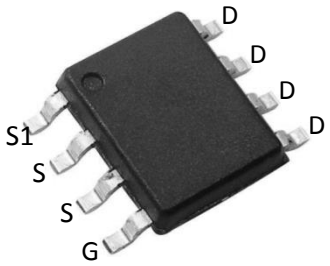
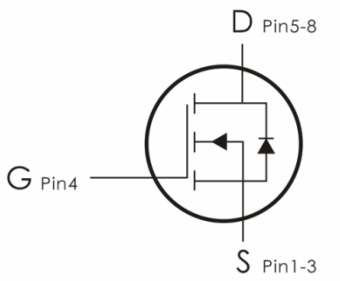
Description：

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}=30V,I_D=20A,$R_{DS(ON)}$<6.5mΩ @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_J=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous (T_A=25℃)	20	A
	Drain Current - Continuous (T_A=75℃)	15.2	
I_{DM}	Drain Current – Pulsed① (T_A=25℃)	76	
I_S	Diode continuous forward current(T_A=25℃)	5	
P_D	Power Dissipation (T_A=25℃)	3.1	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-50 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	40	℃/W

Package Marking and Ordering Information：

Part NO.	Marking	Package
DOS20N03	20N03	SOP-8

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Drain-Source Leakage Current(T_A=25℃)	V_{DS}=30V , V_{GS}=0V	---	---	1	uA
	Drain-Source Leakage Current(T_A=125℃)	V_{DS}=24V , V_{GS}=0V	---	---	100	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1	1.6	2.5	V
$R_{DS(ON)}$	Static Drain-Source On Resistance②	V_{GS}=10V,I_D=15A	---	5.2	6.5	mΩ
		V_{GS}=4.5V,I_D=8A	---	7.5	9.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	1320	---	pF
C_{oss}	Output Capacitance		---	205	---	
C_{rss}	Reverse Transfer Capacitance		---	135	---	
Rg	Gate Resistance	f=1MHz	---	4.4	---	Ω
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V, I_D=3A, R_G=3.3Ω , V_{GS}=10V	---	11	---	ns
t_r	Rise Time		---	30	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	24	---	ns
t_f	Fall Time		---	8	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=15A	---	23.5	---	nC
Q_{gs}	Gate-Source Charge		---	3.3	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	4.8	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage②	V_{GS}=0V,I_{SD}=12A	---	0.81	1.2	V

Trr	Body Diode Reverse Recovery Time	I_{SD}=10A, V_{GS}=0V	---	31	---	Ns
Qrr	Body Diode Reverse Recovery Charge	di/dt=100A/ μ s	---	20	---	Nc

Notes:

① Pulse width limited by maximum allowable junction temperature

②Pulse width ≤ 300 μ s; duty cycle≤ 2%.

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

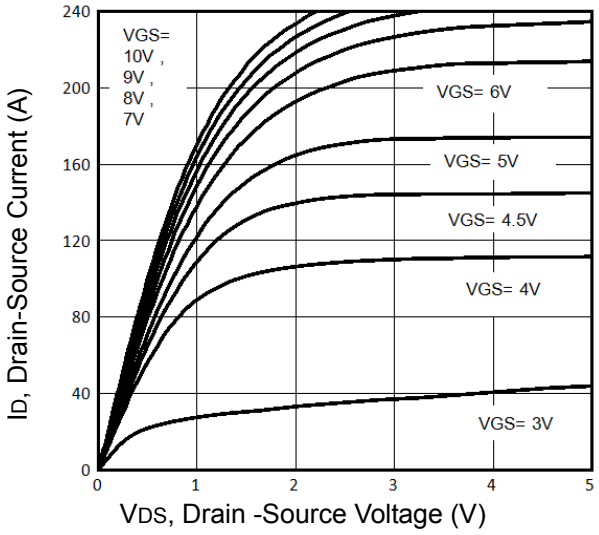


Fig1. Typical Output Characteristics

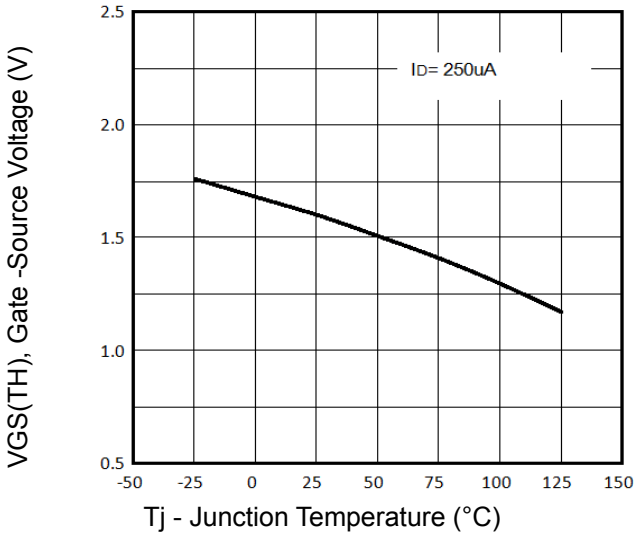


Fig2. VGS(TH) Voltage Vs. Temperature

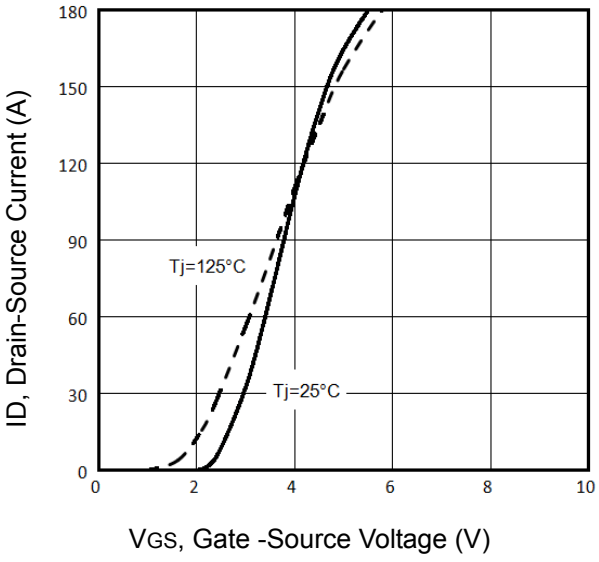


Fig3. Typical Transfer Characteristics

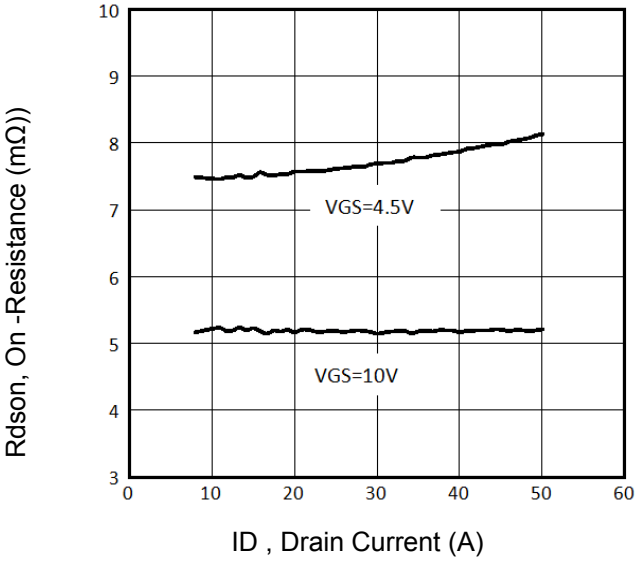


Fig4. On-Resistance vs. Drain Current and Gate Voltage

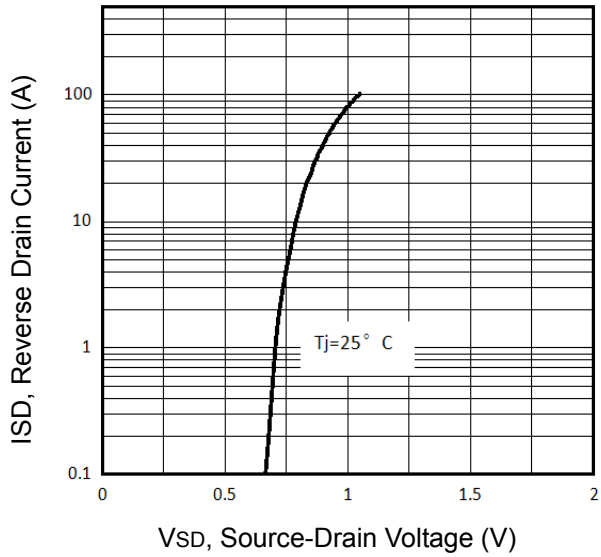


Fig5. Typical Source-Drain Diode Forward Voltage

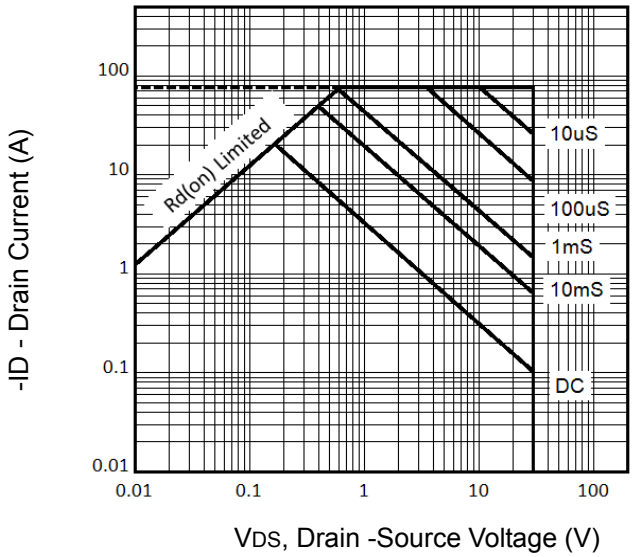


Fig6. Maximum Safe Operating Area

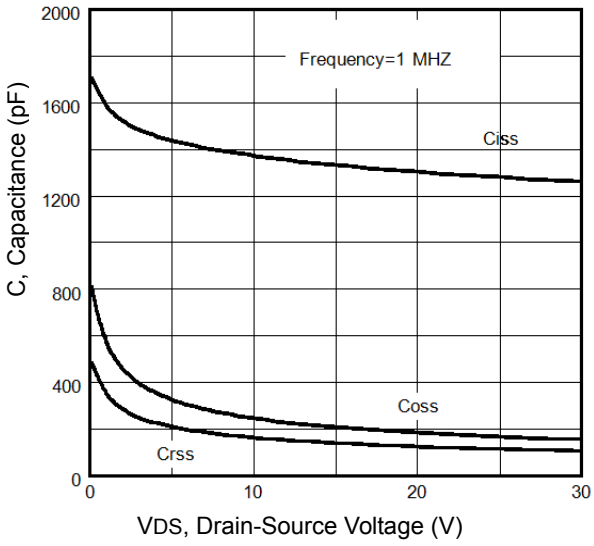


Fig7. Typical Capacitance Vs. Drain-Source Voltage

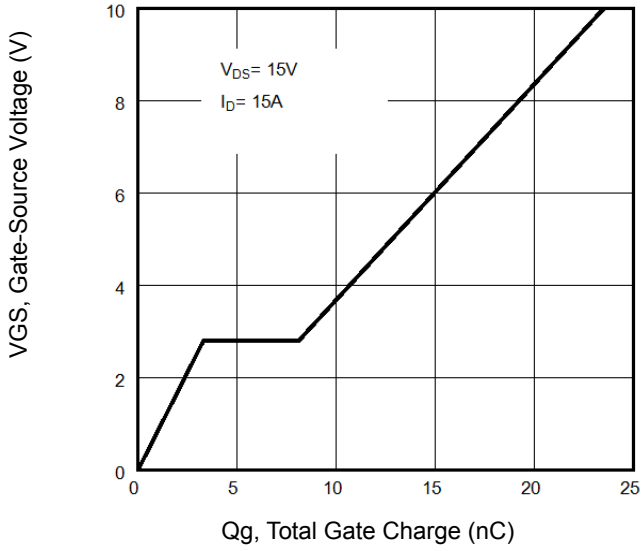


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

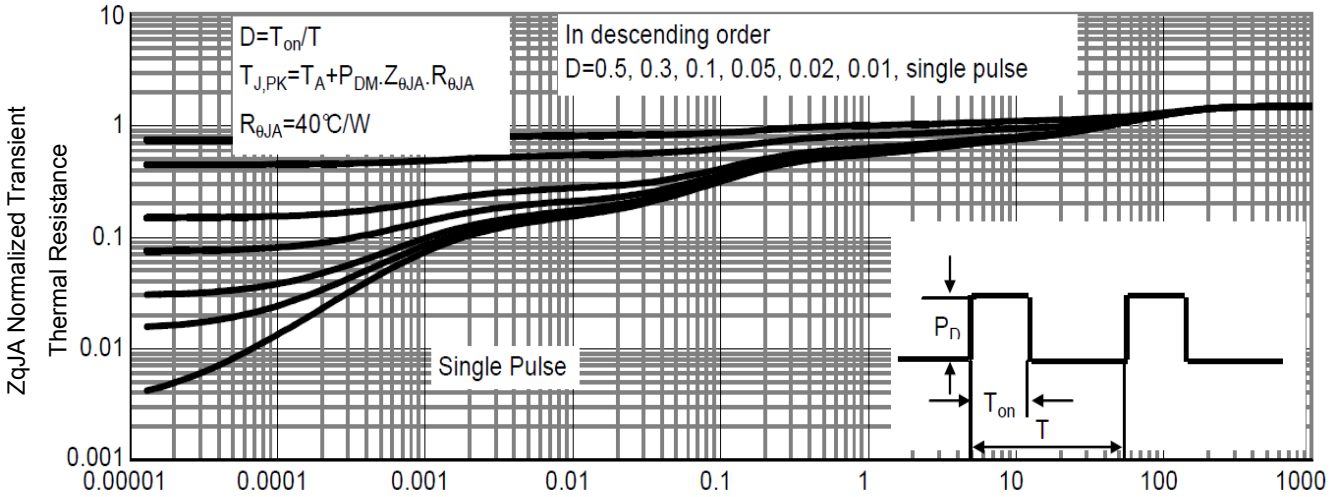


Fig9. Normalized Maximum Transient Thermal Impedance