

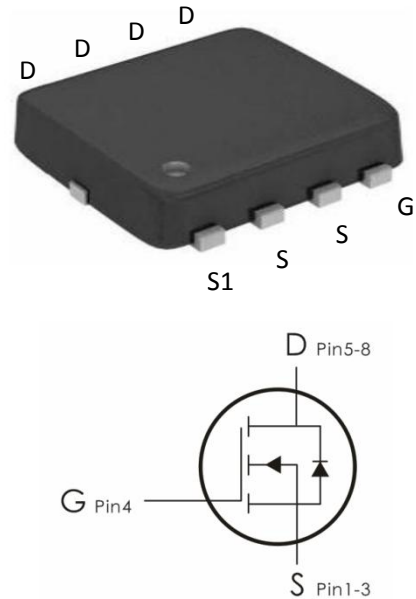
Description:

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) $V_{DS}=40V, I_D=22A, R_{DS(ON)} < 22m\Omega @ V_{GS}=10V$
- 2) Improved dv/dt capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



Absolute Maximum Ratings:

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current-Continuous- $T_C=25^\circ C$	22	A
	Continuous Drain Current-Continuous- $T_C=100^\circ C$	14	
I_{DM}	Drain Current – Pulsed ^{note1}	65	A
EAS	Single Pulse Avalanche Energy ^{note2}	16	mJ
P_D	Power Dissipation - $T_C=25^\circ C$ ⁴	15.6	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	6.9	$^{\circ}\text{C}/\text{W}$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOZ22N04	22N04	DFN3*3-8

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourtce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	40	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =40V	---	---	1.0	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	1.5	2.5	V
R _{DS(ON)}	Drain-Source On Resistance②	V _{GS} =10V, I _D =8A	---	17	22	m Ω
		V _{GS} =4.5V, I _D =5A	---	25	35	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	523	---	pF
C _{OSS}	Output Capacitance		---	62	---	
C _{rss}	Reverse Transfer Capacitance		---	53	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V ,R _L =2.5 Ω V _{GS} =10V , R _{REN} =3 Ω	---	4	---	ns
t _r	Rise Time		---	3	---	ns
t _{d(off)}	Turn-Off Delay Time		---	15	---	ns
t _f	Fall Time		---	2	---	ns
Q _g	Total Gate Charge	V _{DS} =20V , V _{GS} =10V , I _D =8A	---	12	---	nC
Q _{gs}	Gate-Source Charge		---	3.2	---	nC

Q_{gd}	Gate-Drain "Miller" Charge		---	3.1	---	nC
Drain-Source Diode Characteristics						
I_S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	8	A
I_{SM}	Pulsed Source Current ^{2,5}		---	---	32	A
V_{SD}	Forward on voltage ^②	I _{SD} =1A, T _J =25 °C, V _{GS} =0V	---	---	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : T_J=25 °C, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25Ω, I_{AS}=7.2A
T_J=25 °C, V_{DD}=-20V, V_G= -10V, L=0.5mH, R_g=25Ω, I_{AS}=-8.4A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics: (T_C=25 °C unless otherwise noted)

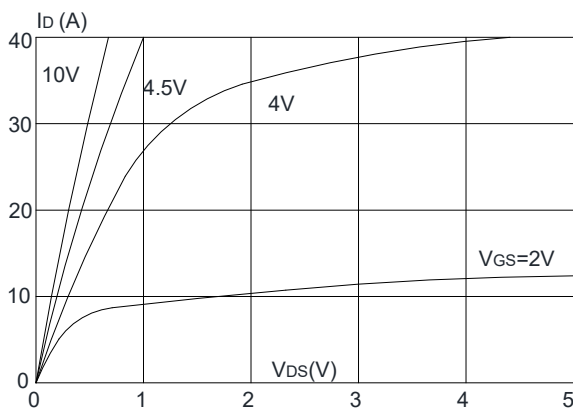


Figure1: Output Characteristics

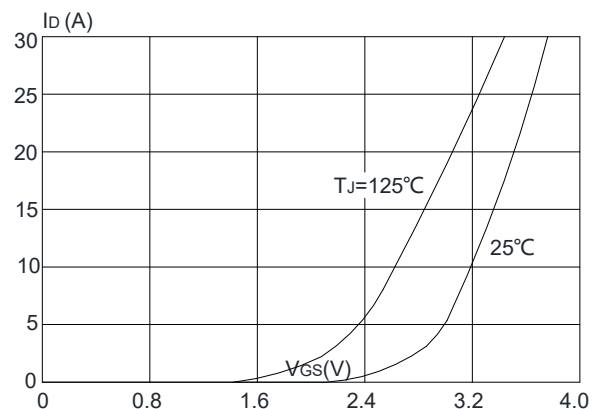


Figure 2: Typical Transfer Characteristics

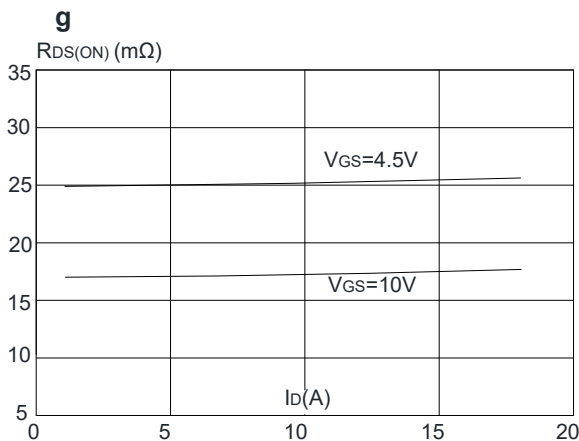


Figure 3: On-resistance vs. Drain Current

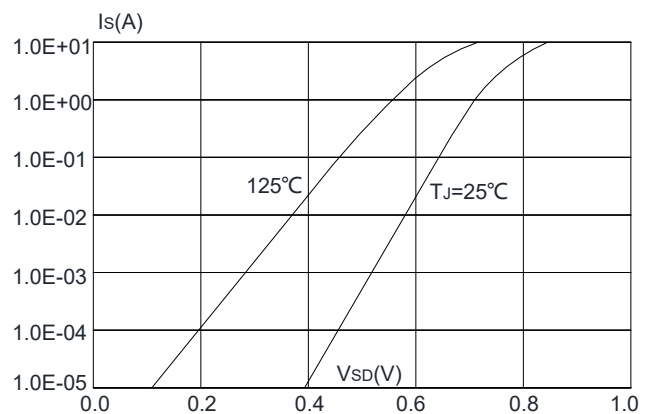


Figure 4: Body Diode Characteristics

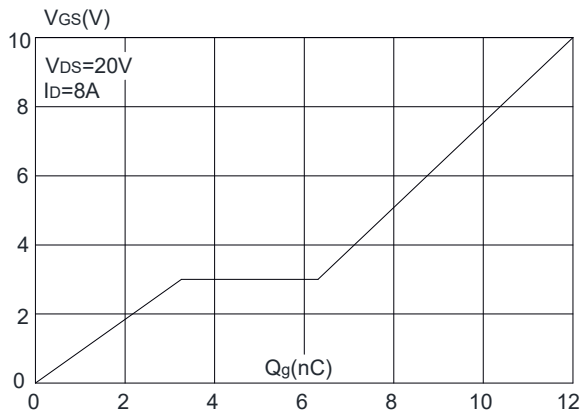


Figure 5: Gate Charge Characteristics

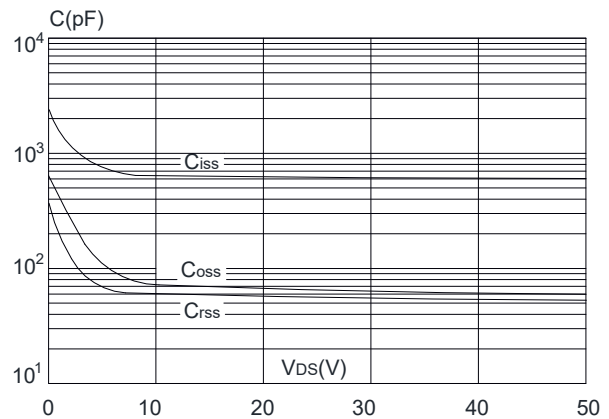


Figure 6: Capacitance Characteristics

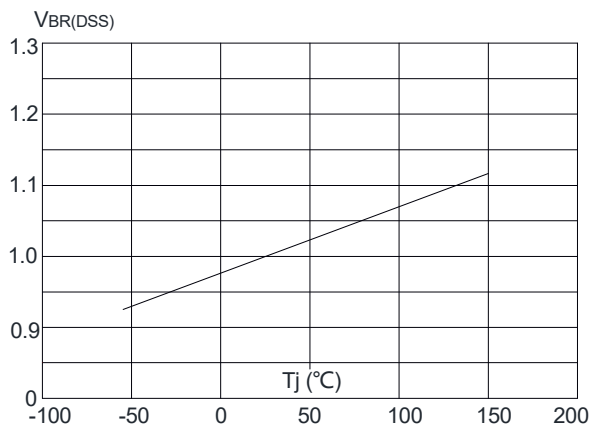


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

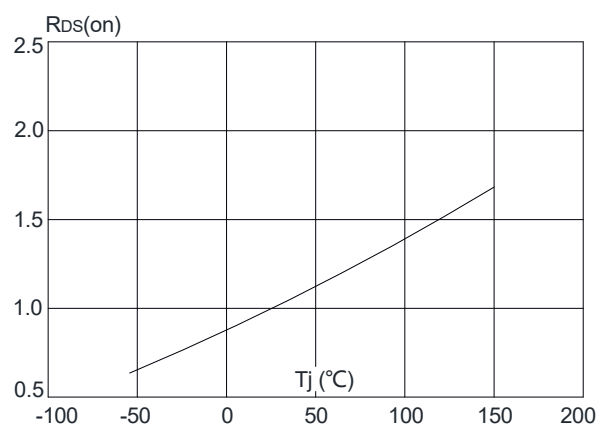


Figure 8: Normalized on Resistance vs. Junction Temperature

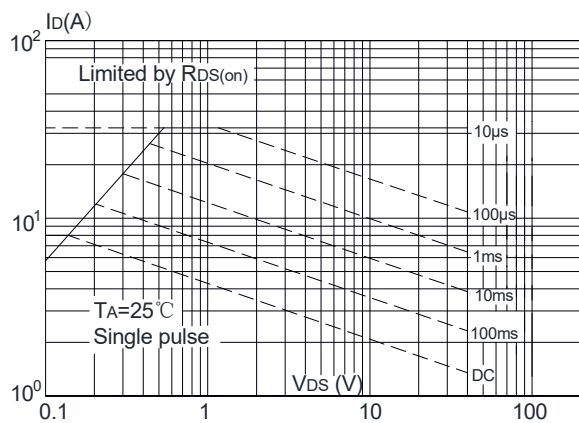


Figure 9: Maximum Safe Operating Area

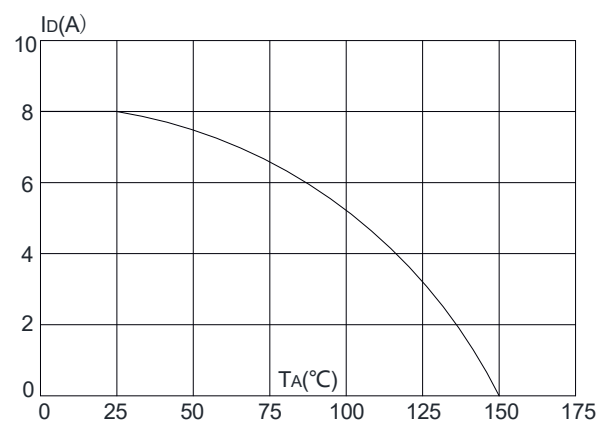


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

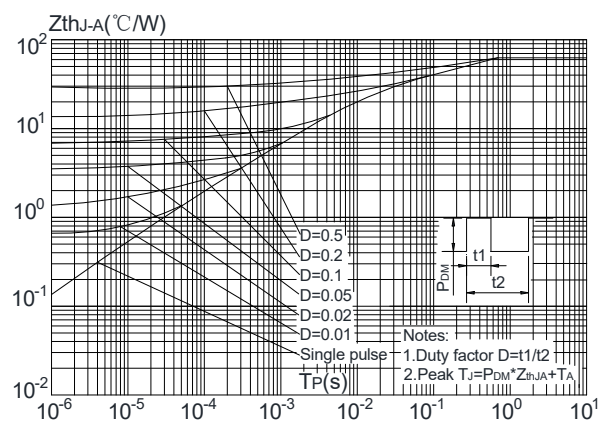


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient