

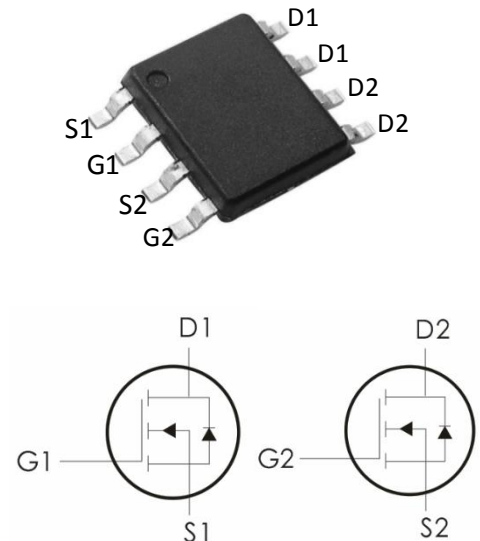
Description:

This Dual 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) $V_{DS}=30V, I_D=9A, R_{DS(ON)} < 13m\Omega @ V_{GS}=10V$
- 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.



Package Marking and Ordering Information :

Part NO.	Marking	Package	Packing
DOS9DN03	9DN03	SOP-8D	3000 pcs/Reel

Absolute Maximum Ratings: ($T_A \geq 25^\circ C$ 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_{Sm}	Diode pulsed current ¹	40	A
E_{AS}	Single Pulse Avalanche Energy ²	17	mJ
P_D	Power Dissipation ³	2.2	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to mbient	57	$^\circ C/w$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 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						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	1.4	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =10A	---	10	13	m Ω
		V _{GS} =4.5V, I _D =5A	---	15	20	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	580	---	pF
C _{Oss}	Output Capacitance		---	110	---	
C _{rss}	Reverse Transfer Capacitance		---	94	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =30V, I _D =20A, R _G =3Ω, V _{GS} =10V	---	4	---	ns
t _r	Rise Time		---	7	---	ns
t _{d(off)}	Turn-Off Delay Time		---	20	---	ns
t _f	Fall Time		---	6	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =10A	---	14	---	nC
Q _{gs}	Gate-Source Charge		---	4.6	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	3.5	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
I _S	Continuous Drain Current	VD=VG=0V	---	---	9	A
I _{SM}	Diode pulsed current	VD=VG=0V	---	---	40	A
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _S =10A	---	---	1.2	V
Q _{rr}	Reverse Recovery Charge	I _S =20A, di/dt=100A/us	---	5.9	---	nC
T _{rr}	Reverse Recovery Time		---	7	---	ns

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : $T_J=25^{\circ}\text{C}$, $V_{DD}=15\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$, $I_{AS}=8.3\text{A}$
 $T_J=25^{\circ}\text{C}$, $V_{DD}=-15\text{V}$, $V_G=-10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$, $I_{AS}=-9.8\text{A}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycles $\leq 2\%$

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

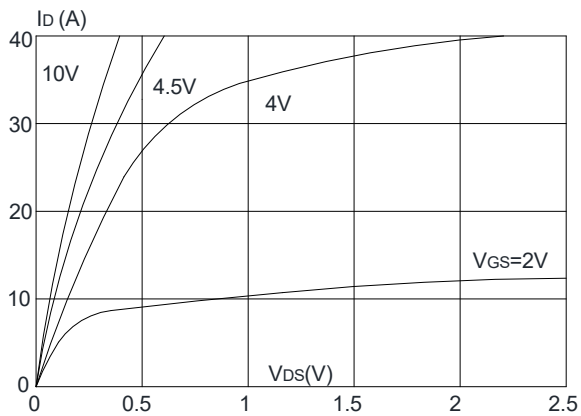


Figure1: Output Characteristics

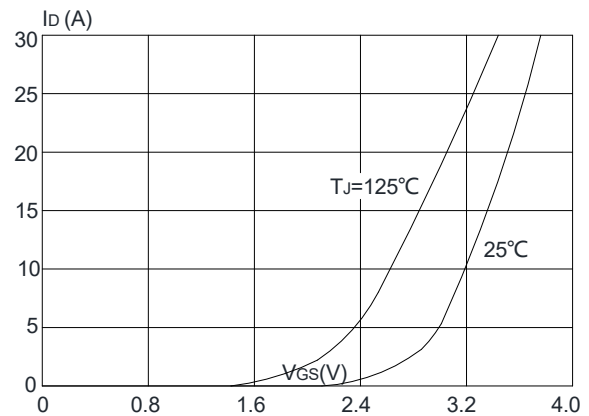


Figure 2: Typical Transfer Characteristics

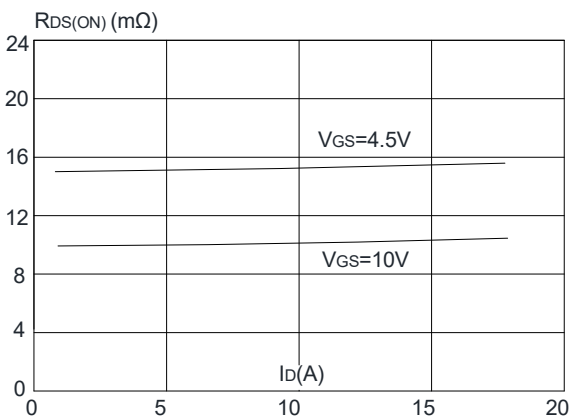


Figure 3: On-resistance vs. Drain Current

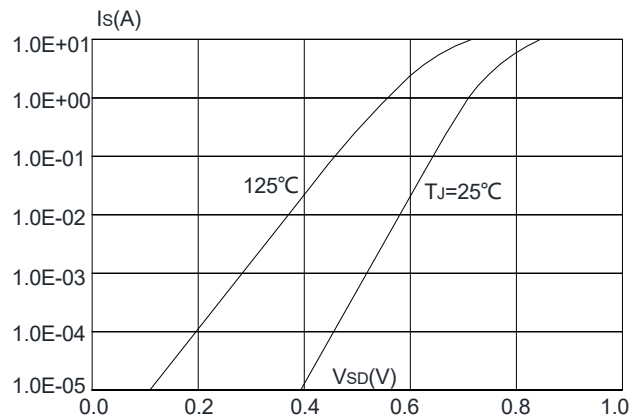


Figure 4: Body Diode Characteristics

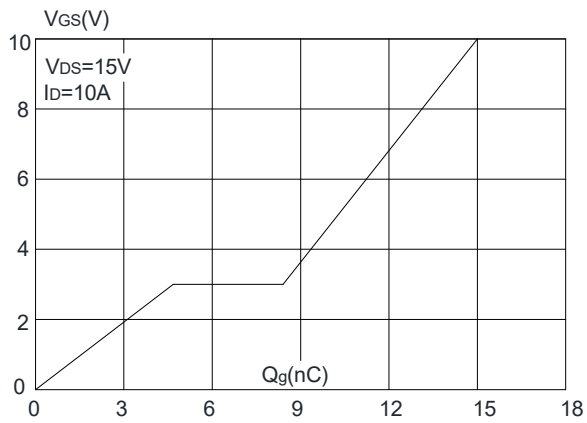


Figure 5: Gate Charge Characteristics

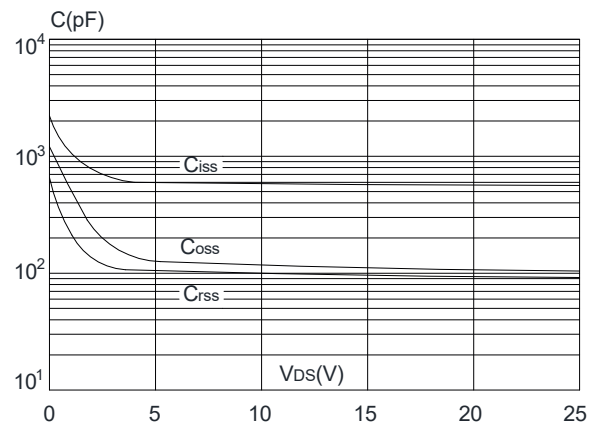


Figure 6: Capacitance Characteristics

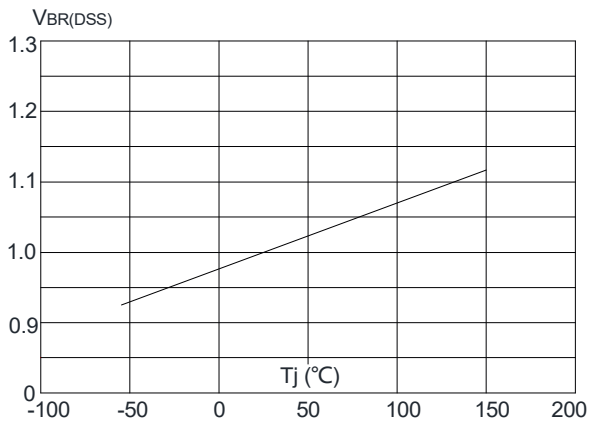


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

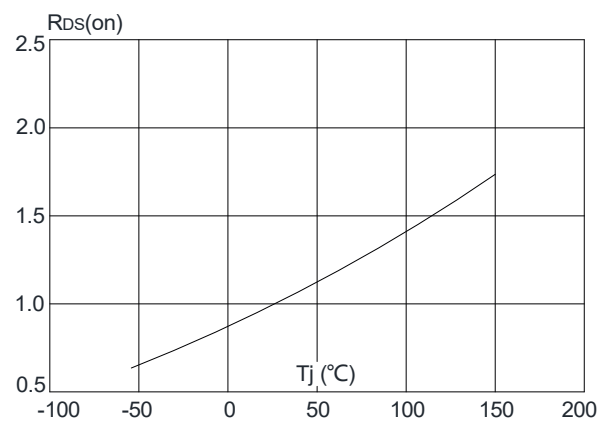


Figure 8: Normalized on Resistance vs. Junction Temperature

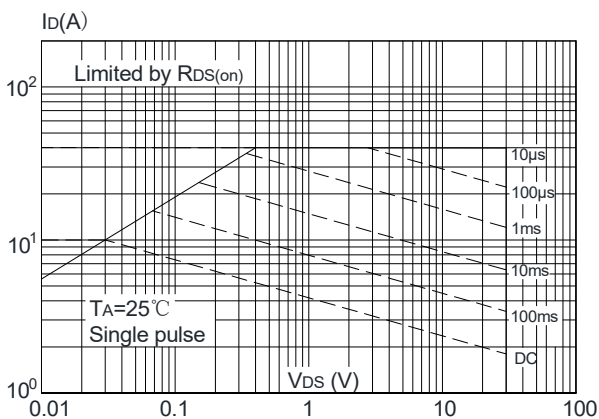


Figure 9: Maximum Safe Operating Area

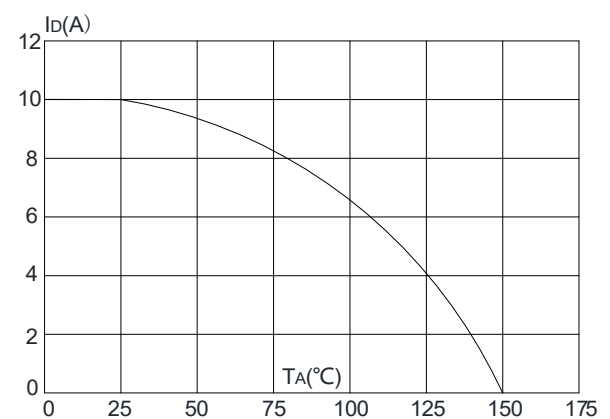


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

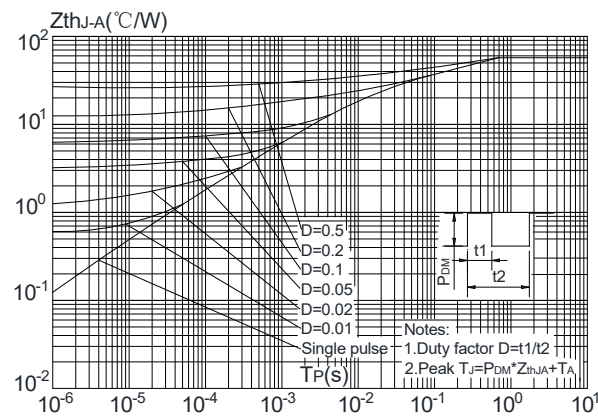
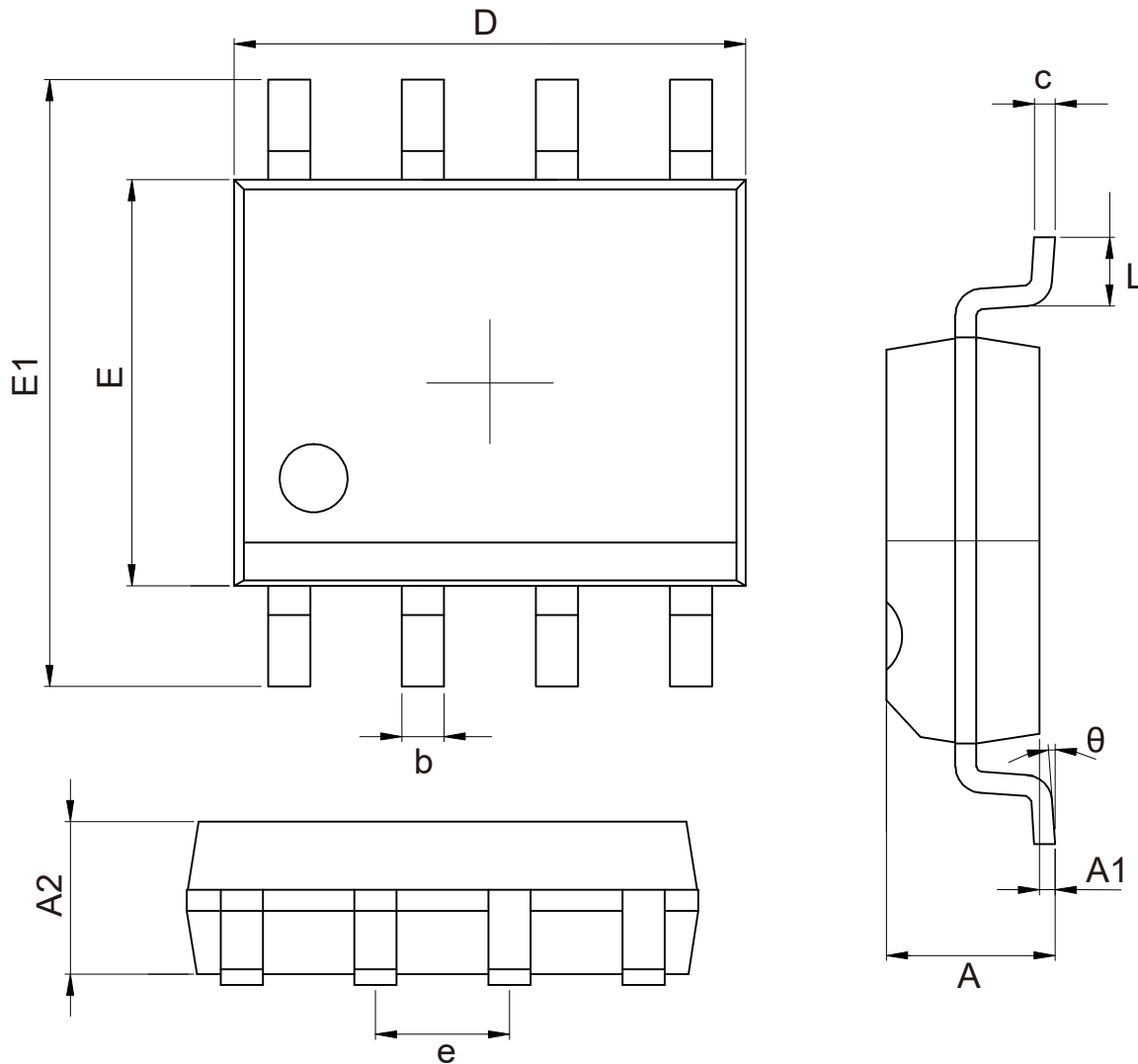


Figure.11: Maximum Effective
Transient Thermal Impedance, Junction-to-Ambient

SOP-8 Package Information:



COMMON DIMENSIONS			
CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.350	—	1.750
A1	0.100	—	0.250
A2	1.350	—	1.550
b	0.330	—	0.510
c	0.170	—	0.250
D	4.700	—	5.100
E	3.800	3.900	4.000
E1	5.800	—	6.200
e	1.270BSC		
L	0.400	—	1.270
θ	0°	—	8°

Unit:mm

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Marking Information:

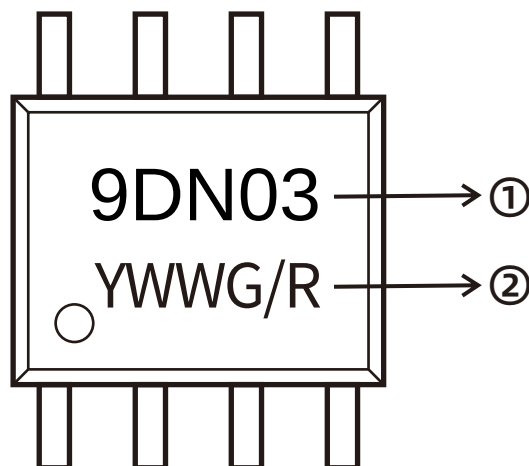
①. Part NO.

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	2024-05-29	Release of final version

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