

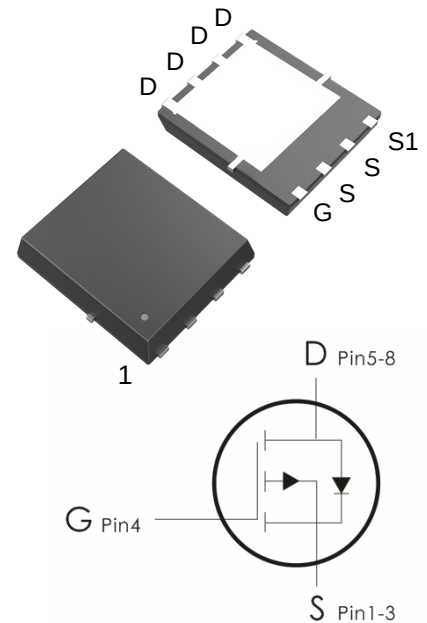
Description:

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) $V_{DS}=-40V, I_D=-45A, R_{DS(ON)}<13m\Omega @V_{GS}=-10V$
- 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
DON45P04	45P04	DFN5*6-8	5000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	-45	A
	Continuous Drain Current- $T_C=100^{\circ}C$	-24	
I_{DM}	Pulsed Drain Current ¹	-160	
P_D	Power Dissipation	31	W
E_{AS}	Single pulse avalanche energy ²	90	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^{\circ}C$

Thermal Characteristics:

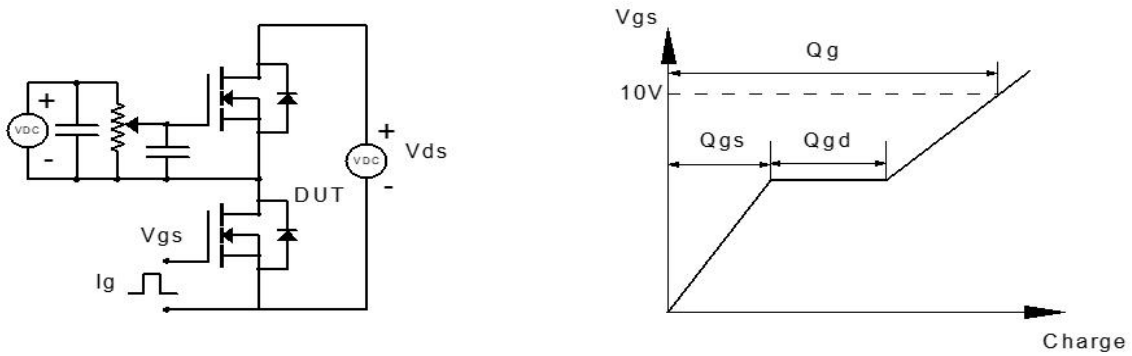
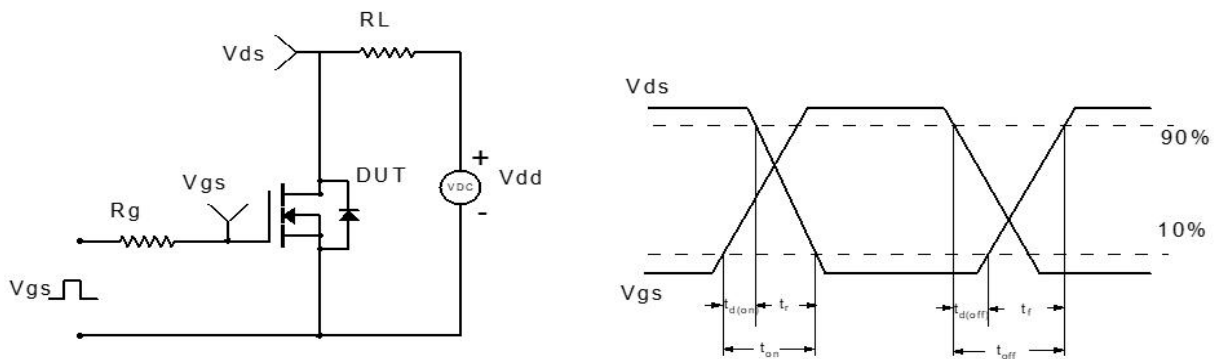
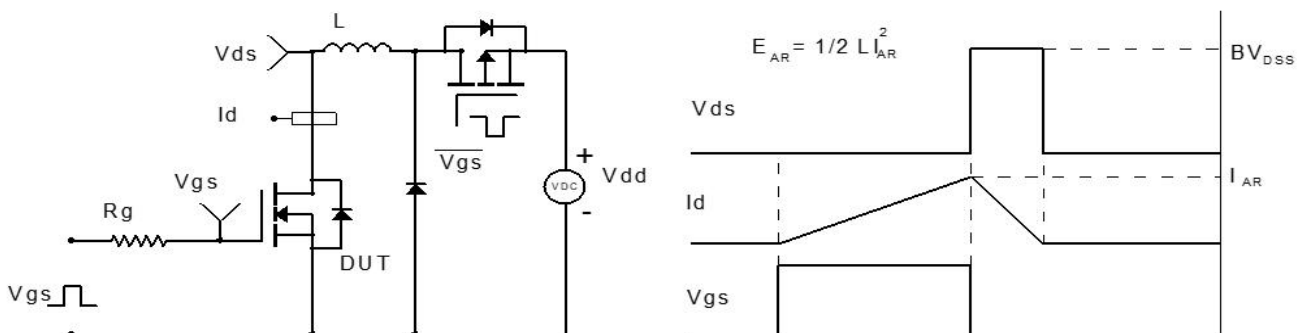
Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	4	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =-250 μ A	-40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-40V	---	---	-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	-1.6	-2.2	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =-10V,I _D =-15A	---	9	13	m Ω
		V _{GS} =-4.5V,I _D =-10A	---	13	17	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V, f=1MHz	---	2000	---	pF
C _{OSS}	Output Capacitance		---	270.9	--	
C _{rss}	Reverse Transfer Capacitance		---	215.25	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-20V, I _D =-10A, R _{GEN} =2.5 Ω ,V _{GS} =-10V	---	10.5	---	ns
t _r	Rise Time		---	21	---	ns
t _{d(off)}	Turn-Off Delay Time		---	53.55	---	ns
t _f	Fall Time		---	29.4	---	ns
Q _g	Total Gate Charge	V _{GS} =0 to -10V, V _{DS} =-20V, I _D =-10A	---	36.75	---	nc
Q _{gs}	Gate-Source Charge		---	6.51	---	nc
Q _{gd}	Gate-Drain “Miller” Charge		---	7.66	---	nc
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-10A	---	---	-1.2	V
I _S	Continuous Drain Curren	V _D =V _G =0V	---	---	-45	A
I _{SM}	Pulsed Drain Current ¹		---	---	-160	A
T _{rr}	Reverse Recovery Time	I _F =-10A,	---	35	---	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/us	---	40	---	nc

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting $T_J=25^{\circ}\text{C}$, $V_{DD}=-20\text{V}$, $V_G=-10\text{V}$, $R_G=25\text{ohm}$, $L=0.5\text{mH}$, $I_{AS}=-19\text{A}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

Figure 1: Gate Charge Test Circuit & Waveform

Figure 2: Resistive Switching Test Circuit & Waveform

Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

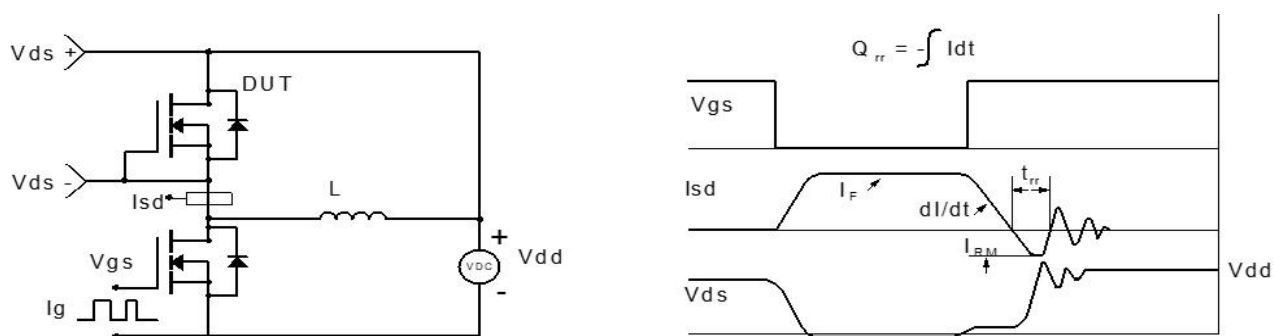
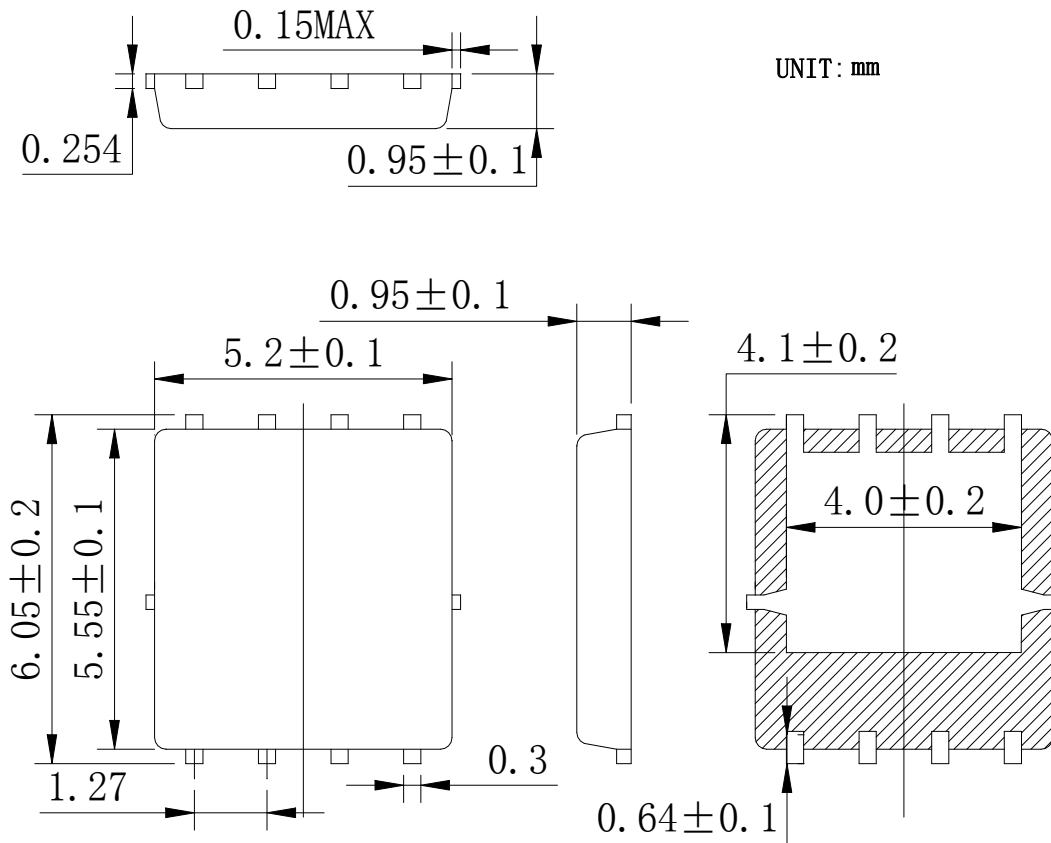


Figure 4: Diode Recovery Test Circuit & Waveform

DFN5×6-8 Package Information:



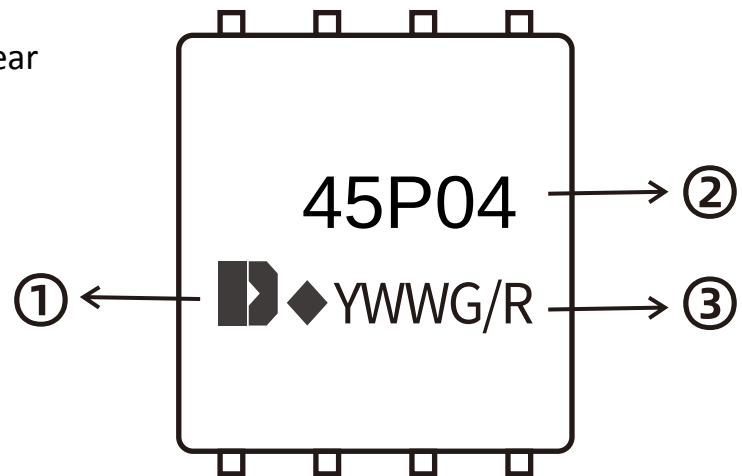
Marking Information:

- ①. Doingter LOGO
- ②. Part NO.
- ③. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

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



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2024-05-10	Release of final version

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