

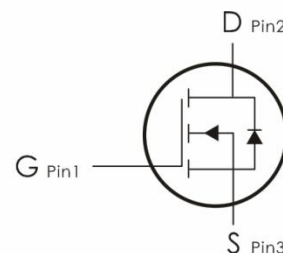
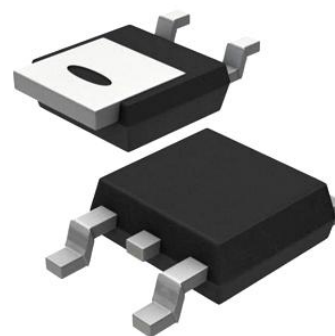
Description:

This N-Channel MOSFET uses advanced Planar 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) $V_{DS}=200V, I_D=9A, R_{DS(on)} < 0.3 \Omega @ V_{GS}=10V$
- 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
DOD9N20	9N20	TO- 252	2500 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Continuous Drain Current	9	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	4.5	
I_{DM}	Pulsed Drain Current ¹	36	
P_D	Power Dissipation	82	W
E_{AS}	Single pulse avalanche energy ²	142	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.52	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	$^\circ\text{C}/\text{W}$

Electrical Characteristics: (T_C=25 °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	200	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =200V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 30V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	2.5	---	3.5	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =10V, I _D =4.5A	---	0.22	0.3	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	564	---	pF
C _{oss}	Output Capacitance		---	85	--	
C _{rss}	Reverse Transfer Capacitance		---	24	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ³	V _{DS} =100V, I _D =5.4A,	---	8	---	ns
t _{d(off)}	Turn-Off Delay Time ³	R _{ENG} =3.5 Ω	---	26	---	ns
Q _{gs}	Total Gate Charge ³	V _{GS} =10V, V _{DS} =160V, I _D =4.5A	---	2.3	---	nc
Q _{gd}	Gate-Source Charge ³		---	3.8	---	nc
Q _g	Gate-Drain “Miller” Charge ³		---	16.4	---	nc
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage ³	V _{GS} =0V, I _{SD} =9A	---	---	1.45	V
I _S	Continuous Drain Current	V _D =V _G =0V	---	---	9	A
I _{SM}	Pulsed Drain Current		---	---	36	A
T _{rr}	Reverse Recovery Time ³	I _F =9A, T _J =25 °C	---	120	176	ns
Q _{rr}	Reverse Recovery Charge ³	di/dt=100A/us	---	542	815	nc

Notes:

- 1.Repetitive rating: Pulse width limited by maximum junction temperature
- 2.Starting T_J=25 °C, V_{DD}=50V, L=3.5 mH, R_G=25Ω, I_{AS}=9.0A
- 3.Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

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

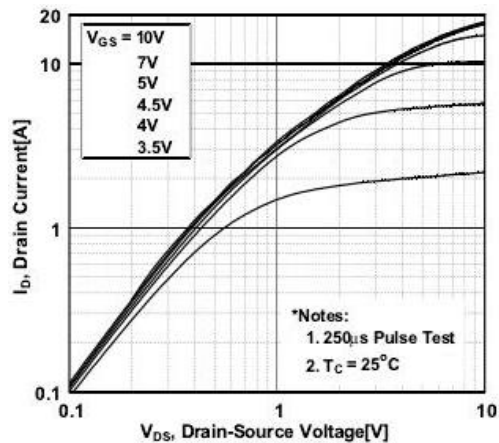


Fig1 Typical Output Characteristics, $T_C=25^\circ\text{C}$

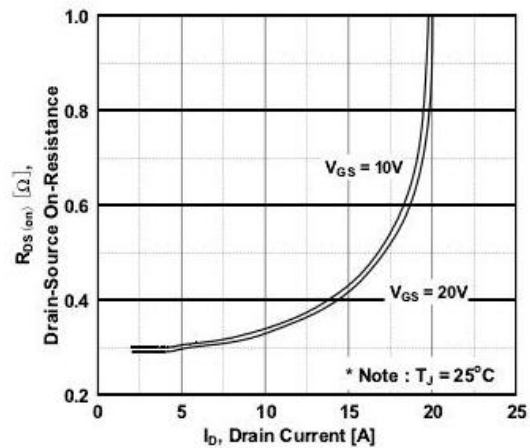


Fig2 On-Resistance Vs. Drain Current and Gate Voltage

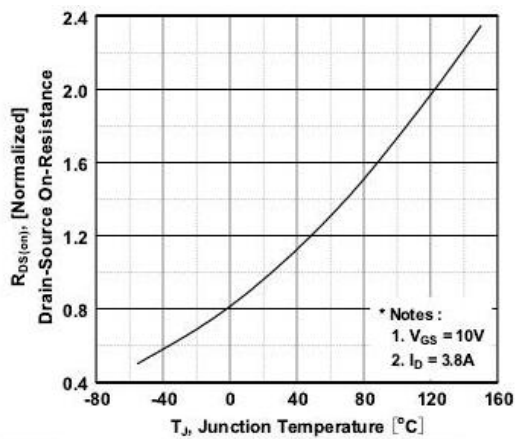


Fig3 Normalized On-Resistance Vs. Temperature

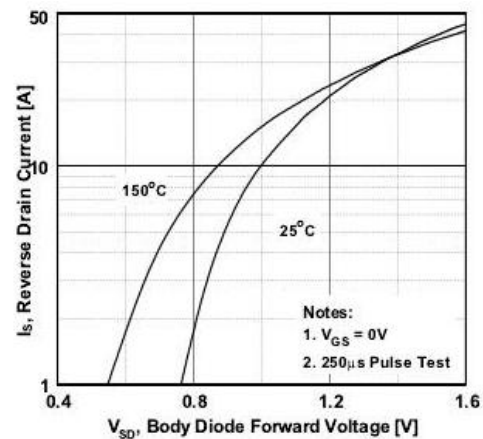


Fig4 Typical Source-Drain Diode Forward Voltage

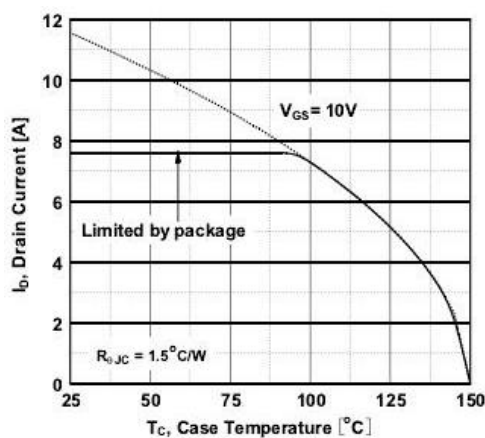


Fig5 Maximum Drain Current Vs. Case Temperature

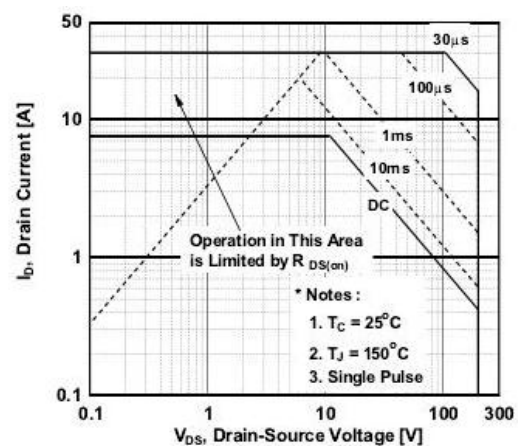
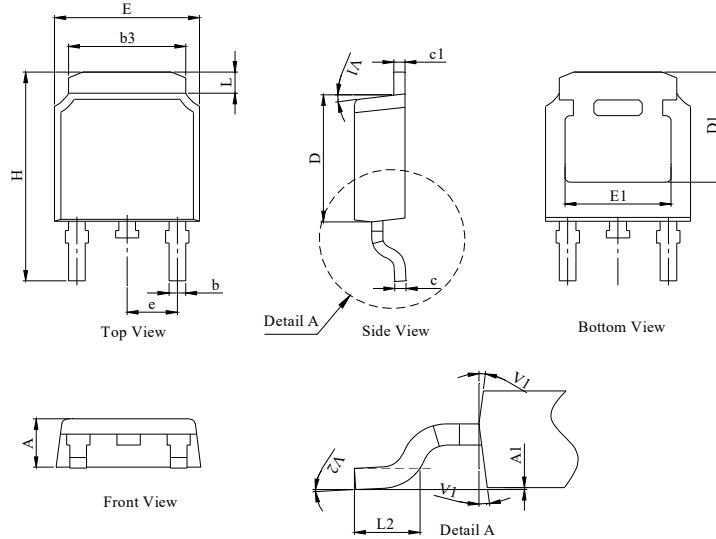


Fig6 Maximum Safe Operating Area

TO-252 Package Information

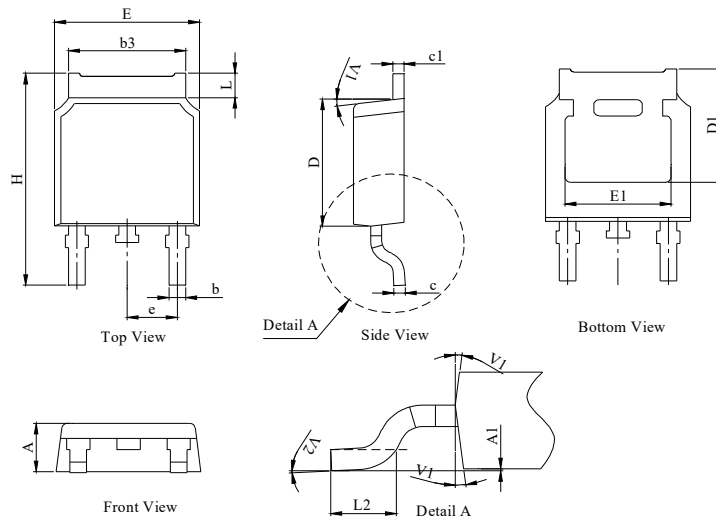
Package Outline Type-A

UNIT: mm



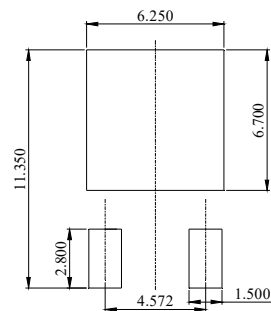
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

Package Outline Type-B



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.10	2.30	2.40
A1	0	--	0.13
b	0.66	0.76	0.86
b3	5.21	5.38	5.55
c	0.40	0.50	0.60
c1	0.44	0.50	0.58
D	5.90	6.10	6.30
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.29 BSC		
H	9.50	10.00	10.70
L	1.09	--	1.21
L2	1.35	--	1.65
V1	7° REF		
V2	0°	--	6°

Recommended Soldering Footprint



Marking Information:

①. Doingter LOGO

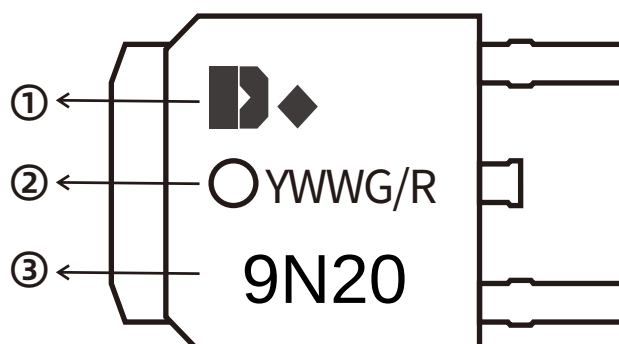
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)

③. Part NO.



Attention :

- Information furnished in this document is believed to be accurate and reliable. However, Shenzhen Doingter Semiconductor Co.,Ltd. assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.
- Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Shenzhen Doingter complies with the agreement. Products and information provided in this document have no infringement of patents.
- Shenzhen Doingter assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.  Is a registered trademark of Shenzhen Doingter Semiconductor Co., Ltd. Copyright © 2013 Shenzhen Doingter Semiconductor Co.,Ltd. Printed All rights reserved.