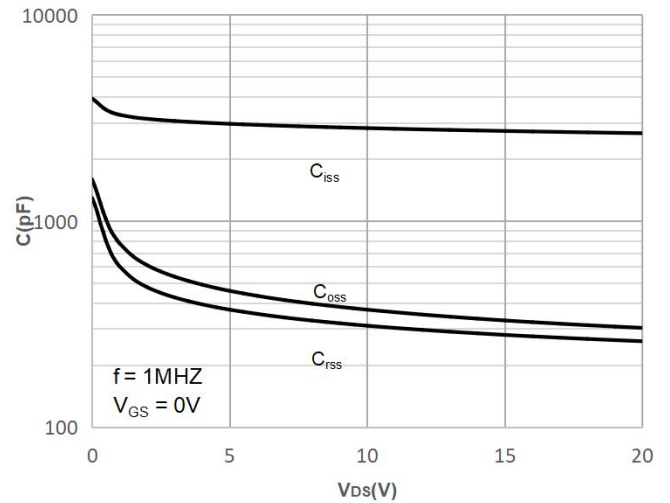


Figure 6: Capacitance Characteristics

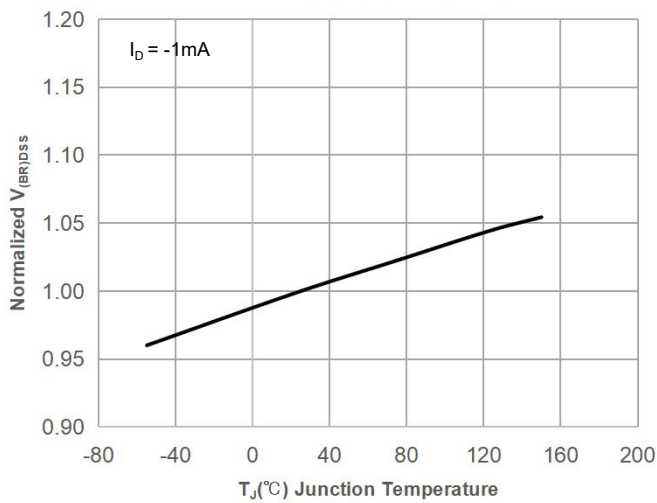


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

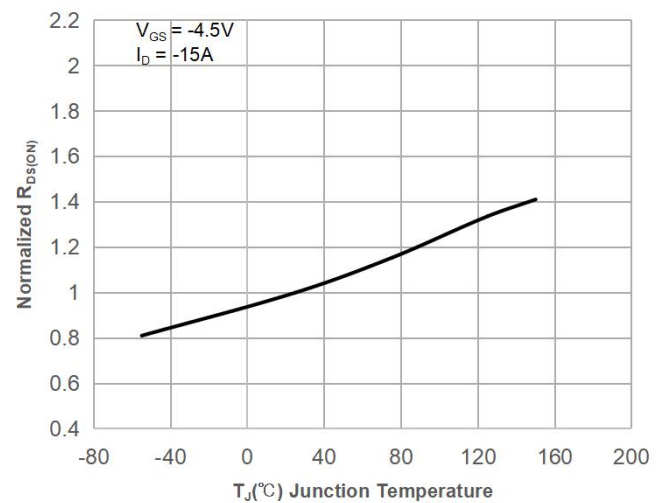


Figure 8: Normalized on Resistance vs. Junction Temperature

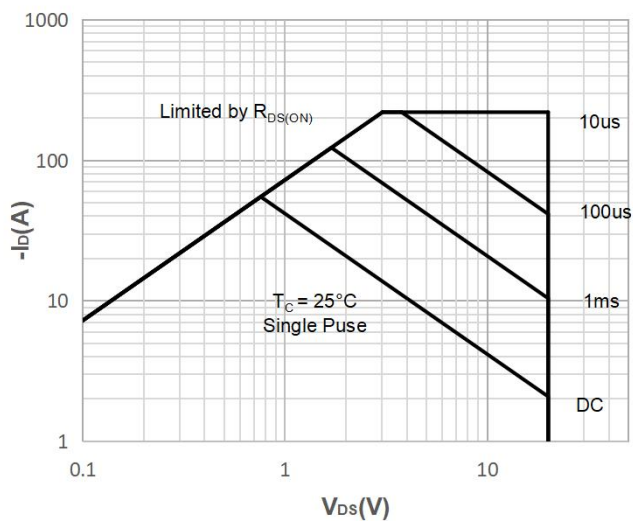


Figure 9: Maximum Safe Operating Area

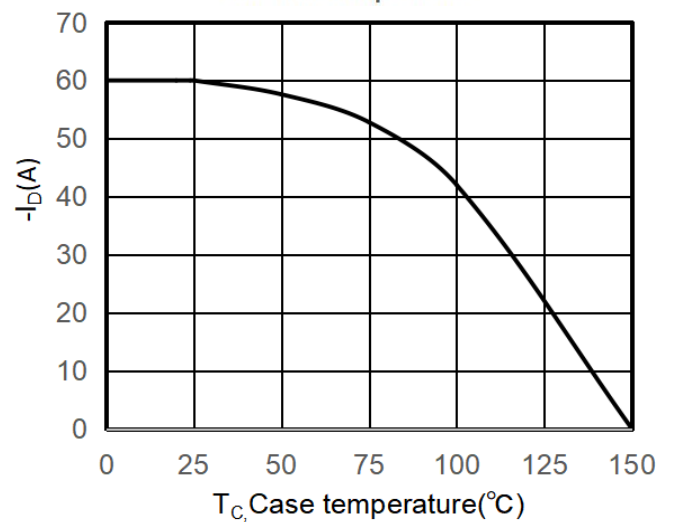


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

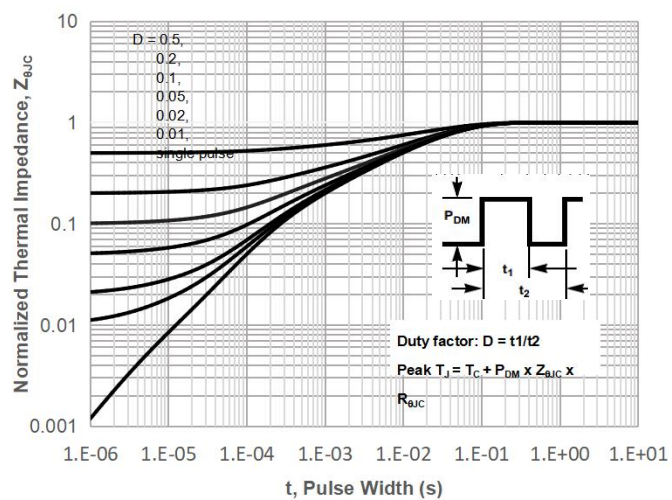


Figure 11: Normalized Maximum Transient Thermal Impedance

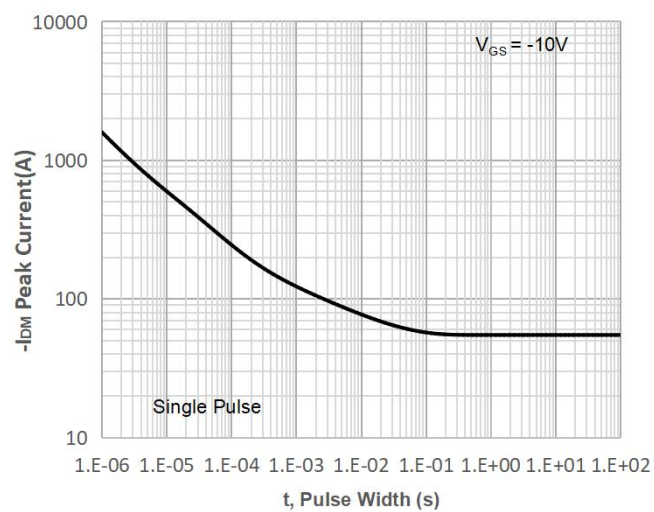
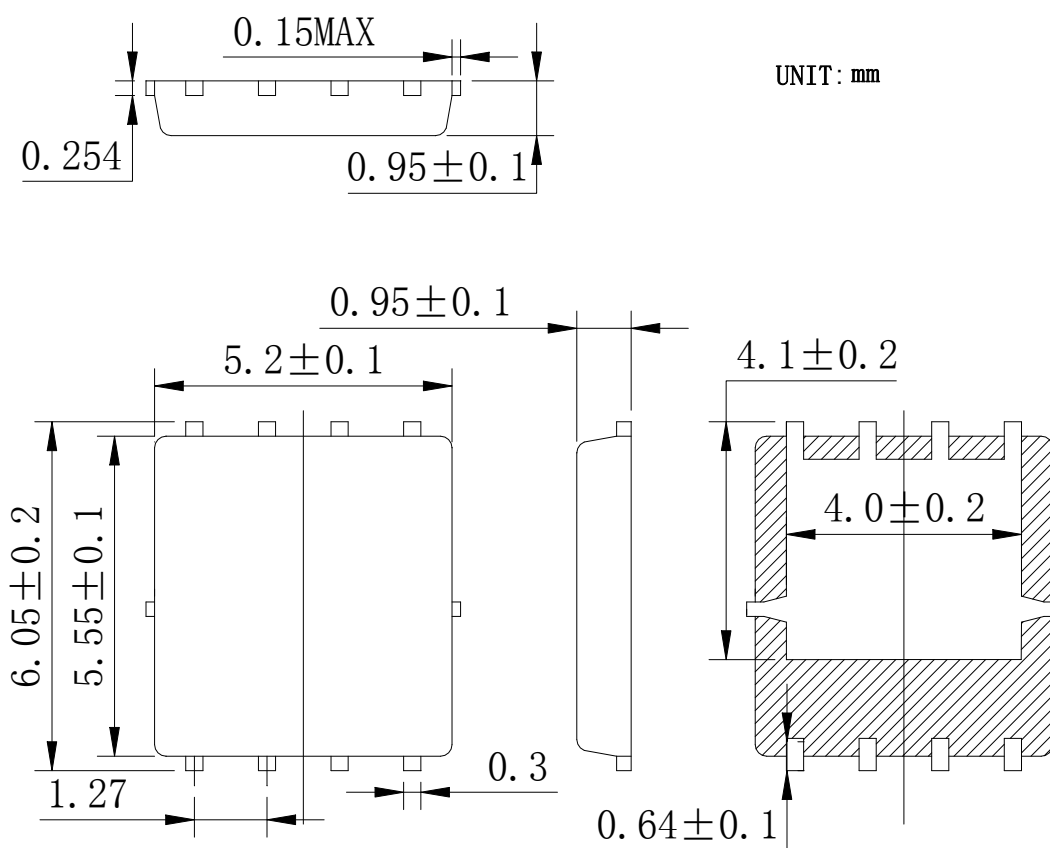


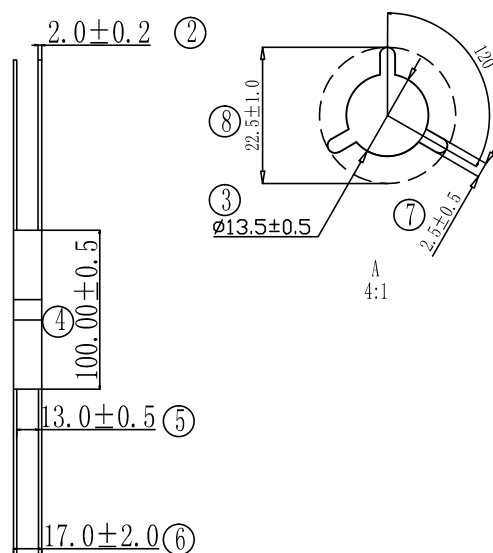
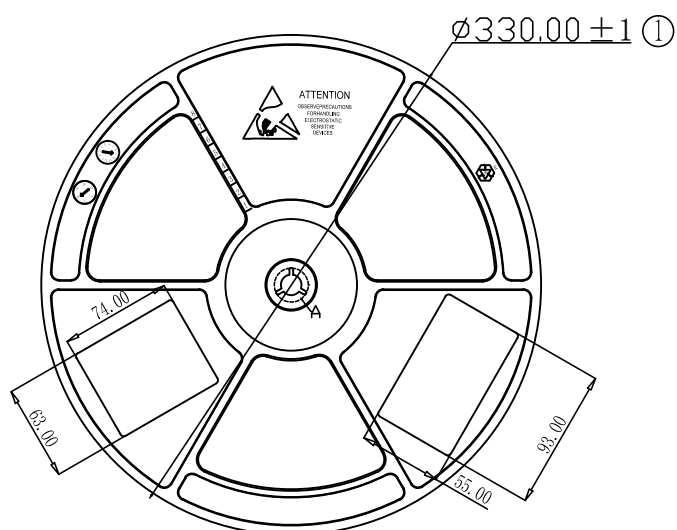
Figure 12: Peak Current Capacity

DFN5x6-8 Package Information:

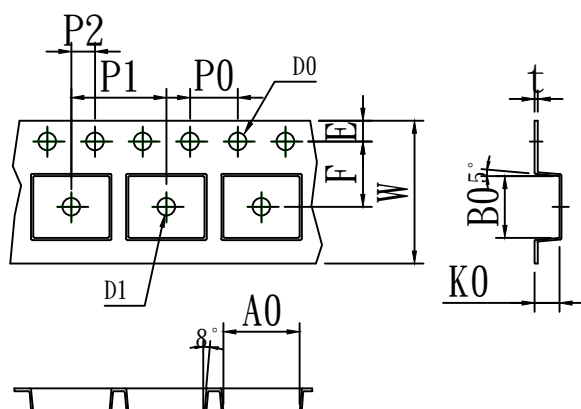


Tape & Reel Information

Dimensions in mm



Symbol	A0	B0	K0	D0	D1	P0	P1	10*P0
Spec	6.15±0.10	5.40±0.10	1.30±0.10	1.55±0.10	1.55±0.10	4.00±0.10	8.00±0.10	40.00±0.10
Symbol	W	E	F	P2	t			
Spec	12.00±0.10	1.75±0.10	5.50±0.10	2.00±0.10	0.20±0.05			



Pulling direction →

Marking Information:

①. Doingter LOGO

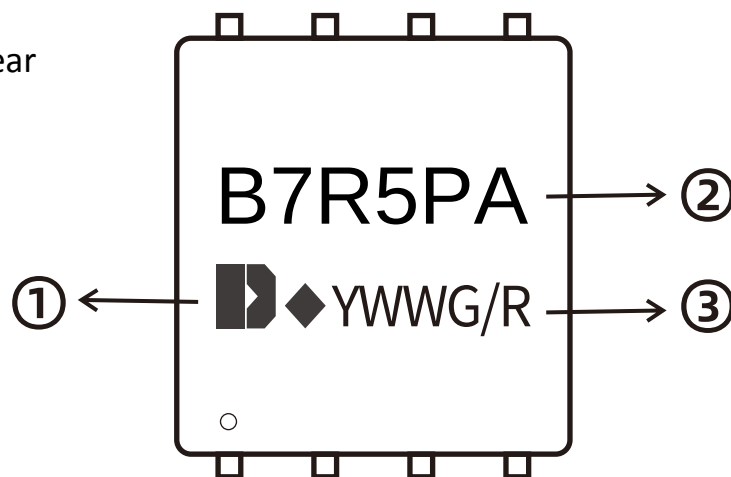
②. Part NO.

③. 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	2025-11-18	Release of final version

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