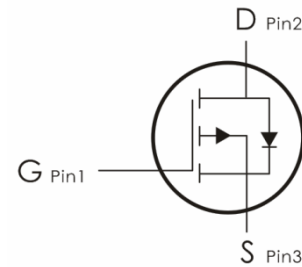


## Description:

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)  $V_{DS}=-100V, I_D=-10A, R_{DS(ON)}<300m\ \Omega$  @ $V_{GS}=-10V$
- 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
DOP10P10	10P10	TO- 220	50 pcs/Tube

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

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	-100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	-10	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	-6	
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-30	
$P_D$	Power Dissipation	46	W
$E_{AS}$	Single pulse avalanche energy <sup>2</sup>	130	mJ
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55-+175	$^\circ\text{C}$

## Thermal Characteristics:

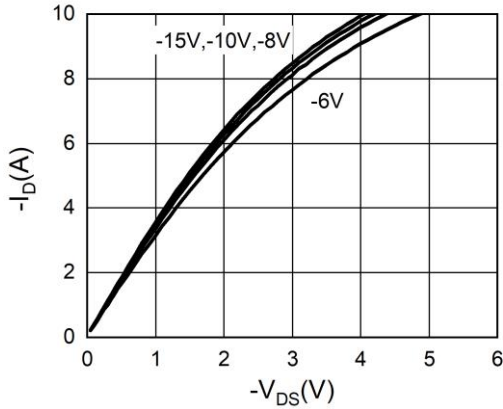
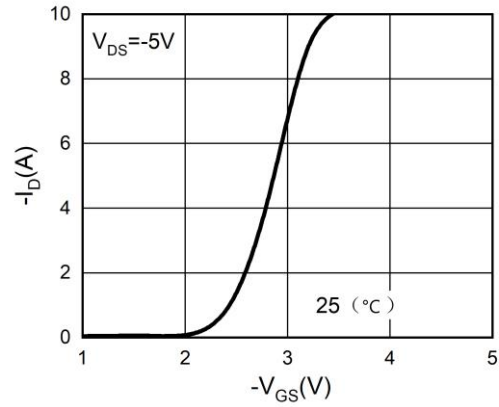
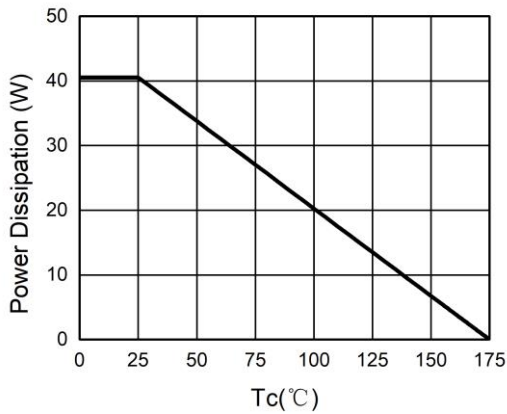
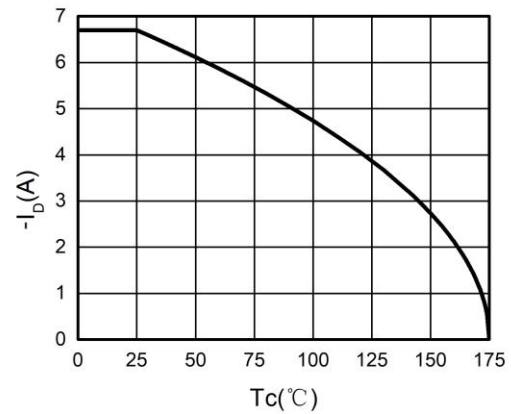
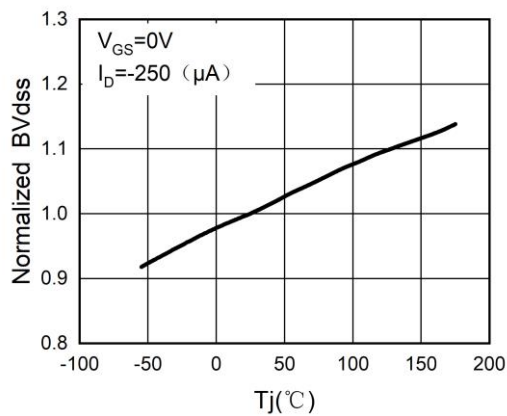
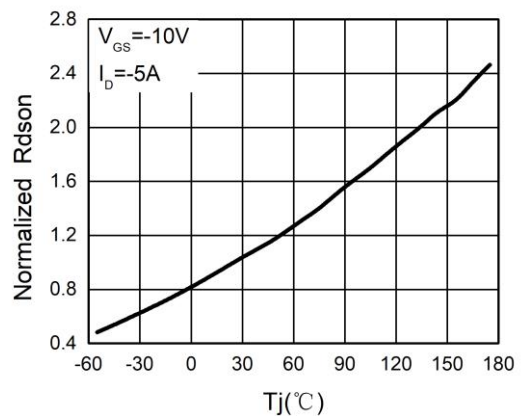
Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.7	$^\circ\text{C}/\text{W}$

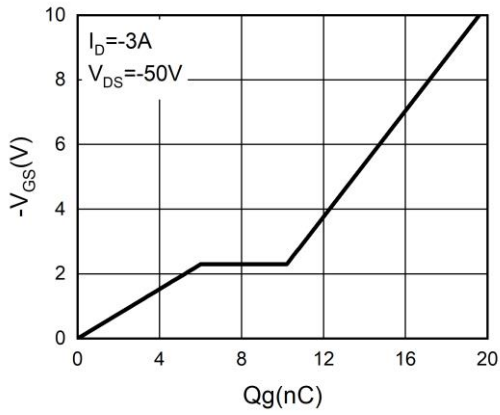
**Electrical Characteristics:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	-100	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=-200V$	---	---	-1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	-1	---	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=-10V, I_D=-3A$	---	260	300	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=-3A$	---	302	350	$\text{m}\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=-50V, V_{GS}=0V, f=1\text{MHz}$	---	1198	---	pF
$C_{oss}$	Output Capacitance		---	33.7	--	
$C_{rss}$	Reverse Transfer Capacitance		---	28.1	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=-50V$ $R_{ENG}=3\ \Omega, V_{GS}=-10V$	---	13.4	---	ns
$t_r$	Rise Time		---	3.7	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	41	---	ns
$t_f$	Fall Time		---	6.3	---	ns
$Q_g$	Total Gate Charge		---	19.5	---	nc
$Q_{gs}$	Gate-Source Charge	$V_{GS}=-10V, V_{DS}=-50V,$ $I_D=-3A$	---	5	---	nc
$Q_{gd}$	Gate-Drain "Miller" Charge		---	4.1	---	nc
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage <sup>3</sup>	$V_{GS}=0V, I_{SD}=-3A$	---	---	-1.2	V
$I_S$	Continuous Drain Current	$V_D=V_G=0V$	---	---	-10	A
$I_{SM}$	Pulsed Drain Current		---	---	-30	A
$T_{rr}$	Reverse Recovery Time	$I_F=-3A, T_J=25^\circ\text{C}$	---	42.9	---	ns
$Q_{rr}$	Reverse Recovery Charge	$dI/dt=100A/\mu\text{s}$	---	83.7	---	nc

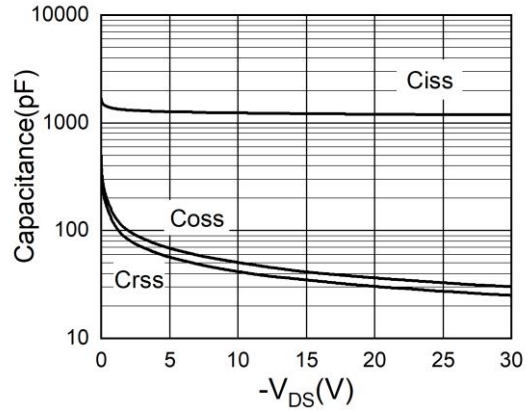
**Notes:**

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.EAs condition:  $T_J=25^{\circ}\text{C}$ ,  $V_{DD}=50\text{V}$ ,  $V_G=-10\text{V}$ ,  $R_g=25\Omega$ ,  $L=0.5\text{mH}$ .
- 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

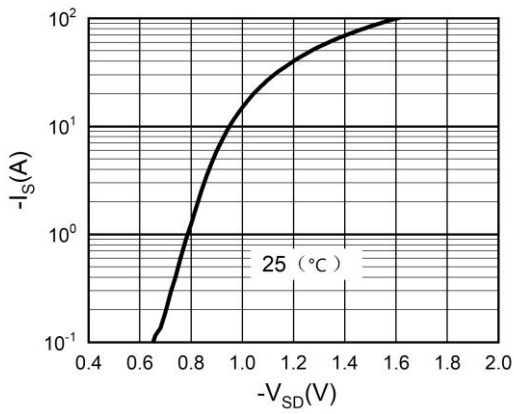
**Typical Characteristics:** ( $T_c=25^{\circ}\text{C}$  unless otherwise noted)

**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**



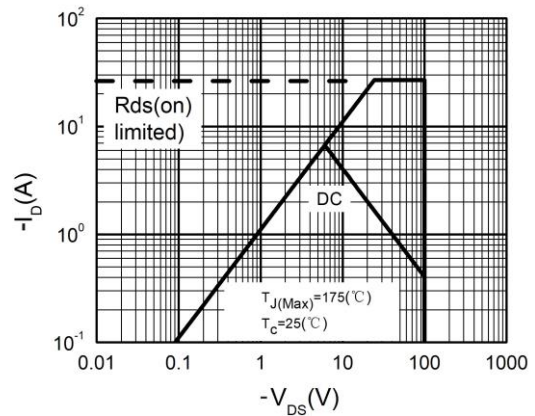
**Figure 7. Gate Charge Waveforms**



**Figure 8. Capacitance**

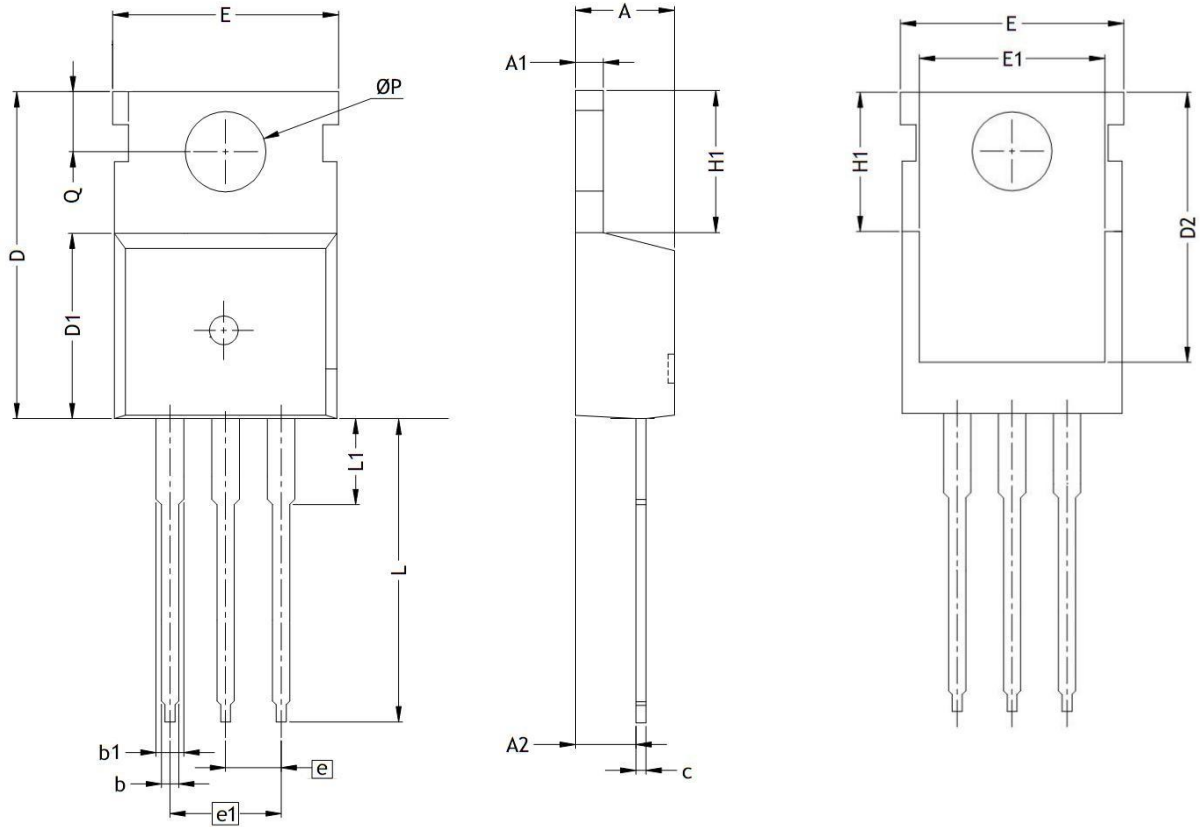


**Figure 9. Body-Diode Characteristics**



**Figure 10. Maximum Safe Operating Area**

## 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

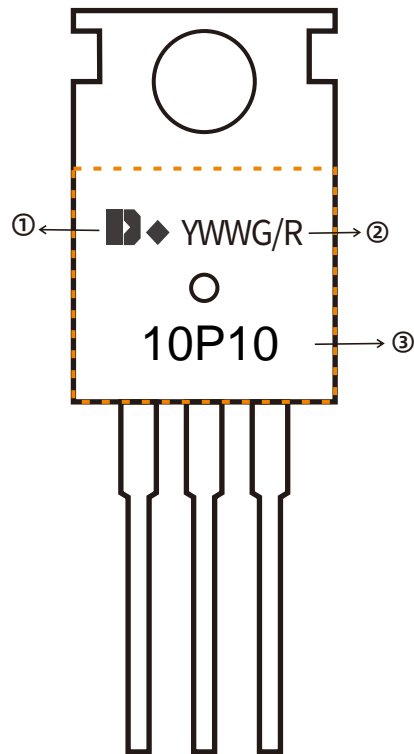
②. Date Code(YWWG / R)

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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