

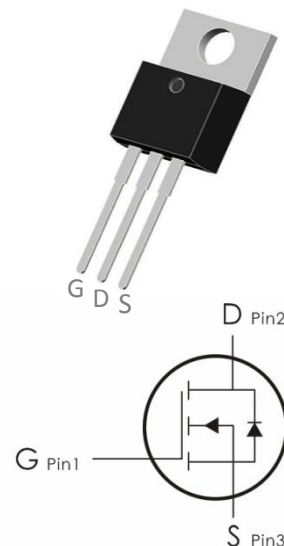
Description:

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) $V_{DS}=60V, I_D=30A, R_{DS(ON)}<30m\ \Omega$ @ $V_{GS}=10V$
- 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
DOP30N06	30N06	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	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ²	30	A
	Continuous Drain Current- $T_C=100^{\circ}C$ ²	18	
I_{DM}	Pulsed Drain Current ³	100	
P_D	Power Dissipation	37.8	W
E_{AS}	Single pulse avalanche energy ¹	48	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	3.3	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	$^{\circ}C/W$

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	60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =60V	---	---	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	1.2	1.8	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =20A	---	24	30	m Ω
		V _{GS} =4.5V, I _D =10A	---	31	40	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	---	1007	---	pF
C _{oss}	Output Capacitance		---	67	--	
C _{rss}	Reverse Transfer Capacitance		---	56.7	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =30V, I _D =20A, R _{ENG} =3 Ω ,V _{GS} =10V	---	8.82	---	ns
t _r	Rise Time		---	8.9	---	ns
t _{d(off)}	Turn-Off Delay Time		---	37.8	---	ns
t _f	Fall Time		---	5.25	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =20A	---	27.3	---	nc
Q _{gs}	Gate-Source Charge		---	5.9	---	nc
Q _{gd}	Gate-Drain “Miller” Charge		---	5.46	---	nc
Drain-Source Diode Characteristics						
I _S	Continuous Drain Current	VD=VG=0V	---	---	30	A
I _{SM}	Pulsed Drain Current		---	---	100	A
T _{rr}	Reverse Recovery Time	I _F =20A, T _J =25, dI/dt=100A/us	---	18	---	ns
Q _{rr}	Reverse Recovery Charge		---	13	---	nc
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =20A	---	---	1.2	V

Notes:

1. $L=0.5\text{mH}$, $V_{DD}=30\text{V}$, Start $T_J=25^\circ\text{C}$.
2. Limited by maximum junction temperature.
3. Repetitive Rating: Pulse width limited by maximum junction temperature.

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

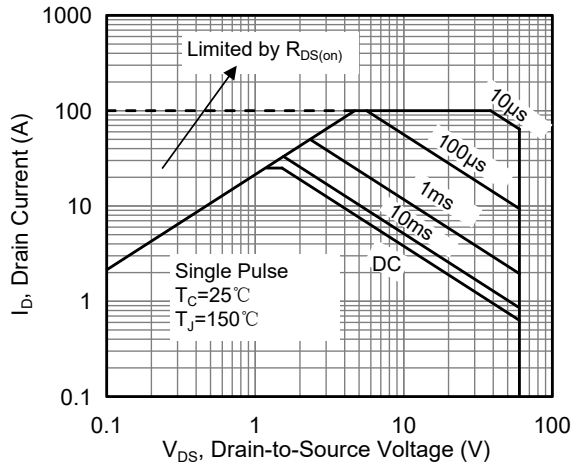


Figure 1. Maximum Safe Operating Area

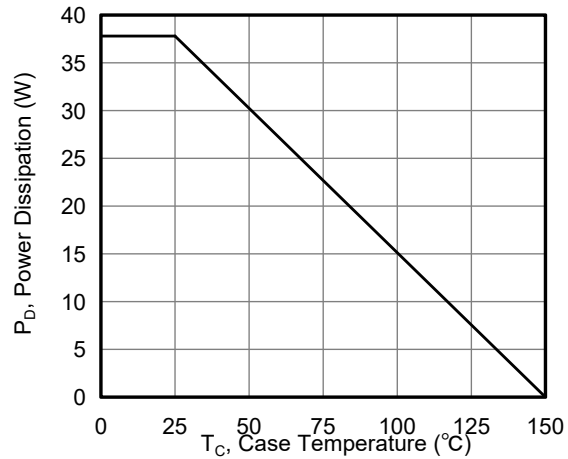


Figure 2. Maximum Power Dissipation vs Case Temperature

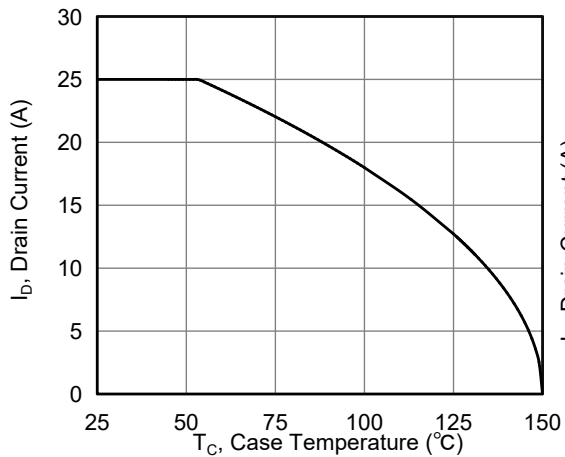


Figure 3. Maximum Continuous Drain Current vs Case Temperature

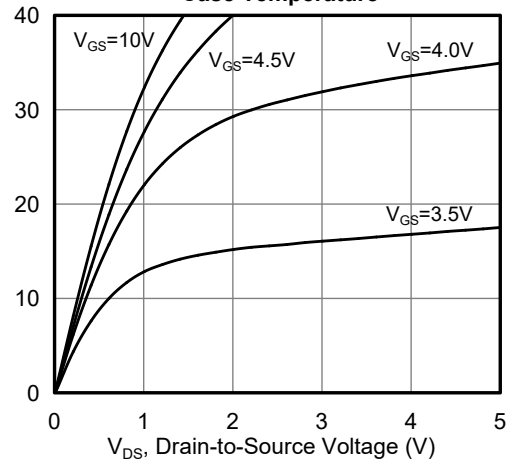


Figure 4. Typical output Characteristics

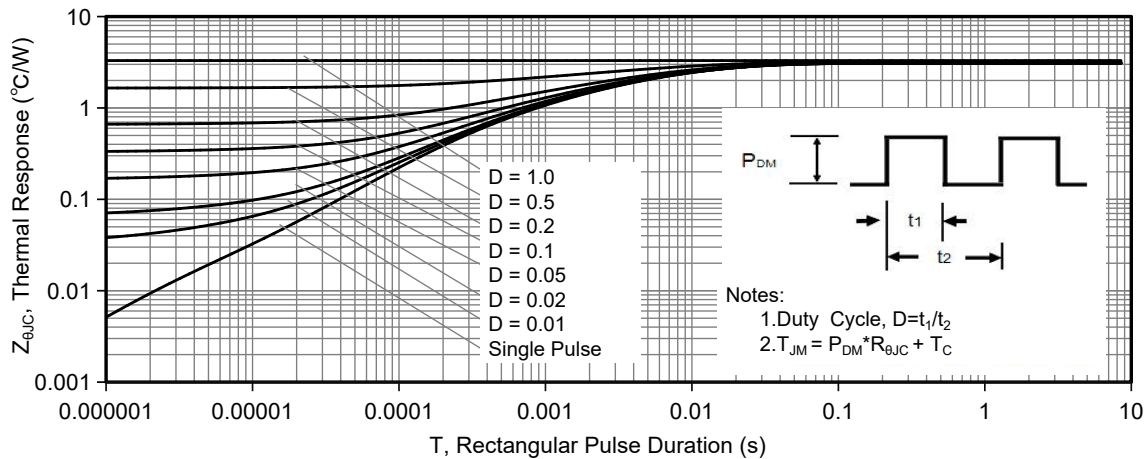
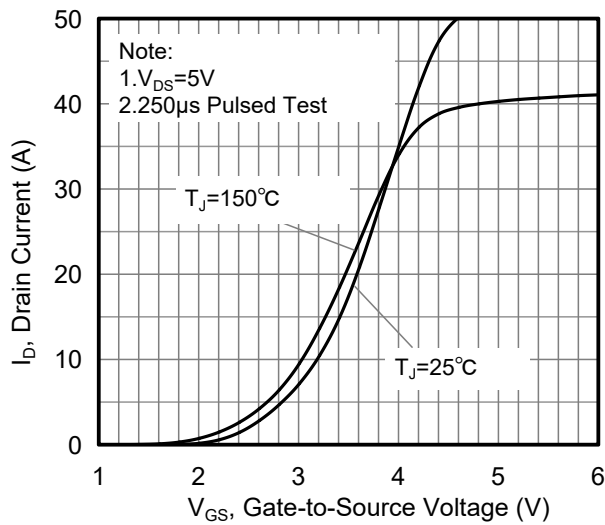
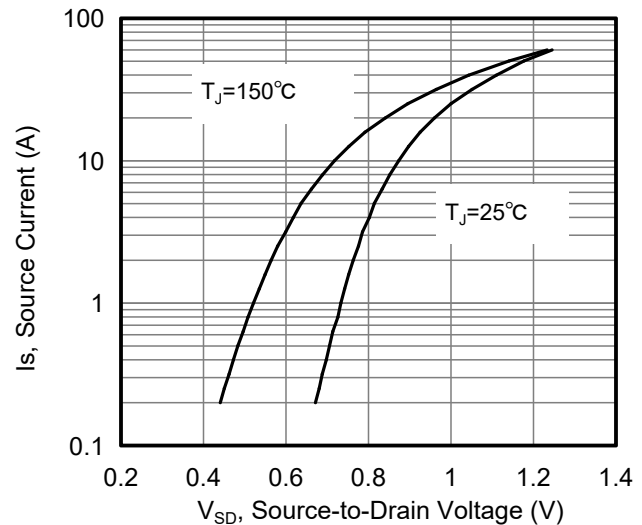
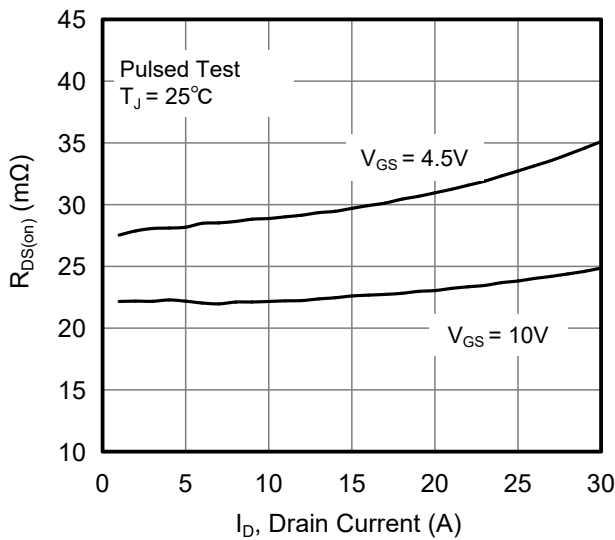
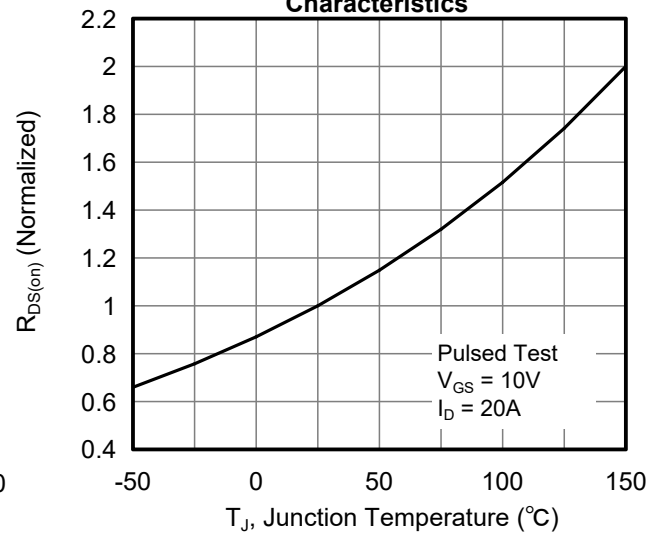
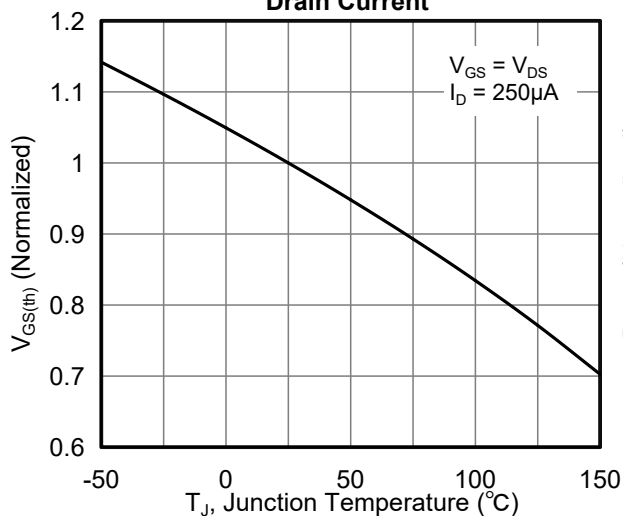
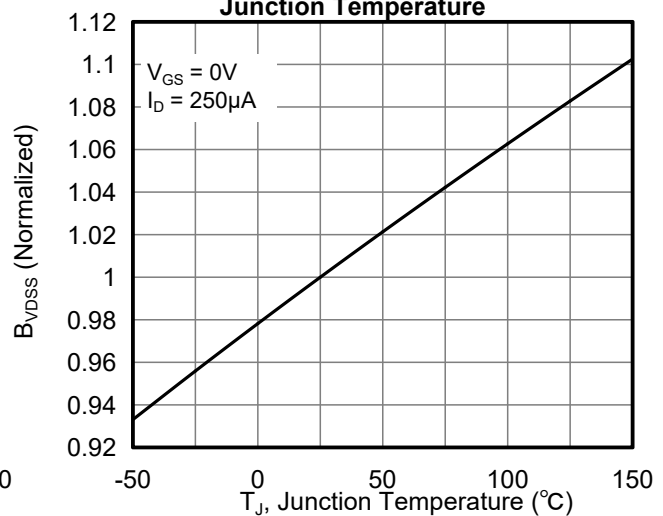


Figure 5. Maximum Effective Thermal Impedance, Junction to Case


Figure 6. Typical Transfer Characteristics

Figure 7. Typical Body Diode Transfer Characteristics

Figure 8. Drain-to-Source On Resistance vs. Drain Current

Figure 9. Normalized On Resistance vs. Junction Temperature

Figure 10. Normalized Threshold Voltage vs. Junction Temperature

Figure 11. Normalized Breakdown Voltage vs. Junction Temperature

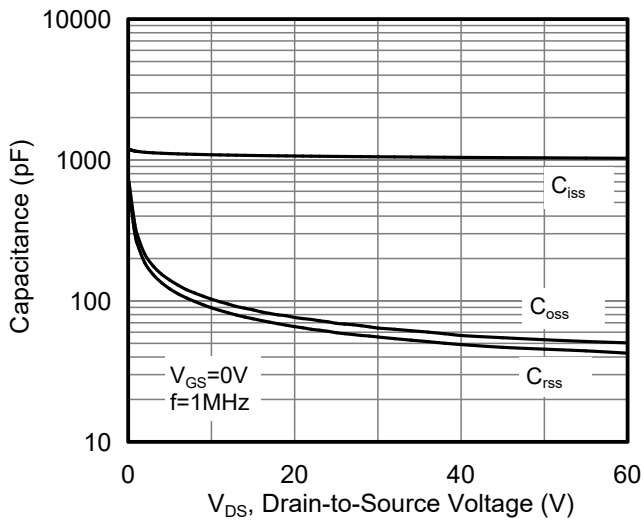


Figure 12. Capacitance Characteristics

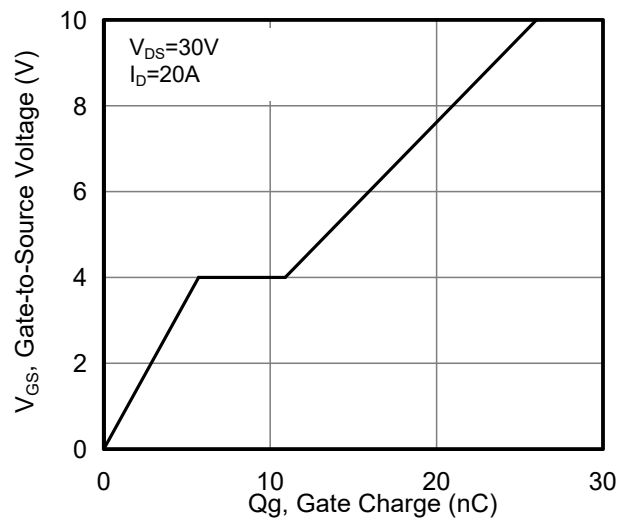
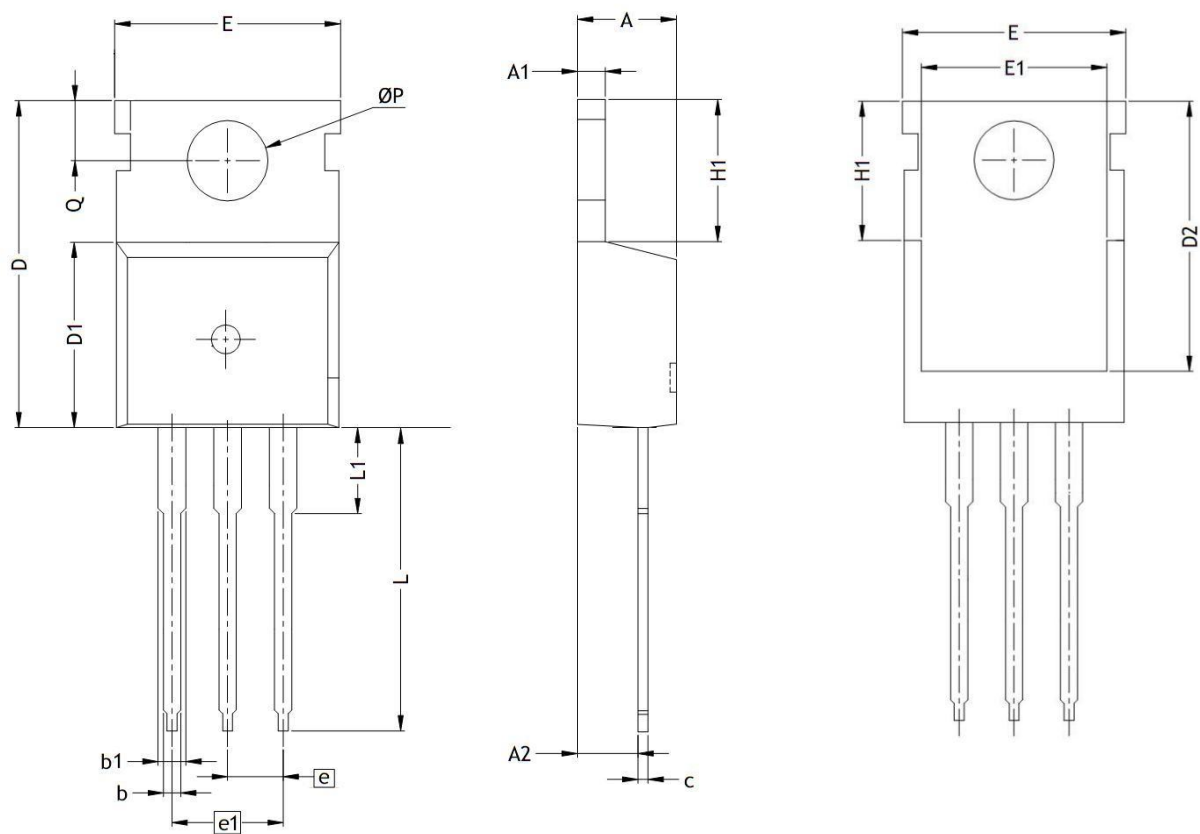


Figure 13. Typical Gate Charge vs. Gate to Source Voltage

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

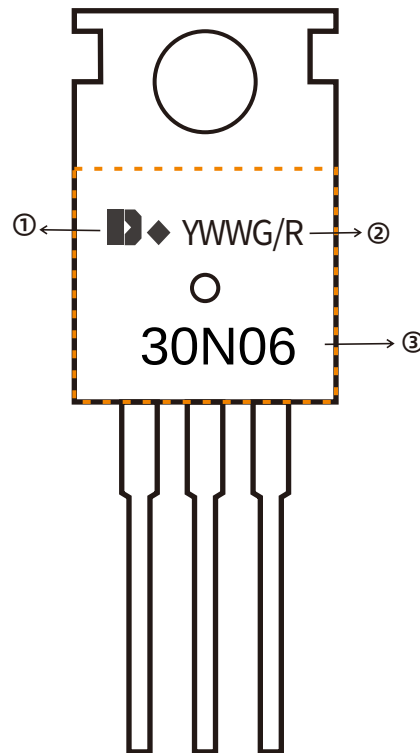
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

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

③. Part NO.



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2024-05-15	Release of final version

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