

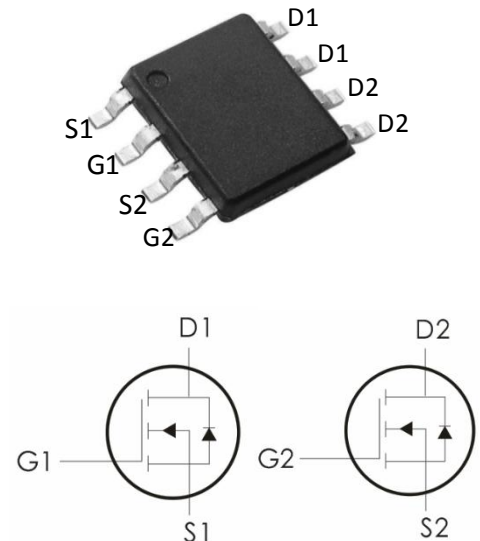
Description:

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) $V_{DS}=40V, I_D=9A, R_{DS(ON)} < 22m\Omega @ V_{GS}=10V$
- 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
DOS9DN04	9DN04	SOP-8D	3000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current - $T_A=25^\circ\text{C}$	9	A
	Continuous Drain Current - $T_A=70^\circ\text{C}$	5.2	
I_{DM}	Drain Current-Pulsed	32	A
E_{AS}	Single Pulsed Avalanche Energy	13	mJ
P_D	Power Dissipation - $T_A=25^\circ\text{C}$	2	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	62.5	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =40V, T _A =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	1.0	1.5	2.5	V
R _{DS(ON)}	Drain-Source On Resistance②	V _{GS} =10V, I _D =8A	---	19	22	m Ω
		V _{GS} =4.5V, I _D =5A	---	22	35	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	630	---	pF
C _{Oss}	Output Capacitance		---	65	---	
C _{rss}	Reverse Transfer Capacitance		---	55	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V, R _{R E N} =3 Ω R _L =2.5 Ω . V _{GS} =10V,	---	3.8	---	ns
t _r	Rise Time		---	2.8	---	ns
t _{d(off)}	Turn-Off Delay Time		---	14.5	---	ns
t _f	Fall Time		---	1.8	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =20V, I _D =8A	---	10	---	nC
Q _{gs}	Gate-Source Charge		---	3	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	2.9	---	nC
Drain-Source Diode Characteristics						
I _s	Maximum Continuous Drain to Source Diode Forward Current	VD=VG=0V	---	---	9	A

I_{SM}	Source drain current(Body Diode)	V _D =V _G =0V	---	---	32	A
V_{SD}	Forward Voltage②	V _{GS} =0V, I _S =8A, T _J =25℃	---	---	1.2	V

Notes:

1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25℃, V_{DD}=20V, V_G=10V, L=0. 5mH, R_g=25 Ω , I_{AS}=7. 2A

T_J=25℃, V_{DD}=-20V, V_G= -10V, L=0. 5mH, R_g=25 Ω , I_{AS}=-8. 4A

3.Pulse Test: Pulse Width≤300 μ s, Duty Cycle≤2%

Typical Characteristics: (T_c=25℃ unless otherwise noted)

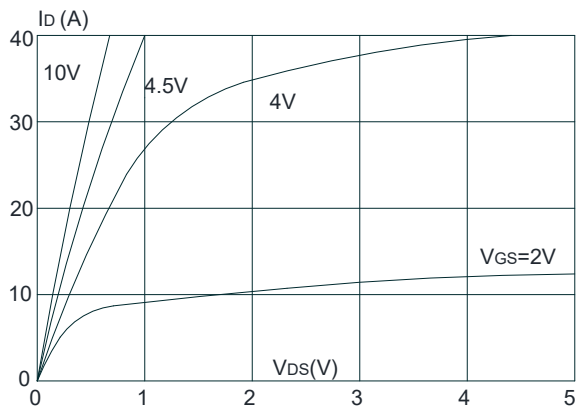


Figure1: Output Characteristics

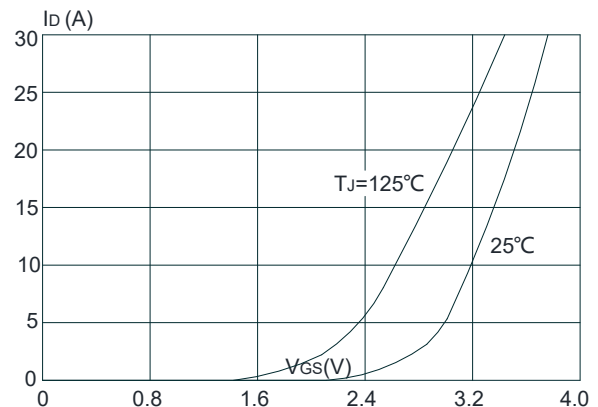


Figure 2: Typical Transfer Characteristics

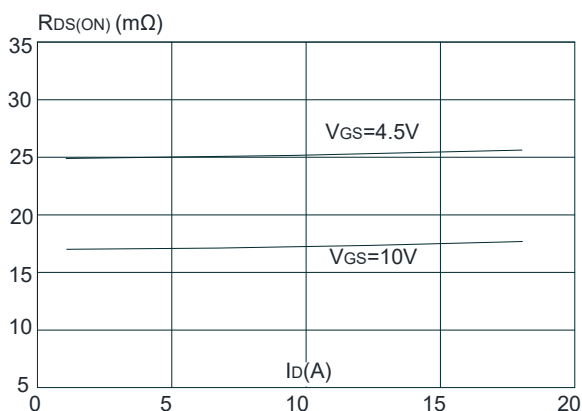


Figure 3:On-resistance vs. Drain Current

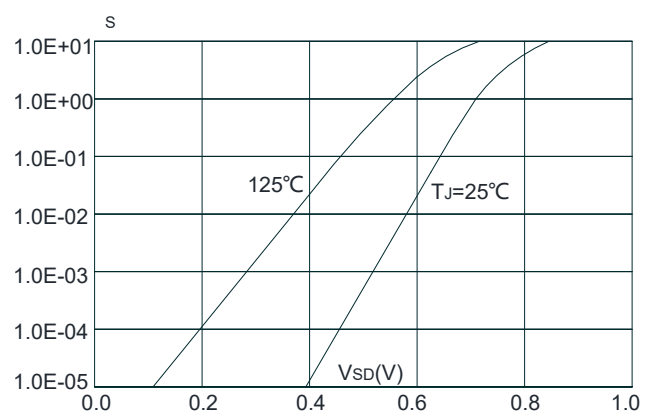


Figure 4: Body Diode Characteristics

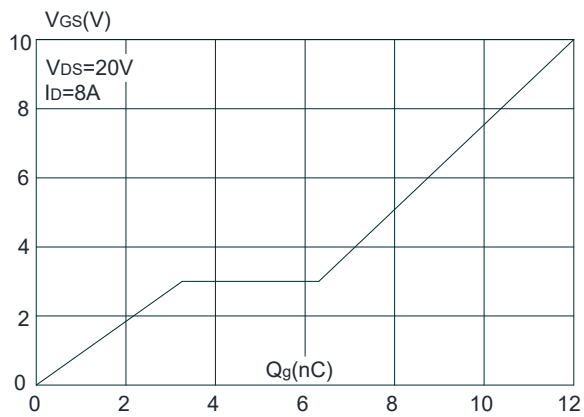


Figure 5: Gate Charge Characteristics

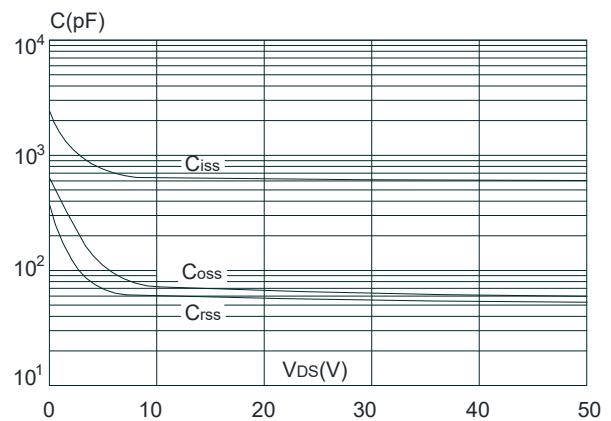


Figure 6: Capacitance Characteristics

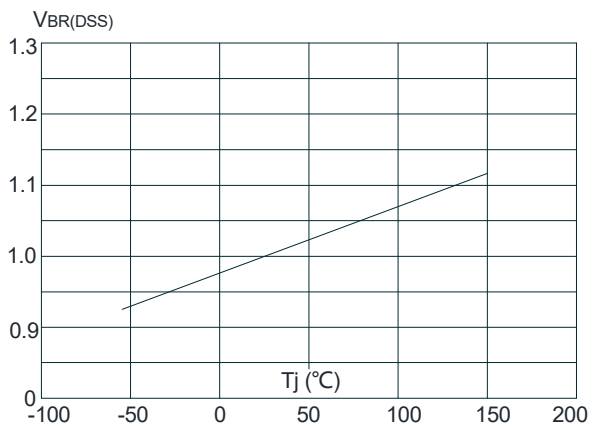


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

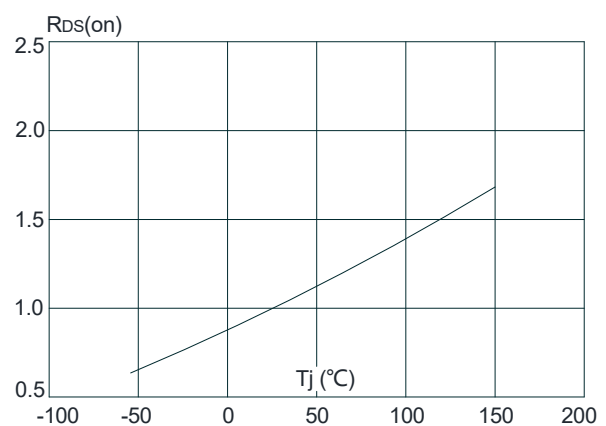


Figure 8: Normalized on Resistance vs. Junction Temperature

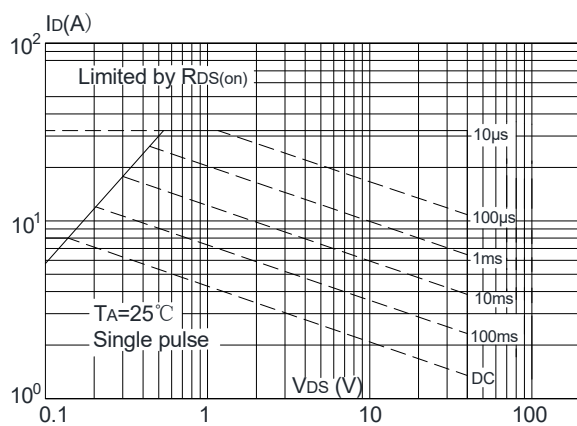


Figure 9: Maximum Safe Operating Area

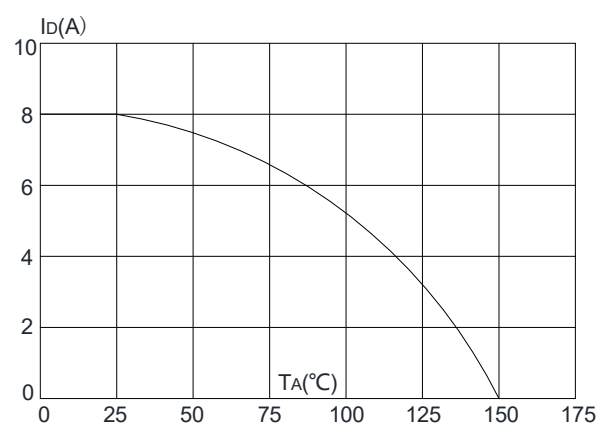


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

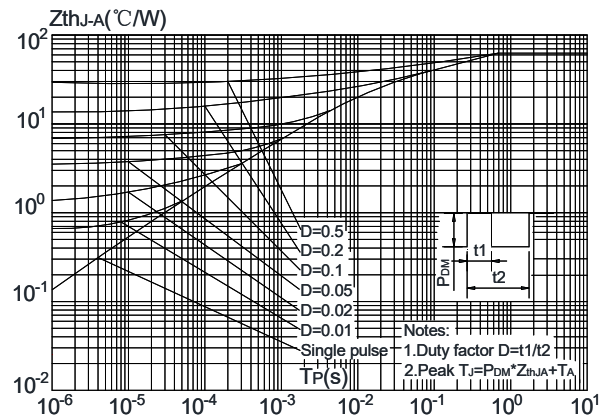
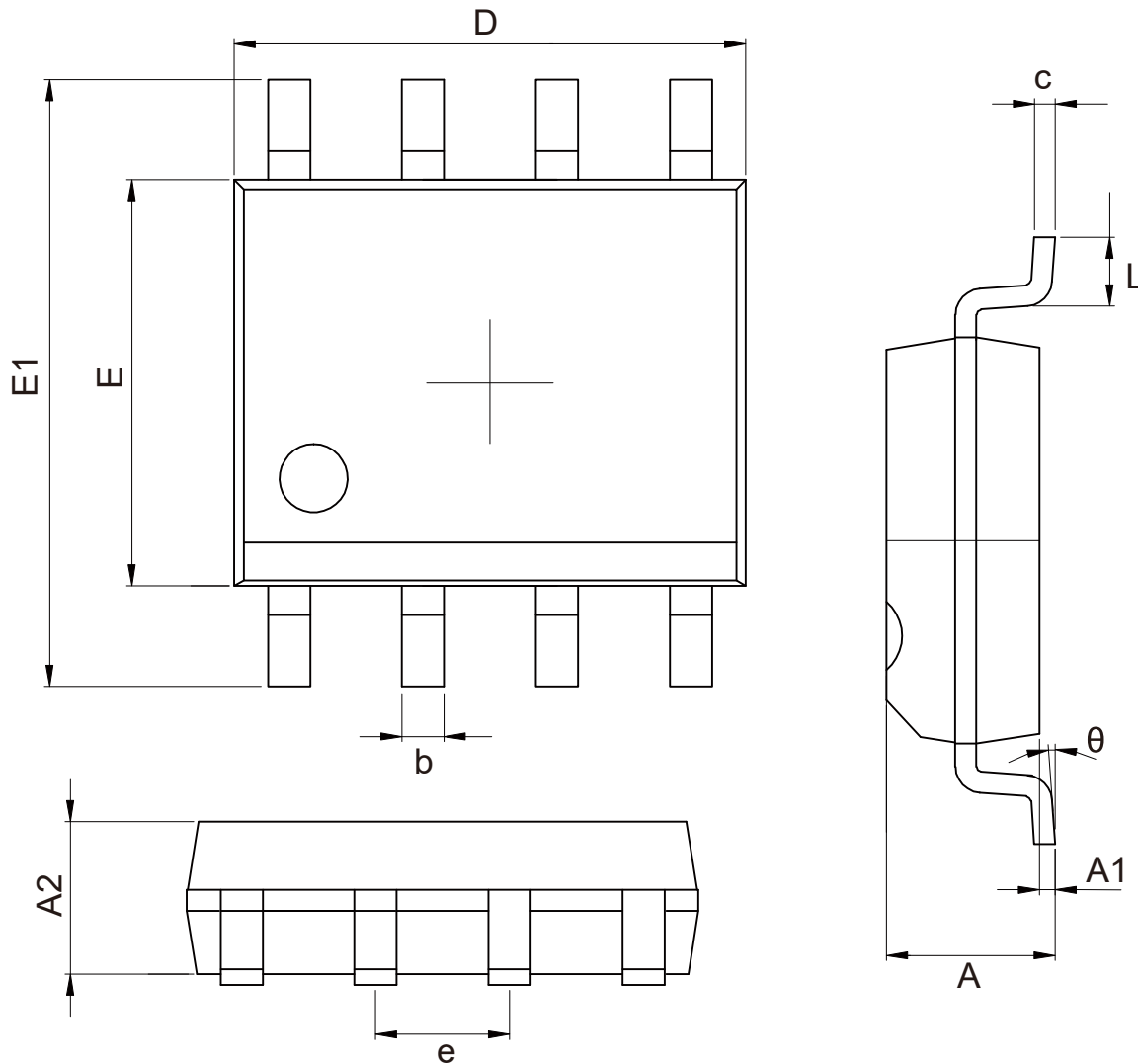


Figure.11: Maximum Effective
Transient Thermal Impedance, Junction-to-Ambient

SOP-8DPackage 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

Marking Information:

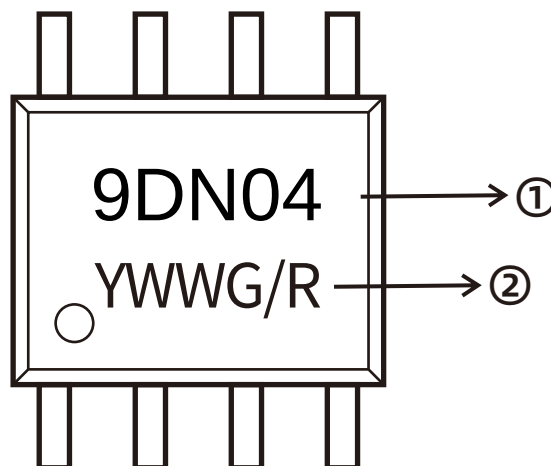
①. Part NO.

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)



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