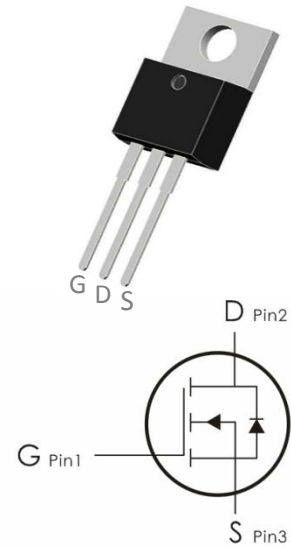


## Description:

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)  $V_{DS}=100V, I_D=15A, R_{DS(ON)}<90m\ \Omega$  @ $V_{GS}=10V$
- 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
DOP15N10	15N10	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	15	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	10	
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	64	
$P_D$	Power Dissipation	52	W
$E_{AS}$	Single pulse avalanche energy <sup>2</sup>	25	mJ
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.4	$^\circ\text{C}/\text{W}$

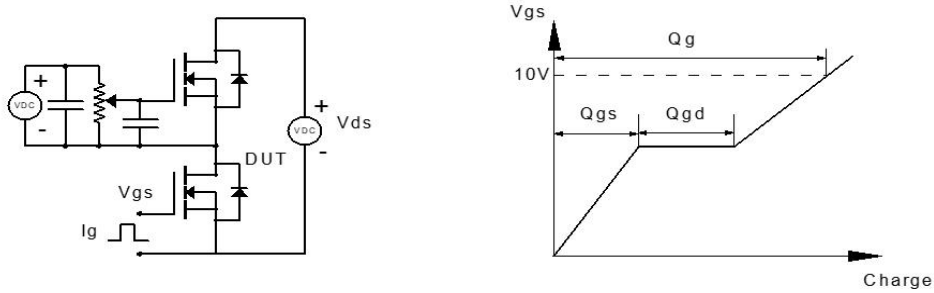
**Electrical Characteristics:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

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	$V_{GS}=0V, V_{DS}=100V$	---	---	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	1.8	2.4	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>3</sup>	$V_{GS}=10V, I_D=7A$	---	75	90	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=5A$	---	82	100	$\text{m}\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	1030	---	pF
$C_{oss}$	Output Capacitance		---	50	--	
$C_{rss}$	Reverse Transfer Capacitance		---	39	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=50V, I_D=10A,$ $R_{ENG}=3\ \Omega, V_{GS}=10V$	---	13	---	ns
$t_r$	Rise Time		---	5.2	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	28	---	ns
$t_f$	Fall Time		---	5	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V,$ $I_D=10A$	---	21	---	nc
$Q_{gs}$	Gate-Source Charge		---	3.1	---	nc
$Q_{gd}$	Gate-Drain "Miller" Charge		---	6.3	---	nc
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=15A$	---	---	1.2	V
$I_S$	Continuous Drain Current	$V_D=V_G=0V$	---	---	15	A
$I_{SM}$	Pulsed Drain Current		---	---	64	A
$T_{rr}$	Reverse Recovery Time	$I_F=10A, T_J=25^\circ\text{C}$	---	30	---	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt=100A/\mu\text{s}$	---	42	---	nc

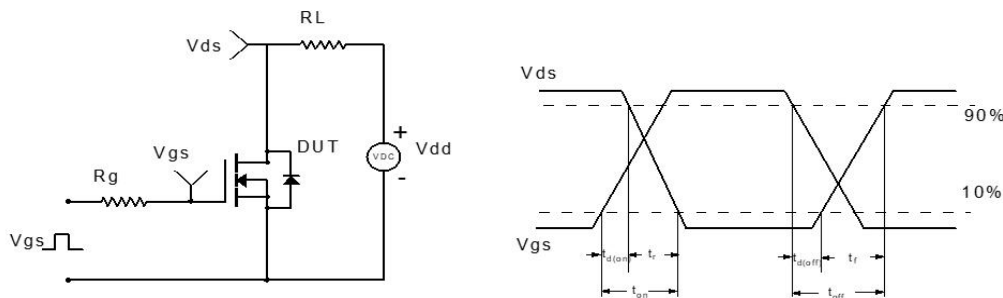
## Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2.  $E_{AS}$  condition: Starting  $T_J=25^{\circ}C$ ,  $V_{DD}=50V$ ,  $V_G=10V$ ,  $R_G=25\Omega$ ,  $L=0.5mH$ ,  $I_{AS}=9A$
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 0.5\%$ .

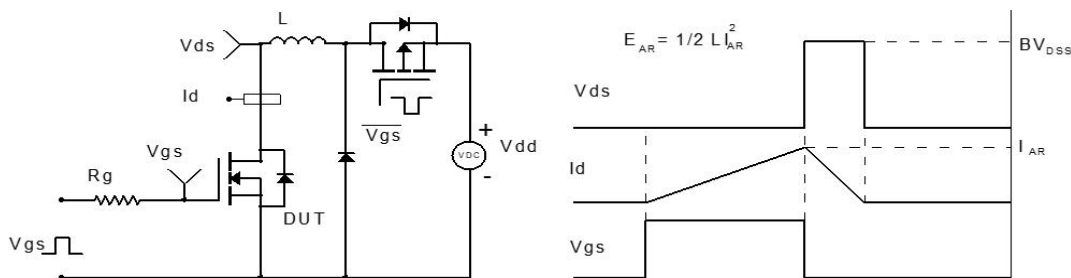
Typical Characteristics: ( $T_c=25^{\circ}C$  unless otherwise noted)



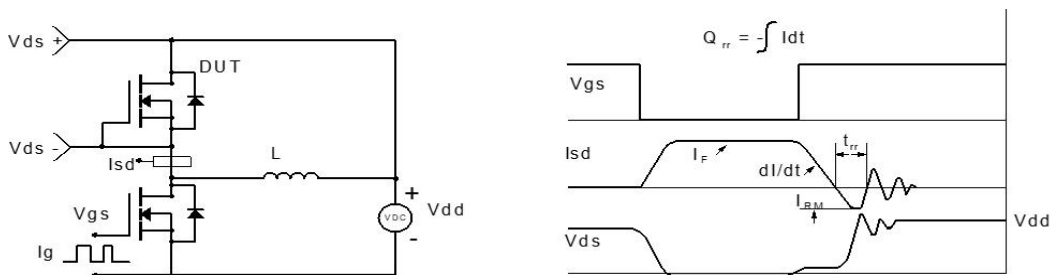
**Figure 1: Gate Charge Test Circuit & Waveform**



**Figure 2: Resistive Switching Test Circuit & Waveform**

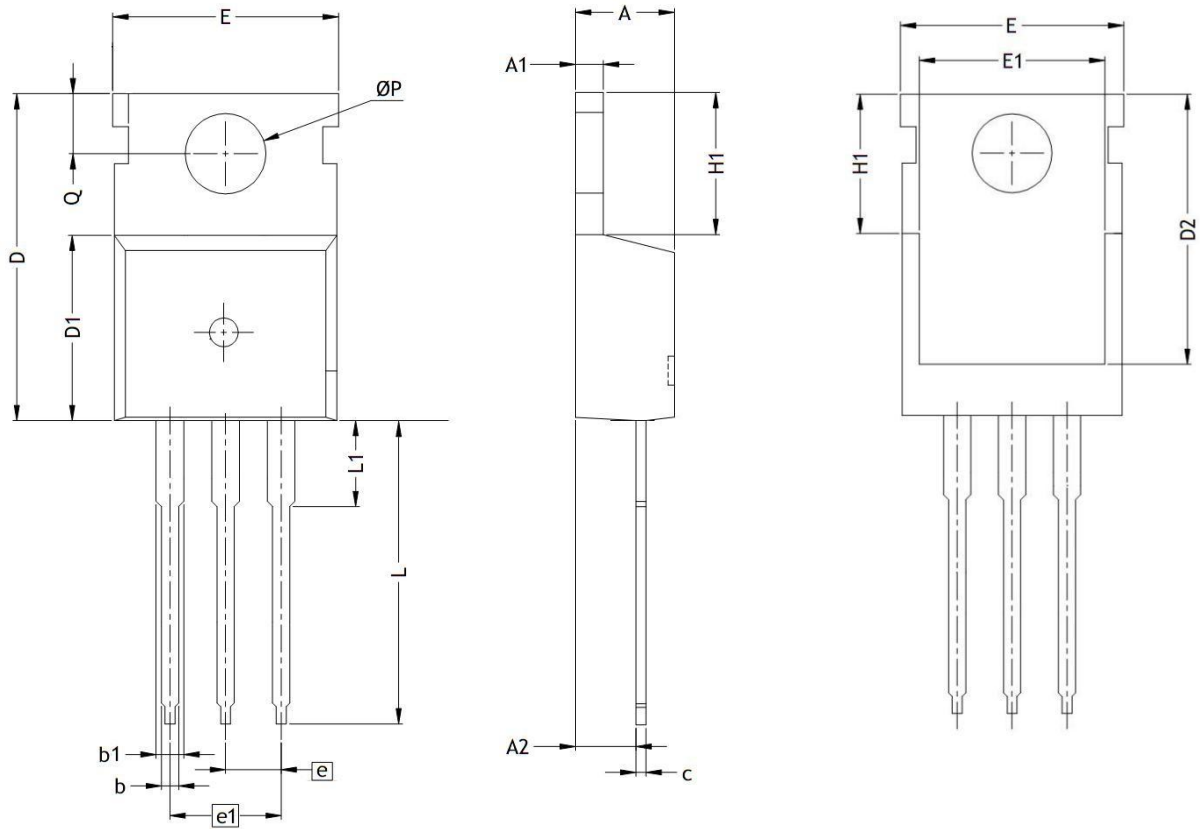


**Figure 3: Unclamped Inductive Switching Test Circuit & Waveform**



**Figure 4: Diode Recovery Test Circuit & Waveform**

## 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

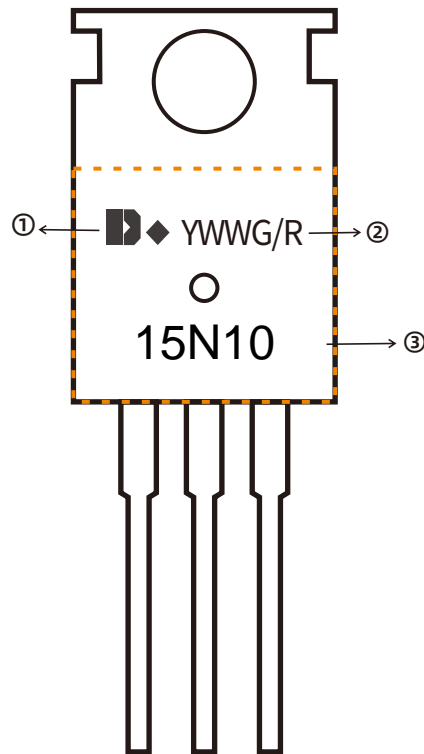
②. Date Code(YWWG / R)

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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