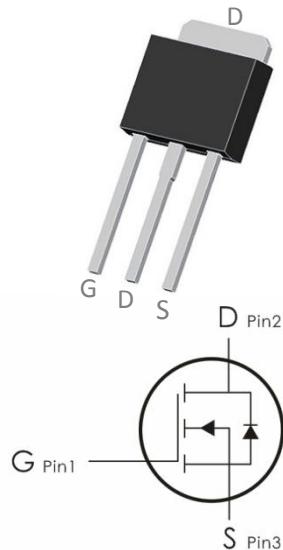


Description:

This P-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) $V_{DS}=-60V, I_D=-20A, R_{DS(on)}<68m\Omega @V_{GS}=-10V$
- 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
DOU20P06	20P06	TO- 251	75 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	-20	A
	Continuous Drain Current- $T_C=100^\circ C$	-12	
I_{DM}	Pulsed Drain Current ¹	-68	
P_D	Power Dissipation	50	W
E_{AS}	Single pulse avalanche energy ²	81	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+175	°C

Thermal Characteristics:

Symbol	Parameter	Max	Units
R_{eJC}	Thermal Resistance,Junction to Case	3	°C/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 μA	-60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-60V	---	---	-1	μA
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 μA	-1	---	-2.5	V
R_{DS(ON)}	Drain-Source On Resistance	V _{GS} =-10V, I _D =-9A	---	50	68	mΩ
		V _{GS} =-4.5V, I _D =-6A	---	60	90	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1MHz	---	1961	---	pF
C_{oss}	Output Capacitance		---	725	--	
C_{rss}	Reverse Transfer Capacitance		---	560	---	
Switching Characteristics						
t_{d(on)}	Turn-On Delay Time	V _{DS} =-30V R _{ENG} =3 Ω, V _{GS} =-10V	---	7	---	ns
t_r	Rise Time		---	39	---	ns
t_{d(off)}	Turn-Off Delay Time		---	61.1	---	ns
t_f	Fall Time		---	20.16	---	ns
Q_g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-30V, I _D =-10A	---	82.32	---	nc
Q_{gs}	Gate-Source Charge		---	11.78	---	nc
Q_{gd}	Gate-Drain "Miller" Charge		---	14	---	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage ³	V _{GS} =0V, I _{SD} =-9A	---	---	-1.2	V
I_s	Continuous Drain Current	V _D =V _G =0V	---	---	-20	A
I_{SM}	Pulsed Drain Current		---	---	-68	A
T_{rr}	Reverse Recovery Time	I _F =-10A, T _J =25°C dI/dt=100A/us	---	24	---	ns
Q_{rr}	Reverse Recovery Charge		---	25.2	---	nc

Notes:

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.EAS condition: $T_J=25^\circ\text{C}$, $V_{DD}=-40\text{V}$, $V_G=-10\text{V}$, $R_g=25\Omega$, $L=0.5\text{mH}$.
- 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

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

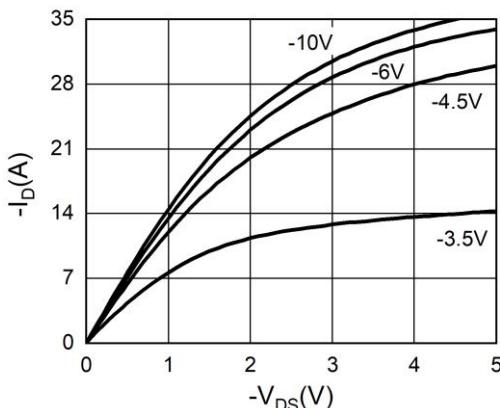


Figure 1. Output Characteristics

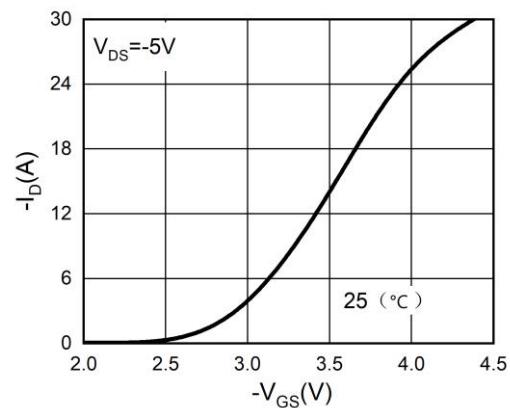


Figure 2. Transfer Characteristics

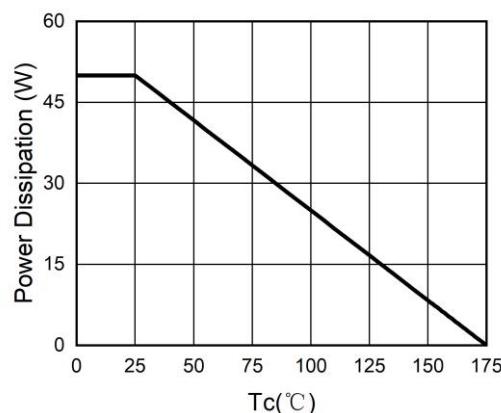


Figure 3. Power Dissipation

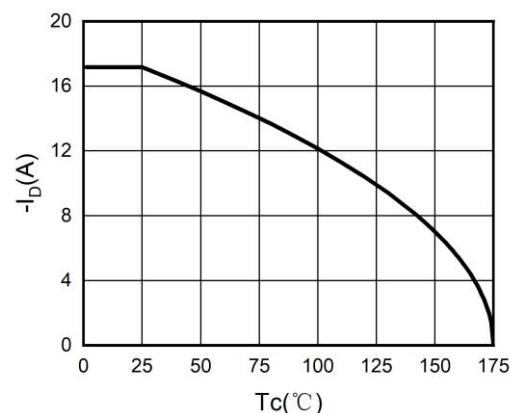


Figure 4. Drain Current

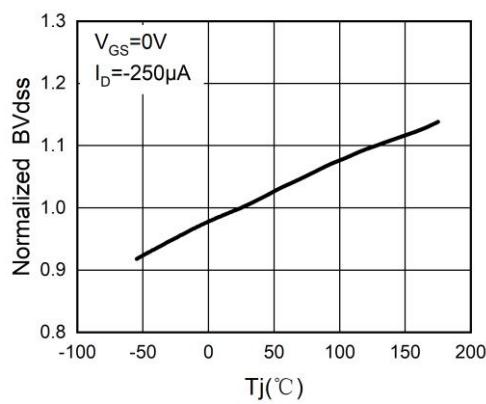


Figure 5. BV_{DSS} vs Junction Temperature

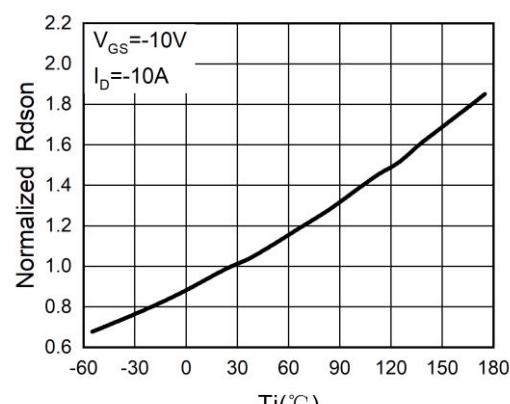


Figure 6. $\text{R}_{\text{DS}(\text{ON})}$ vs Junction Temperature

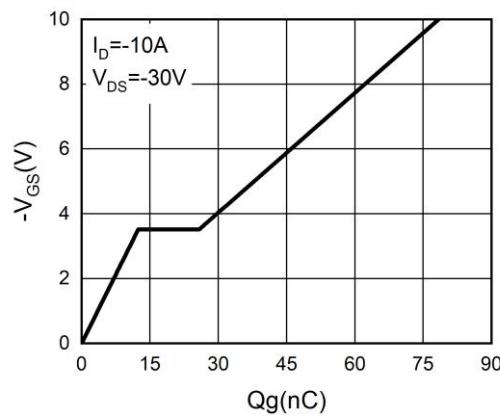


Figure 7. Gate Charge Waveforms

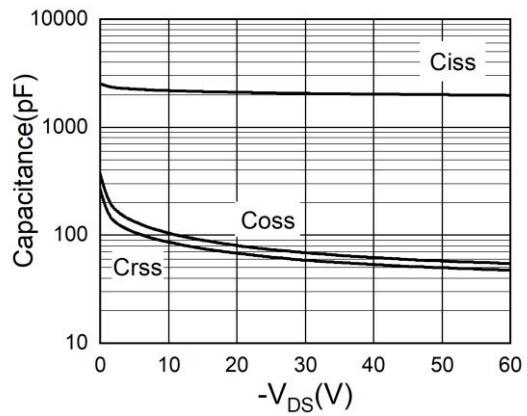


Figure 8. Capacitance

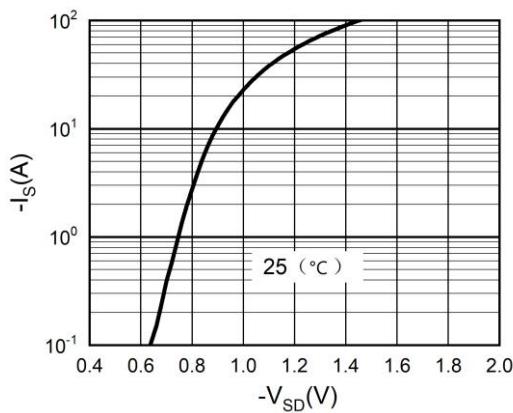


Figure 9. Body-Diode Characteristics

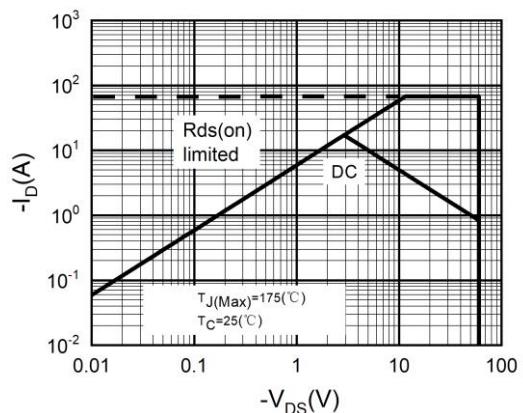
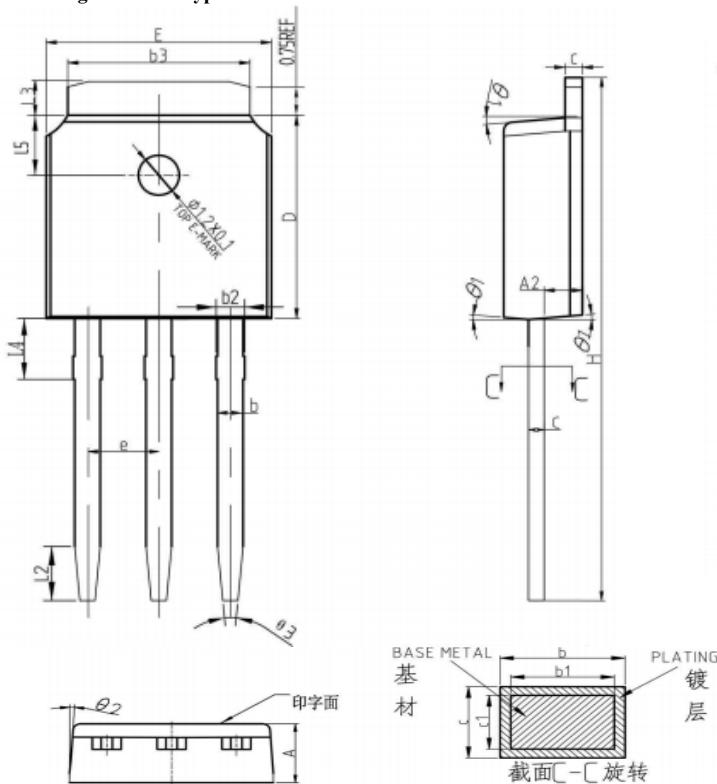


Figure 10. Maximum Safe Operating Area

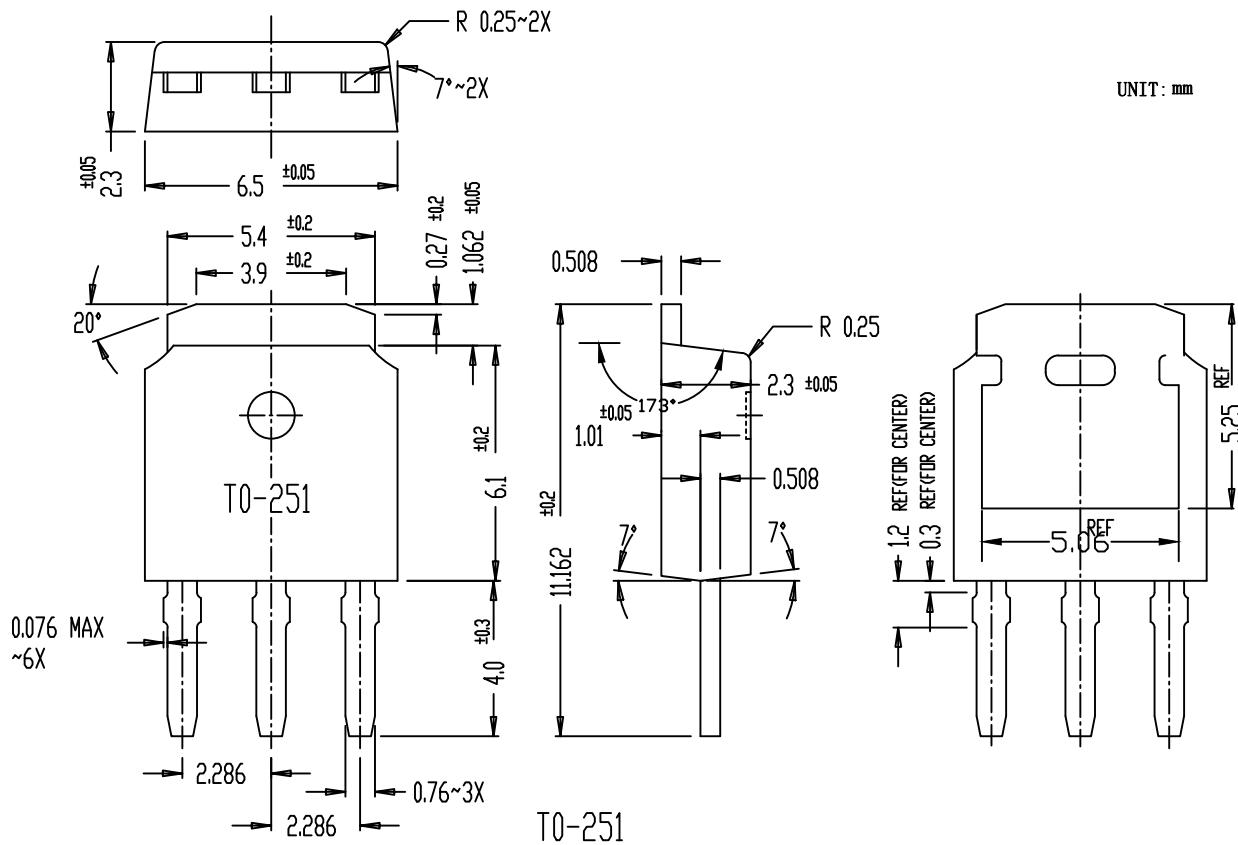
TO-251 Package Information

Package Outline Type-A



SYMBOL	mm		
	MIN	NOM	MAX
*A	2.20	2.30	2.38
*A2	0.97	1.07	1.17
*b	0.72	0.78	0.85
b1	0.71	0.76	0.81
*b2	0.72	0.88	0.95
*b3	5.23	5.33	5.46
*c	0.47	0.53	0.58
c1	0.46	0.51	0.56
*D	6.00	6.10	6.20
D1	5.30REF		
*E	6.50	6.60	6.70
E1	4.70	4.83	4.92
*e	2.286BSC		
*H	16.10	16.40	16.60
*L1	9.20	9.40	9.60
L2	1.25	1.35	1.45
*L3	0.90	1.02	1.22
L4	0.95	1.05	1.15
L5	1.70	1.80	1.90
θ1	5°	7°	9°
θ2	5°	7°	9°
θ3	11°	13°	15°

Package Outline Type-B



Marking Information:

①. Doingter LOGO

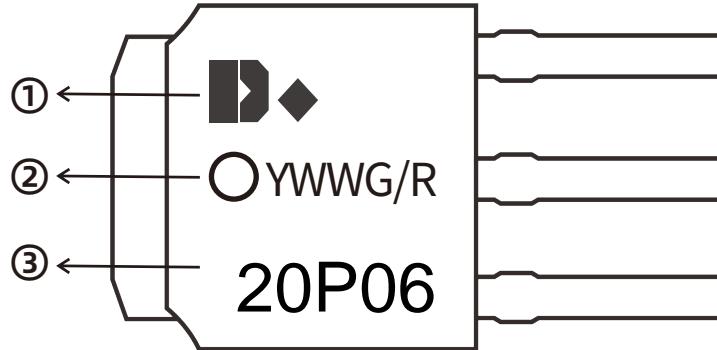
②. Date Code(YWWG / R)

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	2024-06-21	Release of final version

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