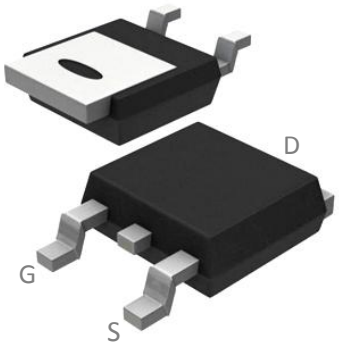
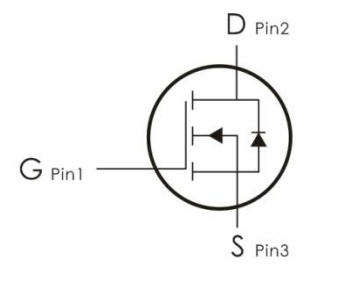
Description：

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}=650V,I_D=5A,$R_{DS(ON)}$<2.7Ω @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current-T_C=25℃	5	A
	Continuous Drain Current-T_C=100℃	2.5	
I_{DM}	Pulsed Drain Current(Note 1)	25	A
E_{AS}	Single Pulsed Avalanche Energy (Note 2)	80	mJ
I_{AR}	Avalanche Current (Note 1)	5	A
E_{AR}	Repetitive Avalanche Energy (Note 1)	4.5	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)	5	V/ns
P_D	Power Dissipation,T_C=25℃	24.5	W
	Power Dissipation-Derate above 25° C	0.2	W/℃
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	5.1	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	45.3	

Package Marking and Ordering Information：

Part NO.	Marking	Package
DO05NG-C	O05N-C	TO-252

Electrical Characteristics： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
$V_{(BR)DSS}$	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	650	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=650V	---	---	1	μA
		V_{GS}=0V, V_{DS}=520V,T_C = 125℃	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=2.5A	---	2.3	2.7	Ω
G_{FS}	Forward Transconductance	V_{DS} = 40 V, I_D = 2 .5A(Note 4)	---	3.8	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	400	---	pF
C_{oss}	Output Capacitance		---	55	---	
C_{rss}	Reverse Transfer Capacitance		---	1.3	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=325V,I_D=5A, R_G =25Ω (Note 4,5)	---	7	---	ns
t_r	Rise Time		---	22	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	15	---	ns
t_f	Fall Time		---	23	---	ns
Q_g	Total Gate Charge	V_{DS}=520V, V_{GS}=10V, I_D=5A	---	13	---	nC

Q_{gs}	Gate-Source Charge	V_{DS}=520V, V_{GS}=10V, I_D=5A (Note 4,5)	---	4.9	---	nC
Q_{gd}	Gate-Drain Charge		---	2.3	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	I_S=5A, V_{GS}=0V	---	---	1.2	V
I_S	Continuous Source Current	---	---	---	4	A
I_{SM}	Pulsed Source Current	---	---	---	16	A
T_{rr}	Reverse Recovery Time	V_{GS} = 0 V, I_S = 5 A, dIF / dt = 100 A/ μ s(Note 4)	---	378	---	ns
Q_{rr}	Reverse Recovery Charge		---	1.35	---	μ C

Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 40 mH, IAS = 2 A, VDD = 50V, RG = 25 Ω, Starting TJ = 25°C
3. ISD≤4A, di/dt ≤200A/us, VDD ≤ BVDSS, Starting TJ = 25°C
4. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

Typical Characteristics: (T_J=25℃ unless otherwise noted)

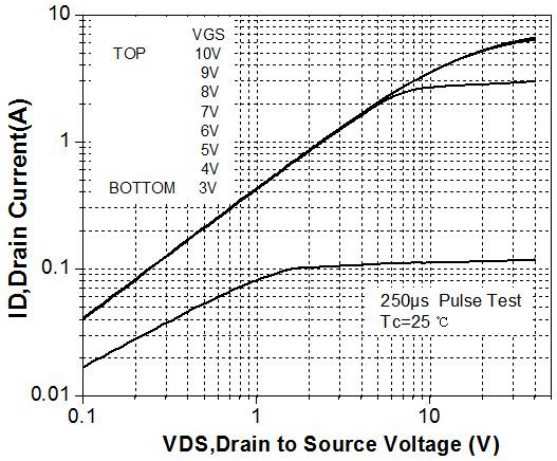


Figure 1. On-Region Characteristics

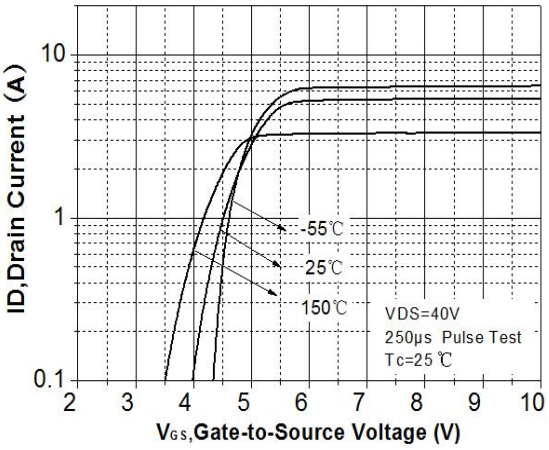


Figure 2. Transfer Characteristics

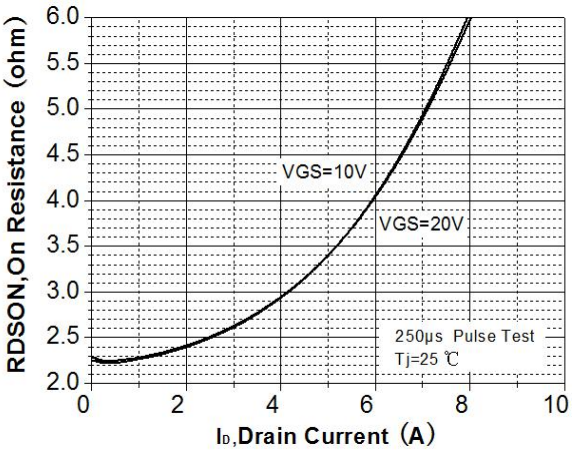


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

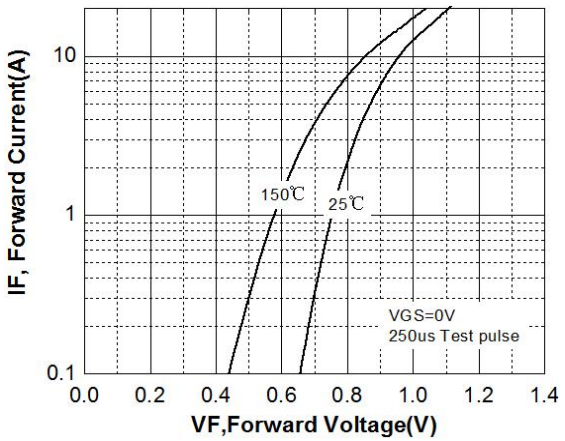


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

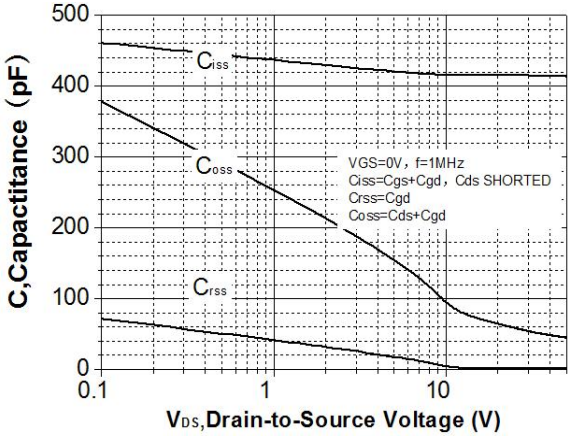


Figure 5 Capacitance Characteristics

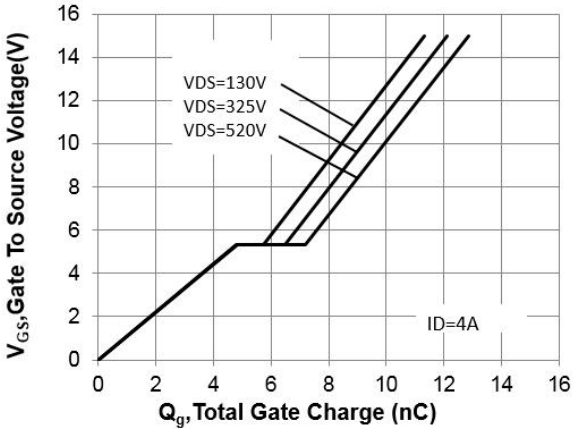


Figure 6. Gate Charge Characteristics

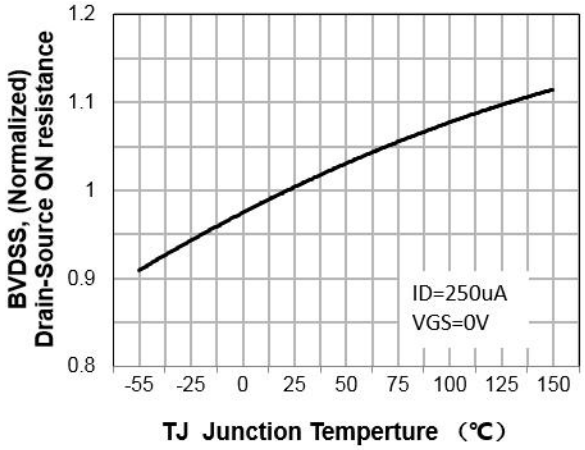


Figure 7. Breakdown Voltage Variation vs Temperature

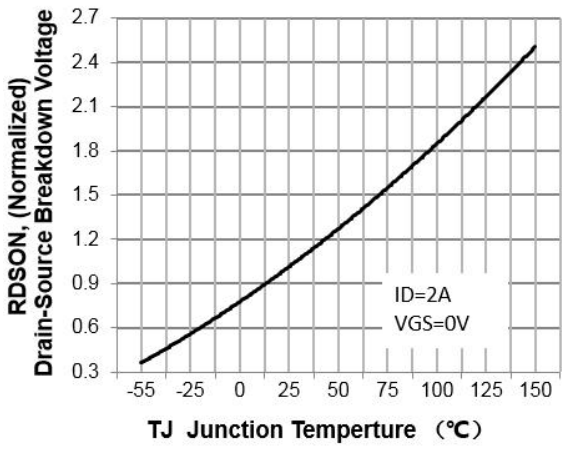


Figure 8. On-Resistance Variation vs Temperature

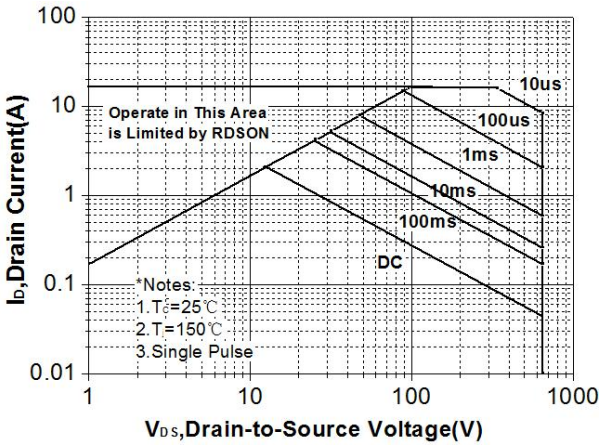


Figure 9. Maximum Safe Operating Area

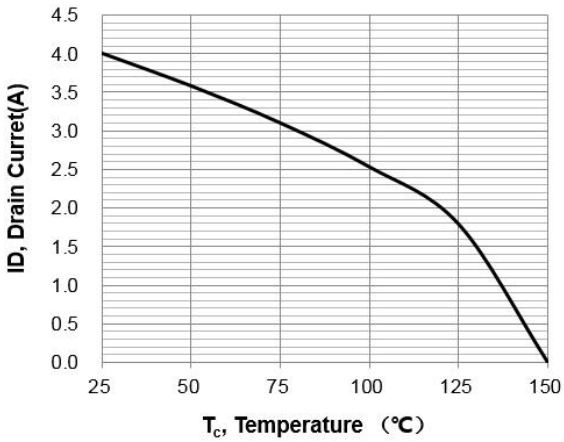


Figure 10. Maximum Drain Current vs Case Temperature

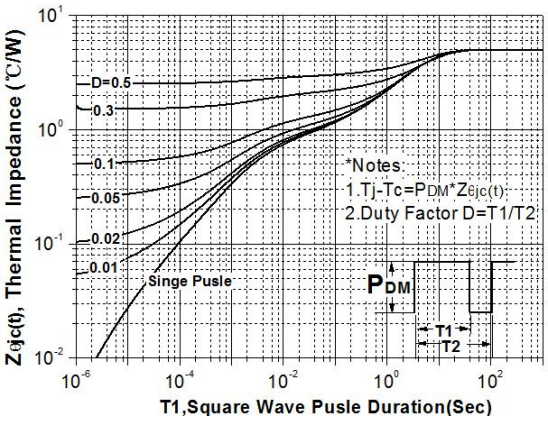


Figure 11. Transient Thermal Response Curve