

## Description:

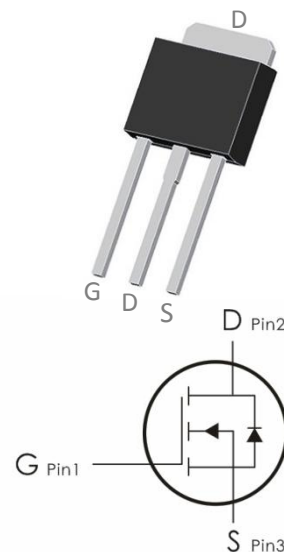
This P-Channel MOSFET uses advanced trench technology and

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	$\pm 20$	V
$I_D$	Continuous Drain Current	-20	A
	Continuous Drain Current- $T_C=100^{\circ}C$	-12	
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-68	
$P_D$	Power Dissipation	50	W
$E_{AS}$	Single pulse avalanche energy <sup>2</sup>	81	mJ
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55-+175	$^{\circ}C$

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3	$^{\circ}C/W$

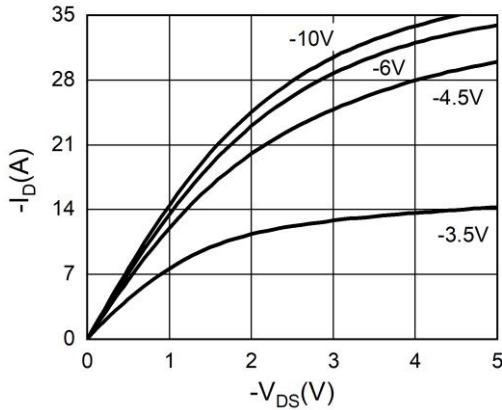
## Electrical Characteristics: ( $T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV <sub>DSS</sub>	Drain-Sourctce Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μ A	-60	---	---	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>GS</sub> =0V, V <sub>DS</sub> =-60V	---	---	-1	μ A
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =± 20V, V <sub>DS</sub> =0A	---	---	± 100	nA
On Characteristics						
V <sub>GS(th)</sub>	Gate- Source Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250 μ A	-1	---	-2.5	V
R <sub>DS(ON)</sub>	Drain-Source On Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-9A	---	50	68	m Ω
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-6A	---	60	90	m Ω
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, f=1MHz	---	1961	---	pF
C <sub>Oss</sub>	Output Capacitance		---	725	--	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	560	---	
Switching Characteristics						
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =-30V  R <sub>ENG</sub> =3 Ω , V <sub>GS</sub> =-10V	---	7	---	ns
t <sub>r</sub>	Rise Time		---	39	---	ns
t <sub>d(off)</sub>	Turn-Off Delay Time		---	61.1	---	ns
t <sub>f</sub>	Fall Time		---	20.16	---	ns
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-30V,  I <sub>D</sub> =-10A	---	82.32	---	nc
Q <sub>gs</sub>	Gate-Source Charge		---	11.78	---	nc
Q <sub>gd</sub>	Gate-Drain “Miller” Charge		---	14	---	nc
Drain-Source Diode Characteristics						
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	V <sub>GS</sub> =0V, I <sub>SD</sub> =-9A	---	---	-1.2	V
I <sub>S</sub>	Continuous Drain Curren	V <sub>D</sub> =V <sub>G</sub> =0V	---	---	-20	A
I <sub>SM</sub>	Pulsed Drain Current		---	---	-68	A
T <sub>rr</sub>	Reverse Recovery Time	I <sub>f</sub> =-10A, T <sub>J</sub> =25℃	---	24	---	ns
Q <sub>rr</sub>	Reverse Recovery Charge	dI/dt=100A/us	---	25.2	---	nc

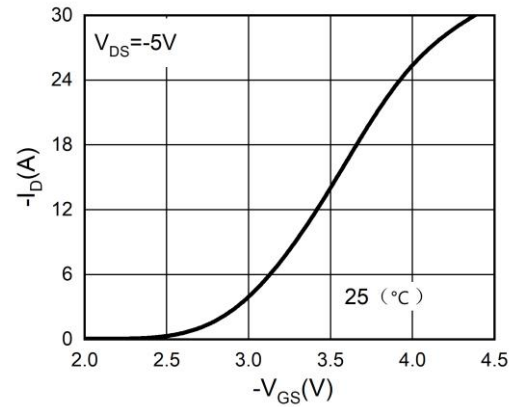
## Notes:

- 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.

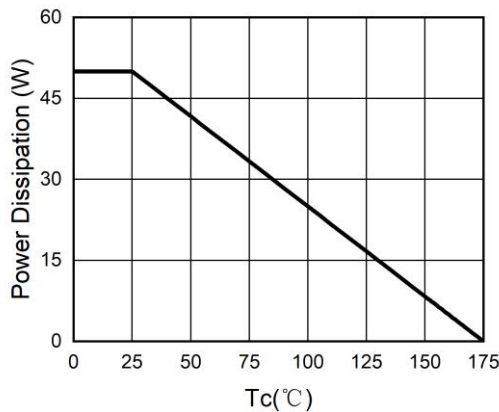
**Typical Characteristics:** ( $T_c=25^{\circ}\text{C}$  unless otherwise noted)



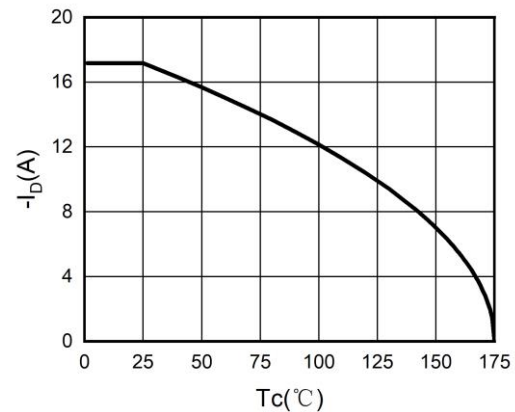
**Figure 1. Output Characteristics**



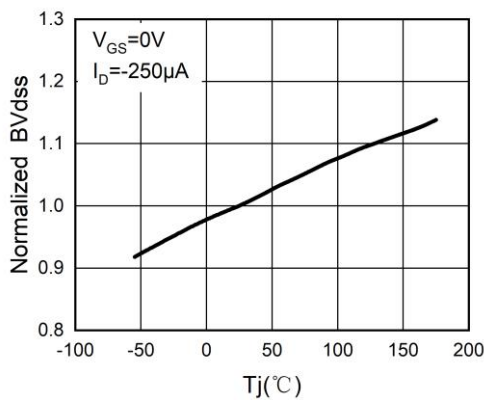
**Figure 2. Transfer Characteristics**



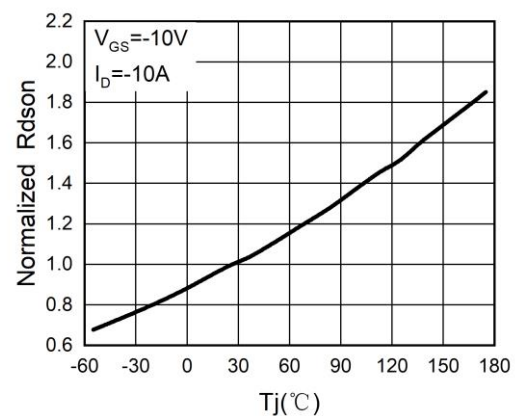
**Figure 3. Power Dissipation**



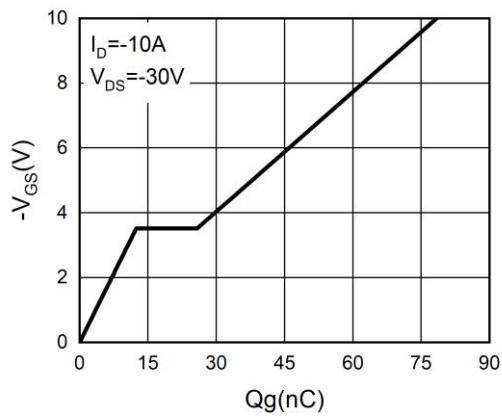
**Figure 4. Drain Current**



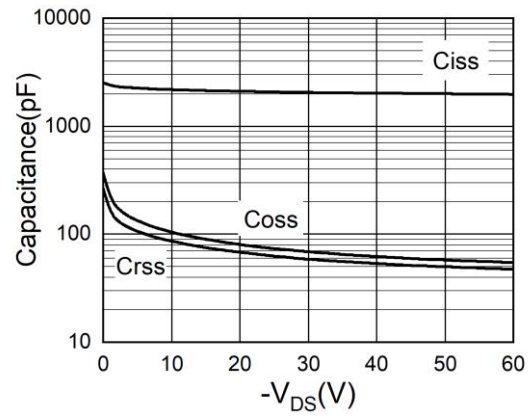
**Figure 5.  $BV_{DS}$  vs Junction Temperature**



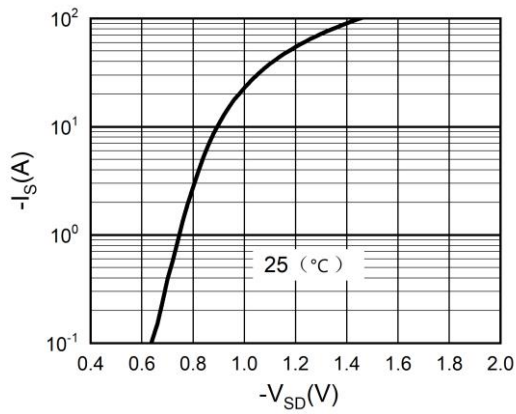
**Figure 6.  $R_{DS(ON)}$  vs Junction Temperature**



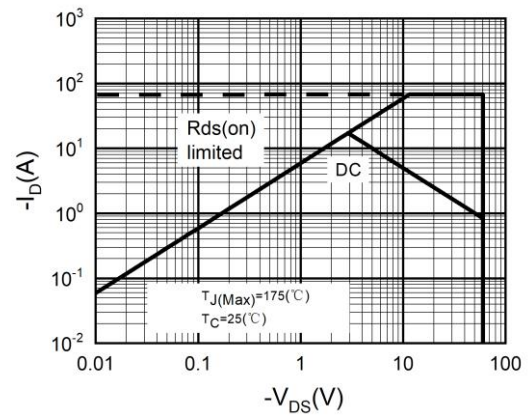
**Figure 7. Gate Charge Waveforms**



**Figure 8. Capacitance**



**Figure 9. Body-Diode Characteristics**



**Figure 10. Maximum Safe Operating Area**



## Marking Information:

①. Doingter LOGO

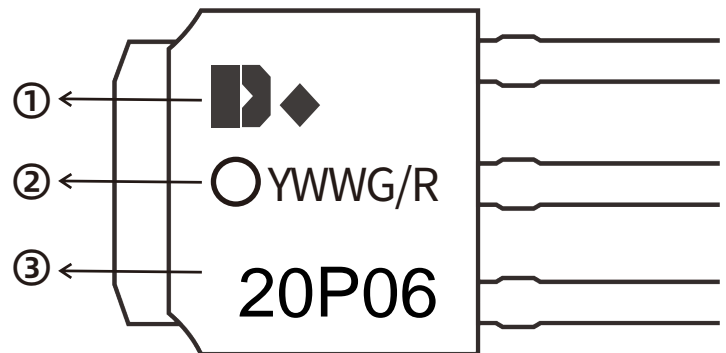
②. Date Code(YWWG / R)

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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