

Description:

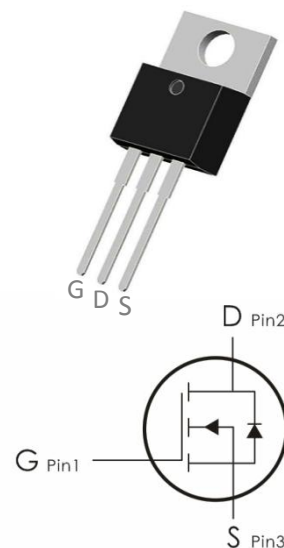
This N-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=200V, I_D=18A, R_{DS(ON)} < 140m\ \Omega @ V_{GS}=10V$
- 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
DOP18N20	18N20	TO- 220	50 pcs/Tube

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	18	A
I_{DM}	Pulsed Drain Current	72	
P_D	Power Dissipation	100	W
E_{AS}	Single pulse avalanche energy ²	246	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	1.25	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-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} =180V	---	---	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	2	---	4	V
R _{DS(ON)}	Drain-Source On Resistance ¹	V _{GS} =10V, I _D =9A	---	120	140	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	1173	---	pF
C _{oss}	Output Capacitance		---	140	--	
C _{rss}	Reverse Transfer Capacitance		---	67	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =100V, R _{ENG} =10 Ω ,V _{GS} =10V	---	15.3	---	ns
t _r	Rise Time		---	0.7	---	ns
t _{d(off)}	Turn-Off Delay Time		---	33.5	---	ns
t _f	Fall Time		---	20.5	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =160V, I _D =18A	---	41.1	---	nc
Q _{gs}	Gate-Source Charge		---	7.3	---	nc
Q _{gd}	Gate-Drain “Miller” Charge		---	19	---	nc
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =9A	---	---	1.5	V
I _S	Continuous Drain Curren	VD=VG=0V	---	---	18	A
I _{SM}	Pulsed Drain Current		---	---	72	A
Trr	Reverse Recovery Time ³	I _F =1A, T _J =25 °C	---	115	---	ns
Qrr	Reverse Recovery Charge ³	dI/dt=100A/us	---	418	---	nc

Notes:

1. Repetitive Rating;pulse width limited by maximum junction temperature.

2. $L=0.5mH, R_g=25\Omega, V_{DD}=50V$, starting $T_J=25^{\circ}\text{C}$.

3. Pulse width $\leq 300\mu s$;duty cycle $\leq 2\%$.

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

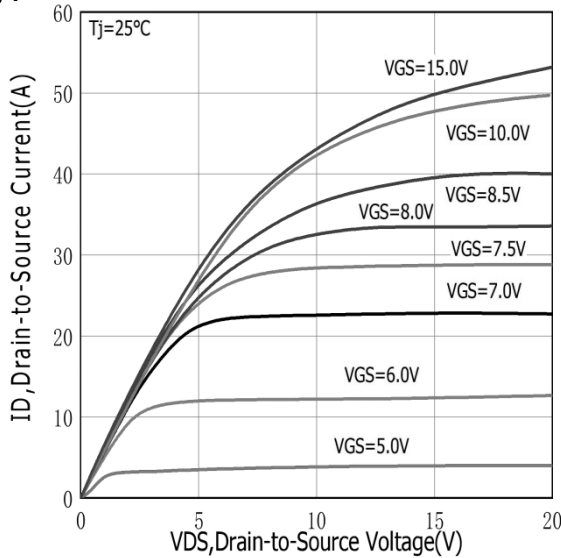


Figure.1 Typical Output Characteristics

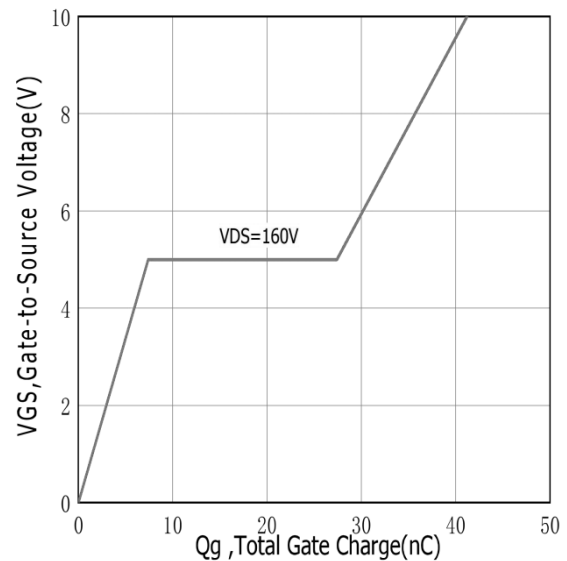


Figure.2 Typical Gate Charge vs Gate to Source Voltage

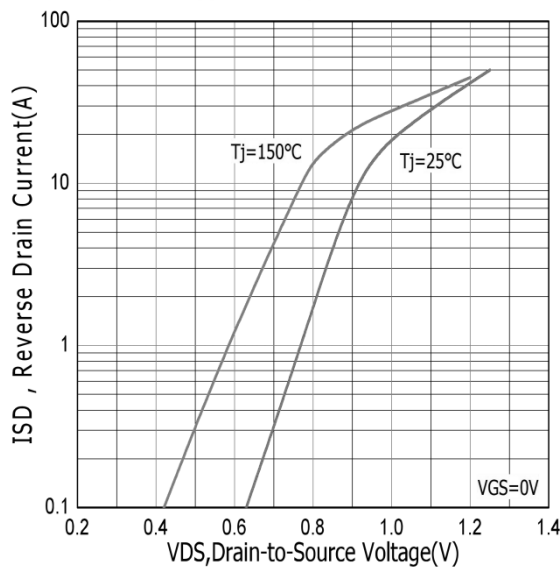


Figure.3 Typical Body Diode Transfer Characteristics

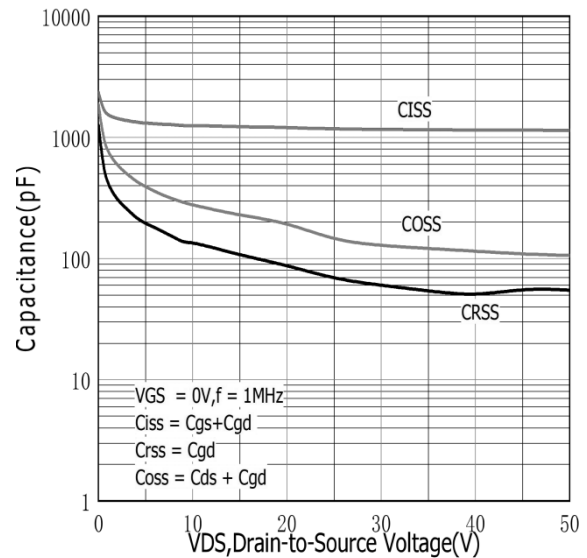


Figure.4 Typical Capacitance vs Drain to Source Voltage

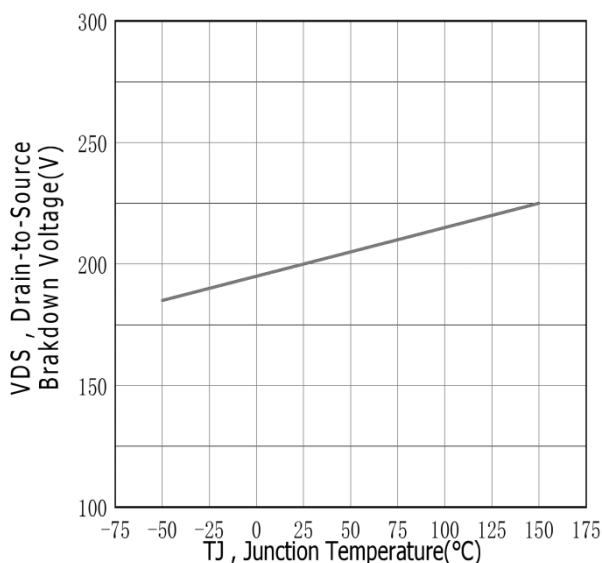


Figure.5 Typical Breakdown Voltage vs Junction Temperature

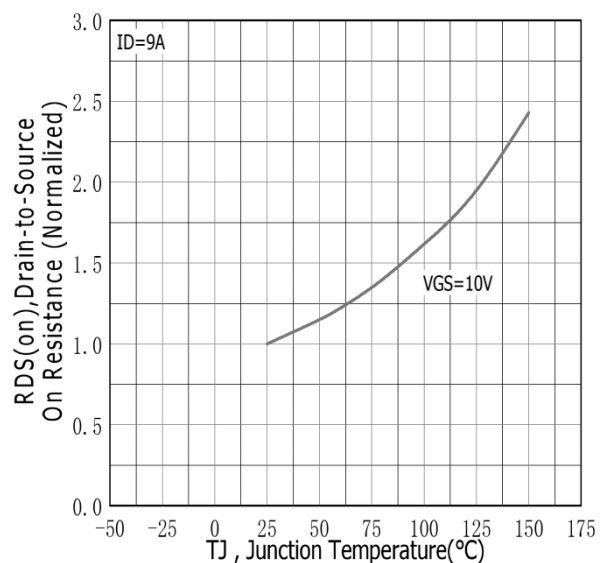


Figure.6 Typical Drain to Source on Resistance vs Junction Temperature

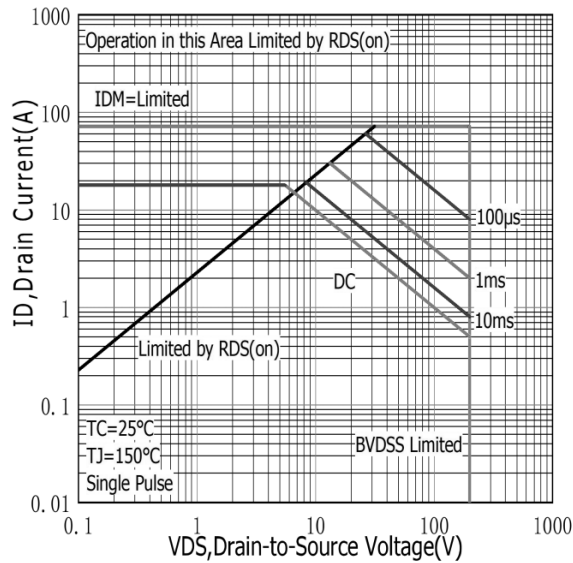


Figure.7 Maximum Forward Bias Safe Operating Area

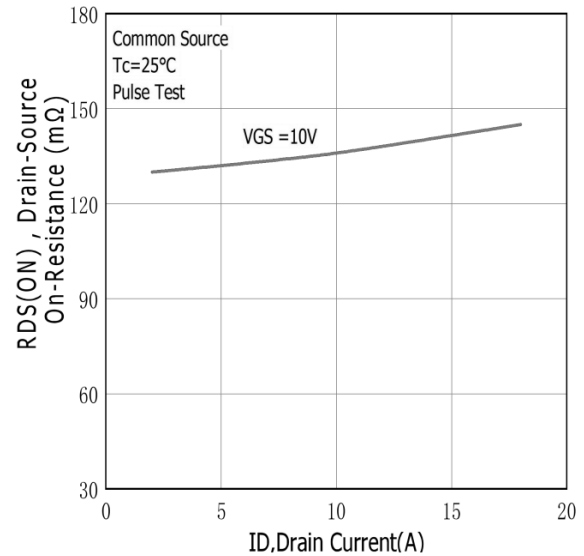


Figure.8 Typical Drain to Source ON Resistance vs Drain Current

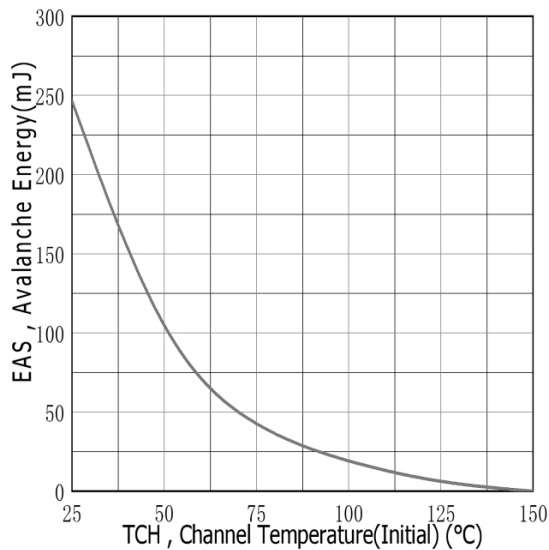


Figure.9 Maximum EAS vs Channel Temperature

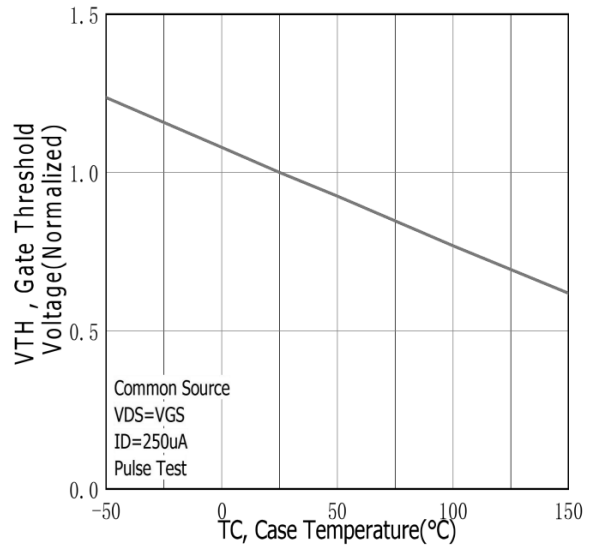


Figure.10 Typical Threshold Voltage vs Case Temperature

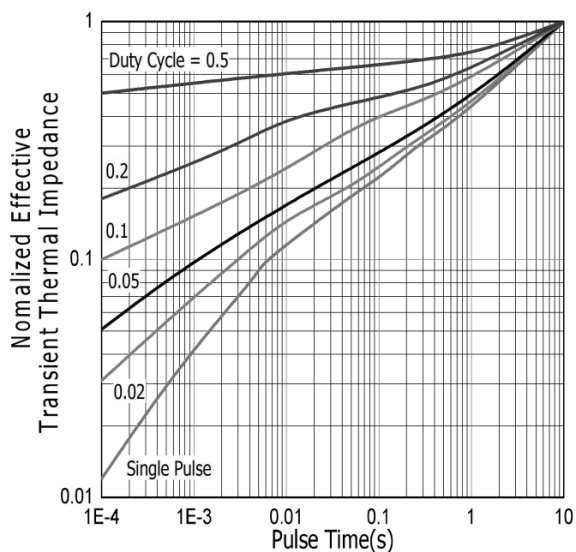


Figure.11 Maximum Effective Thermal Impedance, Junction to Case

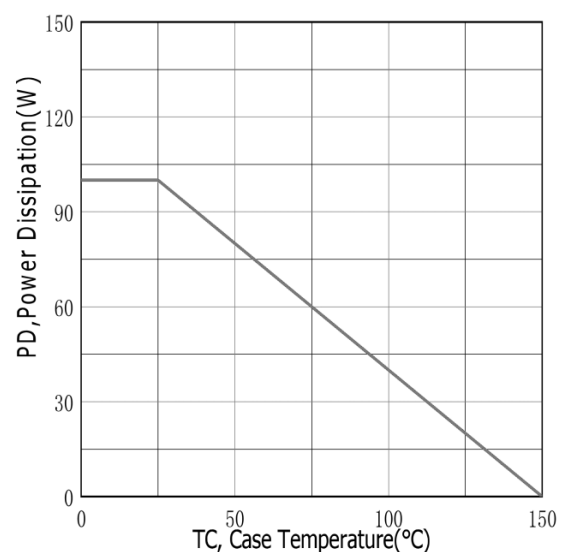
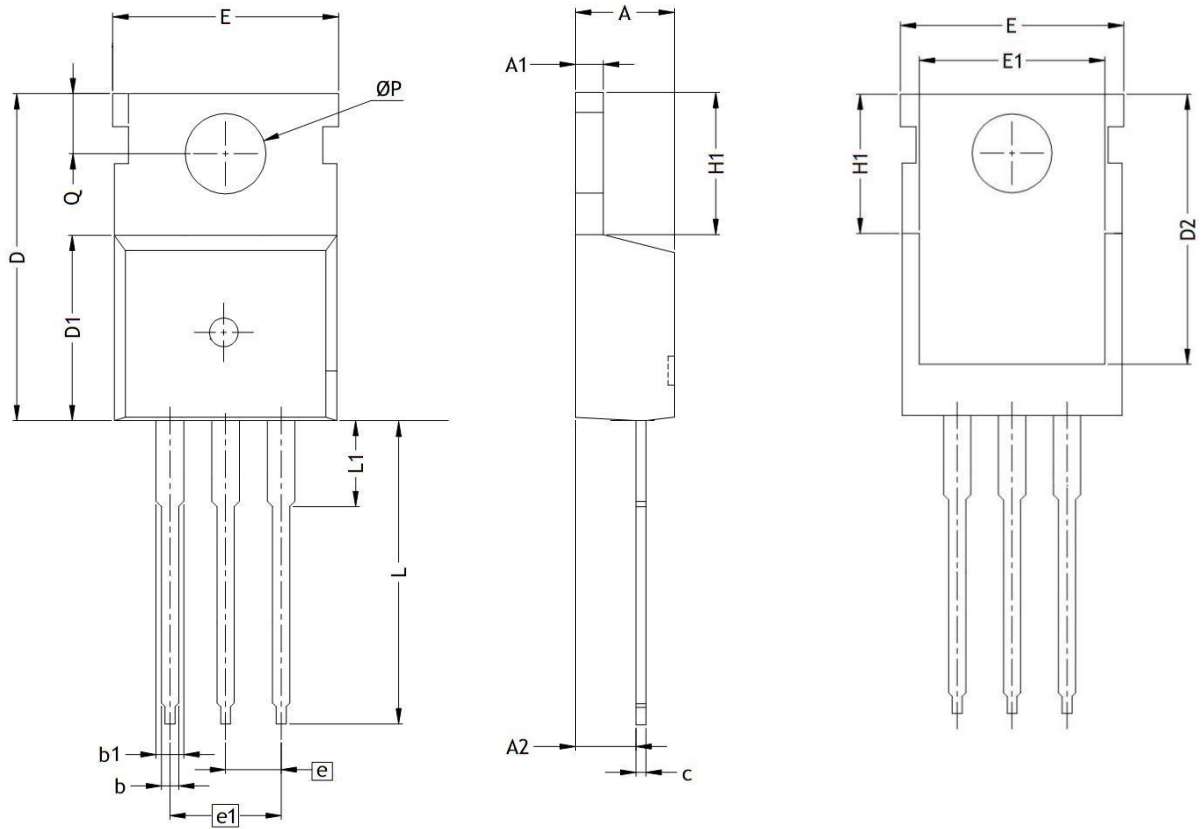


Figure.12 Maximum Power Dissipation vs Case Temperature

TO-220 Package Information:



UNIT: mm

SYMBOLS	A	A1	A2	b	b1	c	D	D1	D2	E	E1	e
MIN	4.25	1.25	2.35	0.7	1.15	0.45	14.35	8.80	13.05	9.90	7.85	2.540
MAX	4.65	1.35	2.55	0.9	1.75	0.60	15.95	9.50	13.65	10.35	8.85	BSC
SYMBOLS	e1	H1	L	L1	Q	φP						
MIN	5.080	6.30	12.85	2.85	2.70	3.50						
MAX	BSC	6.65	13.50	3.25	2.90	3.70						

Marking Information:

①. Doingter LOGO

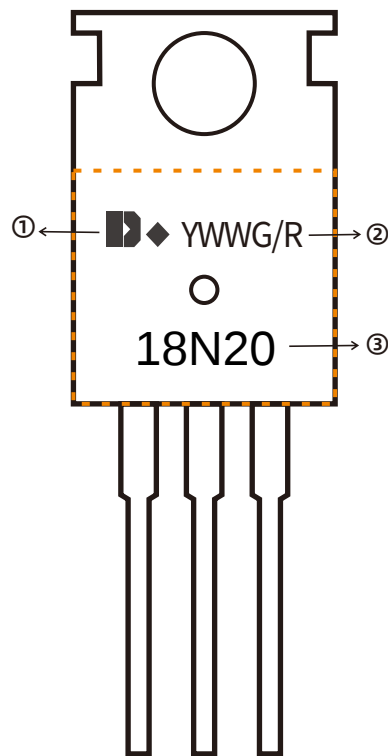
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

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

③. Part NO.

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