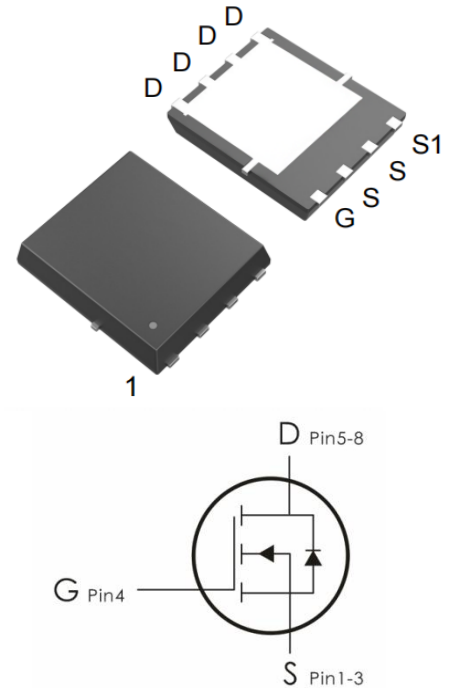


Description:

This N-Channel MOSFET uses advanced trench technology to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features:

- 1) $V_{DS}=20V, I_D=100A, R_{DS(ON)} < 3m\Omega @ V_{GS}=4.5V$
- 2) Improved dv/dt capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current-Continuous- $T_C=25^\circ C$	100	A
	Continuous Drain Current- $T_C=100^\circ C$	70	
I_{DM}	Drain Current – Pulsed ^{note1}	320	A
E_{AS}	Single Pulse Avalanche Energy ^{note2}	150	mJ
P_D	Power Dissipation- $T_C=25^\circ C$	30	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	4.2	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOZ100N02	100N02	DFN3*3-8

Electrical Characteristics: ($T_J=25^{\circ}\text{C}$ 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	20	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =20V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 12V, V _{DS} =0V	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	0.5	0.7	1.1	V
R _{DS(ON)}	Drain-Source On Resistance ^{note3}	V _{GS} =4.5V,I _D =20A	---	2.2	3	m Ω
		V _{GS} =2.5V,I _D =10A	---	3.7	4.5	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	---	5372	---	pF
C _{oss}	Output Capacitance		---	890	---	
C _{rss}	Reverse Transfer Capacitance		---	860	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =10V , V _{GS} =4.5V R _G =1 Ω ,I _D =40A	---	7.5	---	ns
t _r	Rise Time		---	25	---	ns
t _{d(off)}	Turn-Off Delay Time		---	57	---	ns
t _f	Fall Time		---	37	---	ns
Q _g	Total Gate Charge	V _{DS} =10V , V _{GS} =4.5V , I _D =40A	---	52	---	nC
Q _{gs}	Gate-Source Charge		---	6.3	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	25	---	nC
Drain-Source Diode Characteristics						
I _S	Maximum Contiuos Drain to Source Diode Forward Curent		---	---	80	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Curent		---	---	320	A

V_{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V , I _{SD} =30A , T _J =25℃	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I _F =40A , di/dt=220A/μs,	---	41	---	nS
Q_{rr}	Reverse Recovery Charge	T _J =25℃	---	68	---	nC

Notes:

1. Reptive Rating: Pulse Width Limited by Maximu Junction Temperature
2. EAS conditon: T_J=25℃ , V_D=10V,G=10V, R_G=25 Ω , L=0.5mH, I_{AS}=24.5A
3. Pulse Tst: Pulse Width ≤ 30 μ s, Duty Cycle ≤ 0.5%

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

Figure1: Output Characteristics

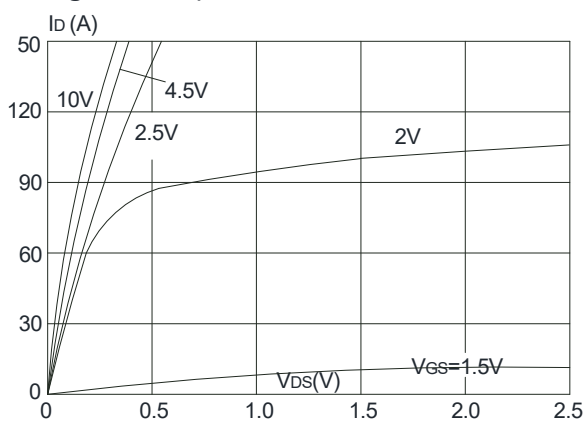


Figure 2: Typical Transfer Characteristics

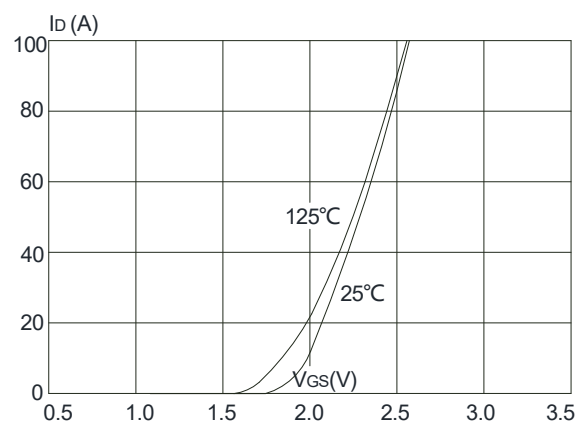


Figure 3: On-resistance vs. Drain Current

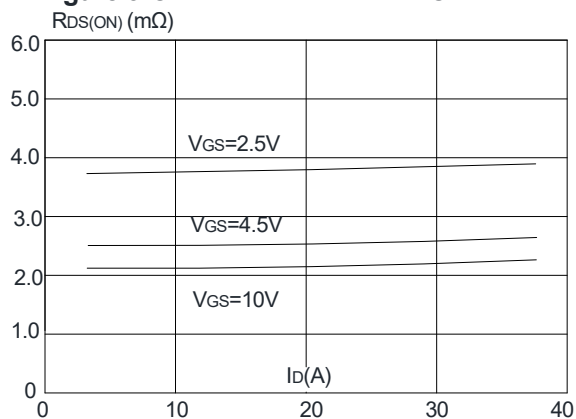


Figure 4: Body Diode Characteristics

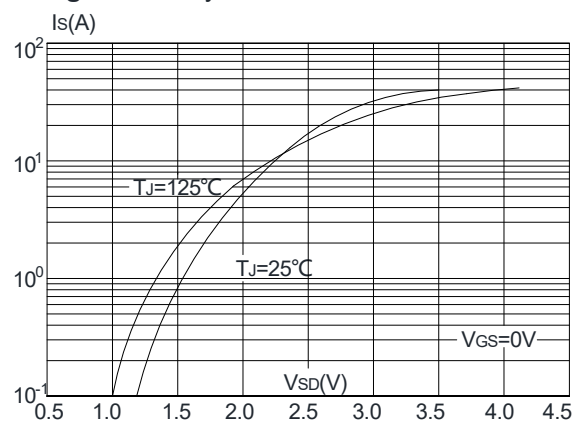


Figure 5: Gate Charge Characteristics

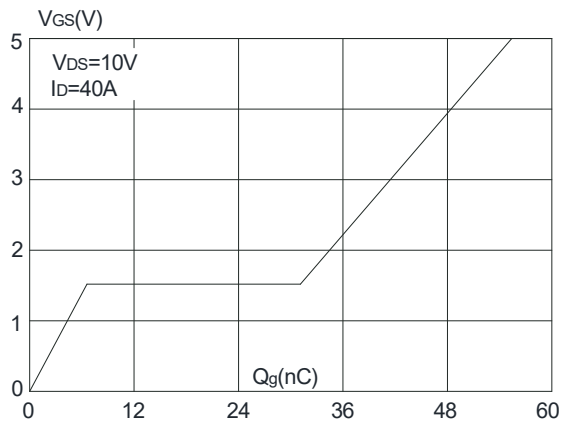


Figure 6: Capacitance Characteristics

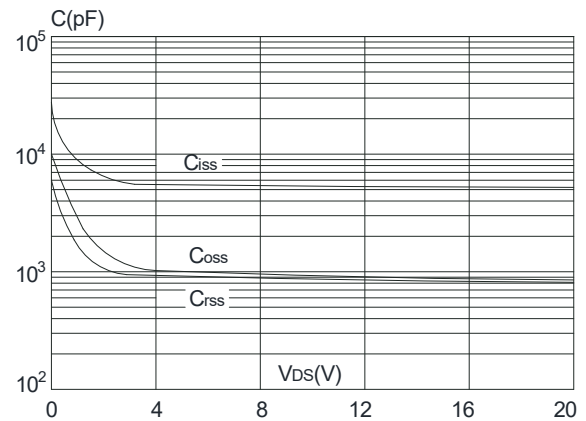


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

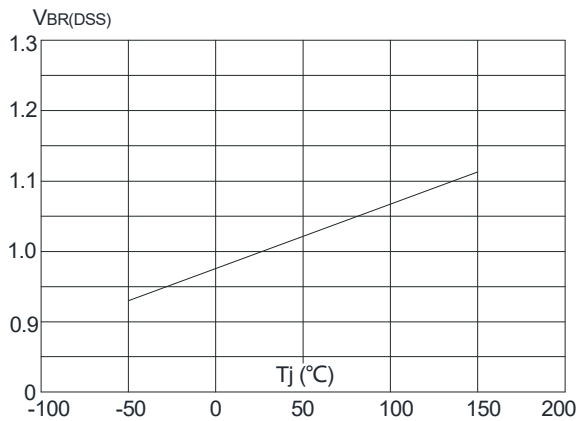


Figure 8: Normalized on Resistance vs. Junction Temperature

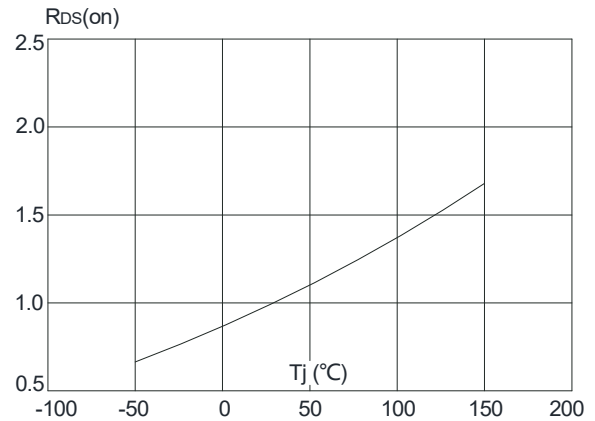


Figure 9: Maximum Safe Operating Area

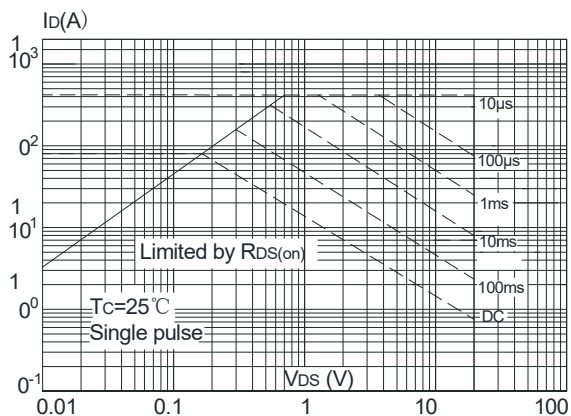


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

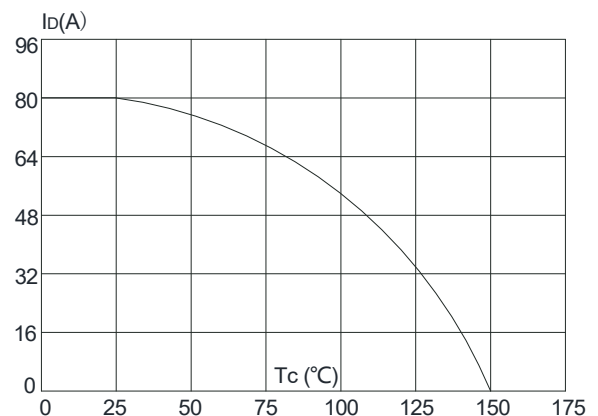


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

