

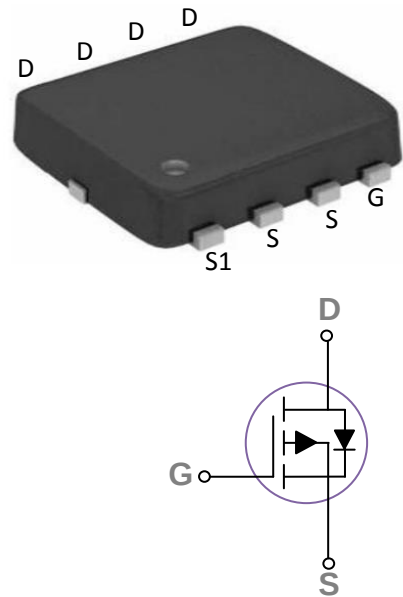
Description:

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) $V_{DS}=-30V, I_D=-20A, R_{DS(on)} < 25m\Omega @ V_{GS}=-10V$
- 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.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	-20	A
	Continuous Drain Current- $T_C=100^\circ C$	-11.8	
I_{DM}	Pulsed Drain Current ^{note1}	-36	
E_{AS}	Single Pulse Avalanche Energy ^{note2}	31	mJ
I_{AS}	Avalanche Current	-20	A
P_D	Power Dissipation- $T_C=25^\circ C$	20.8	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	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	85	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOZ20P03	20P03	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-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	-30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-30V	---	---	-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	-1.5	-2.5	V
R _{DS(ON)}	Drain-Source On Resistance ^{note3}	V _{GS} =-10V,I _D =-10A	---	19	25	m Ω
		V _{GS} =-4.5V,I _D =-5A	---	27	40	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	1150	---	pF
C _{OSS}	Output Capacitance		---	150	---	
C _{rss}	Reverse Transfer Capacitance		---	135	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, I _D =-1A, R _{GEN} =6 Ω , V _{GS} =-10V R _D =15 Ω	---	13	---	ns
t _r	Rise Time		---	15	---	ns
t _{d(off)}	Turn-Off Delay Time		---	198	---	ns
t _f	Fall Time		---	98	---	ns
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-8A	---	52	---	nC
Q _{gs}	Gate-Source Charge		---	9.8	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	8.3	---	nC
Drain-Source Diode Characteristics						

V_{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-12A	---	---	-1.2	V
T_{rr}	Reverse Recovery Time	I _F =-2A, dI/dt=100A/μs, T _J =25°C	---	37	---	ns
Q_{rr}	Reverse Recovery Charge		---	36	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : T_J=25°C, V_{DD}=15V, V_G=10V, L=0.5mH, R_g=25Ω, I_{AS}=8.3A
T_J=25°C, V_{DD}=-15V, V_G=-10V, L=0.5mH, R_g=25Ω, I_{AS}=-9.8A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

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

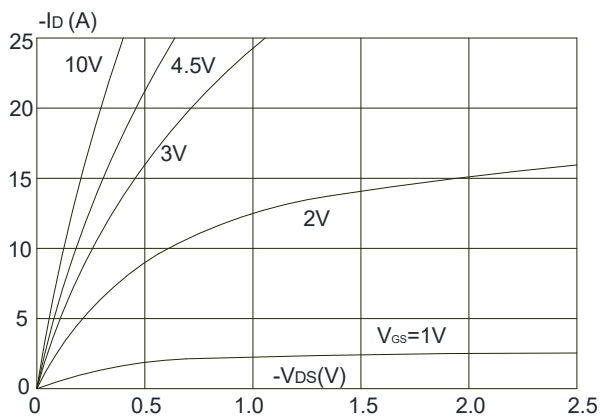


Figure1: Output Characteristics

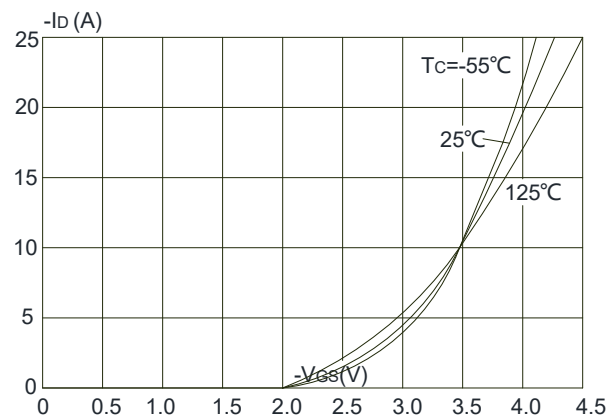


Figure 2: Typical Transfer Characteristics

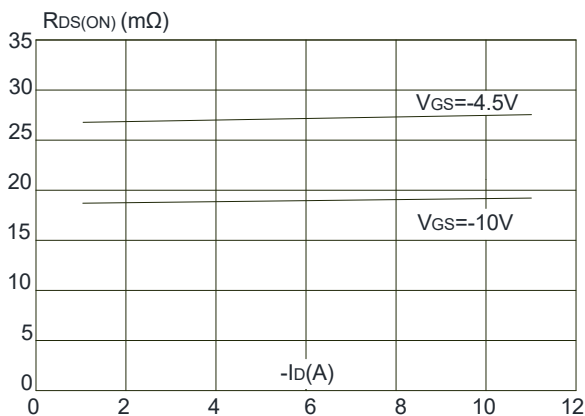


Figure 3: On-resistance vs. Drain Current

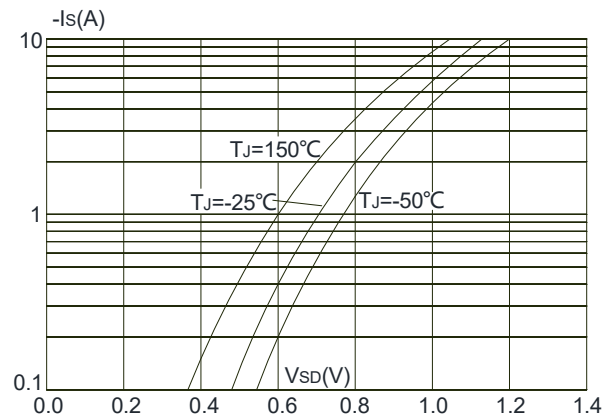


Figure 4: Body Diode Characteristics

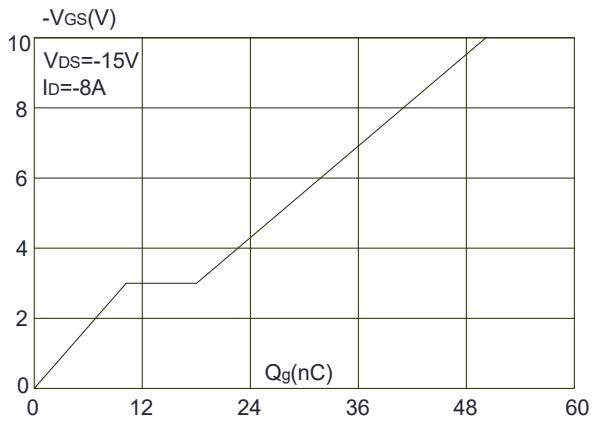


Figure 5: Gate Charge Characteristics

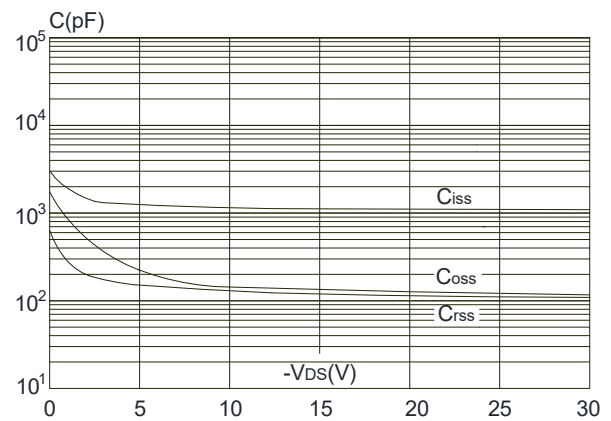


Figure 6: Capacitance Characteristics

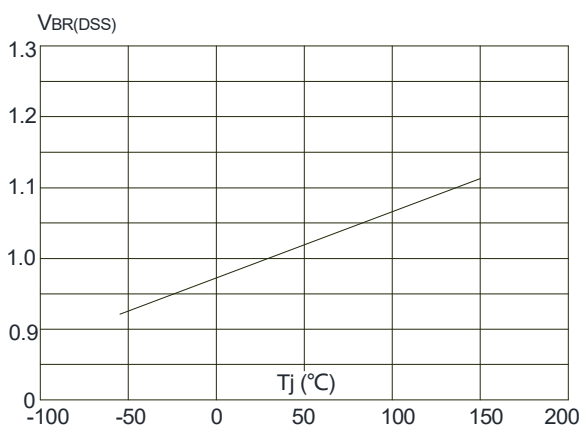


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

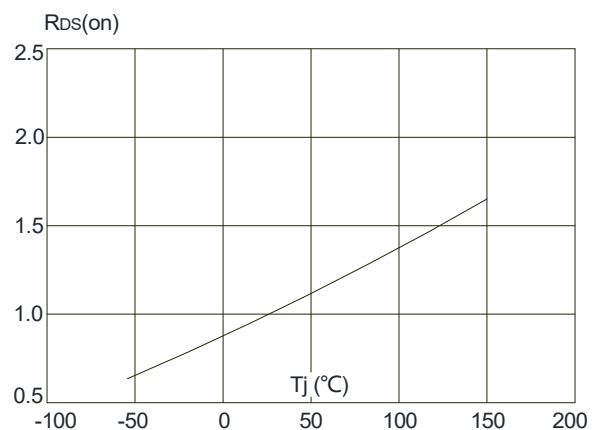


Figure 8: Normalized on Resistance vs. Junction Temperature

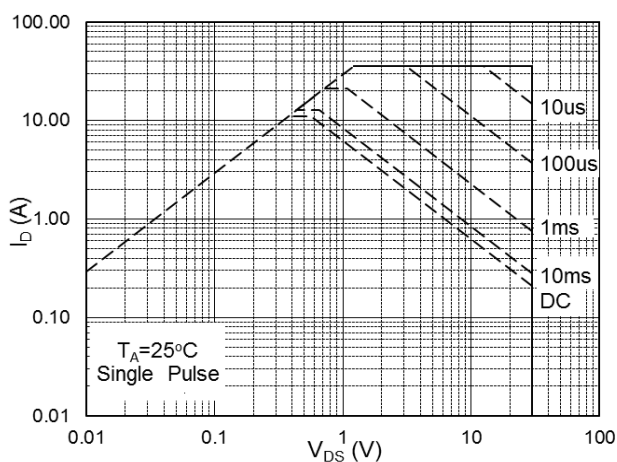


Fig.9 Safe Operating Area

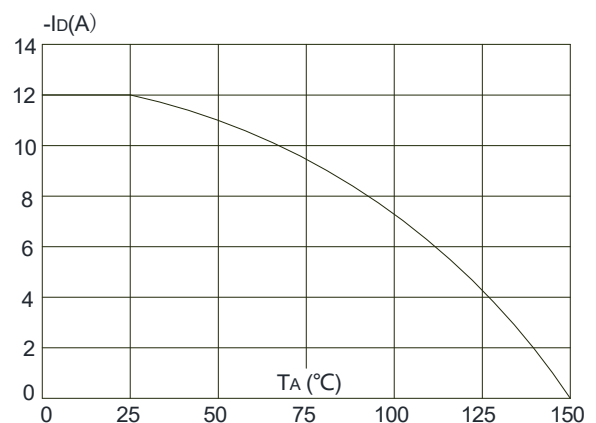


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

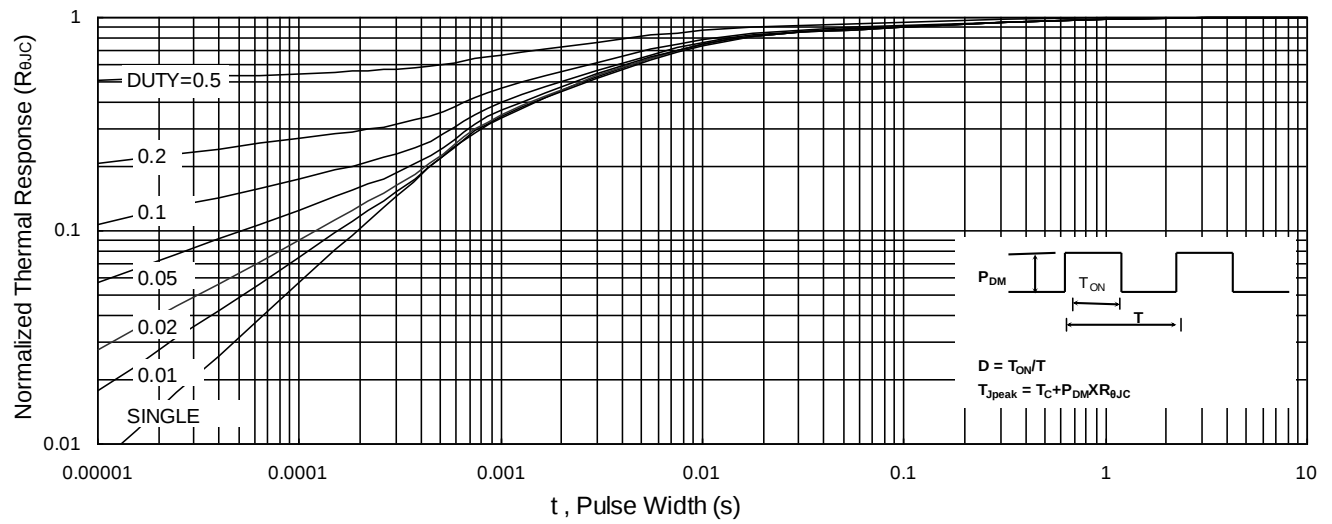


Fig.11 Normalized Maximum Transient Thermal Impedance