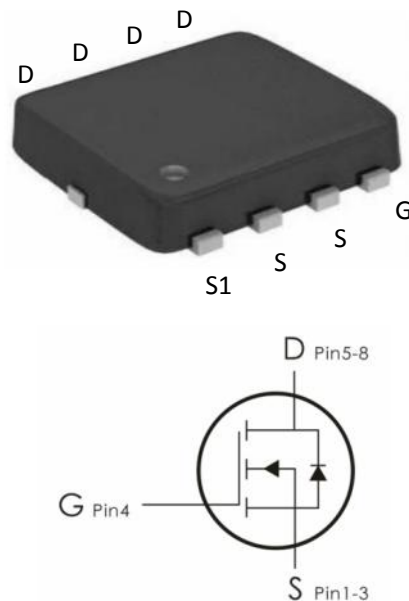


Description:

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) $V_{DS}=30V, I_D=50A, R_{DS(ON)}=7.5m\Omega @ V_{GS}=10V$
- 2) Improved dv/dt capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DOZ50N03	50N03	DFN3*3-8	5000 pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ 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-Continuous- $T_C=25^\circ\text{C}$	50	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	28	
I_{DM}	Drain Current – Pulsed ^{note1}	120	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	39	mJ
P_D	Power Dissipation- $T_C=25^\circ\text{C}$	12	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	10.4	$^\circ\text{C}/\text{W}$

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	30	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =30V	---	---	1	μ A
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 =250 μ A	1	1.5	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ^{note3}	V _{GS} =10V, I _D =25A	---	5.8	7.5	m Ω
		V _{GS} =4.5V, I _D =15A	---	10	13	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	1105	---	pF
C _{oss}	Output Capacitance		---	182	---	
C _{rss}	Reverse Transfer Capacitance		---	150	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =15V , V _{GS} =10V R _{GEN} =3 Ω , I _D =15A	---	15	---	ns
t _r	Rise Time		---	19	---	ns
t _{d(off)}	Turn-Off Delay Time		---	35	---	ns
t _f	Fall Time		---	21	---	ns
Q _g	Total Gate Charge	V _{DS} =15V , V _{GS} =10V , I _D =15A	---	21	---	nC
Q _{gs}	Gate-Source Charge		---	2.35	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	5.9	---	nC
Drain-Source Diode Characteristics						
I _S	Contiuos Source Curent	V _D =V _G =0V	---	---	50	A
I _{SM}	Pulsed Source Curent	V _D =V _G =0V	---	---	120	A
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V , I _S =30A	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F =30A , di/dt=100A/μs	---	14	---	nS
Q _{rr}	Reverse Recovery Charge		---	4.1	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_{GS}=10\text{V}$, $R_G=25\ \Omega$, $L=0.5\text{mH}$, $I_{AS}=12.6\text{A}$
3. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 0.5\%$

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

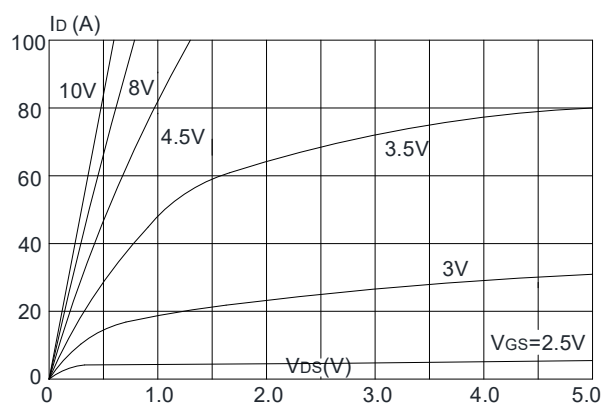


Figure 1: Output Characteristics

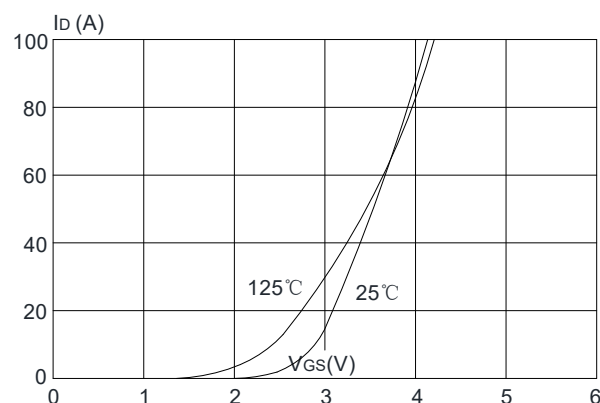


Figure 2: Typical Transfer Characteristics

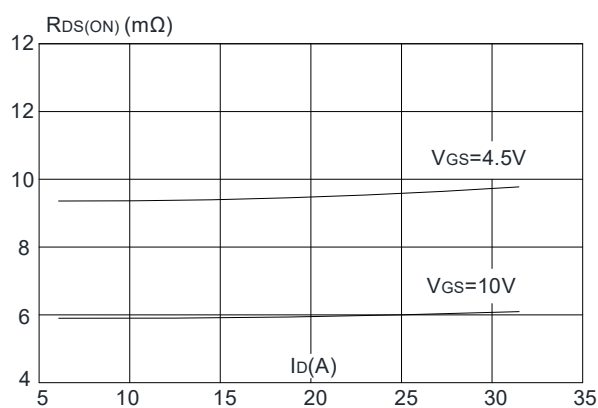


Figure 3: On-resistance vs. Drain Current

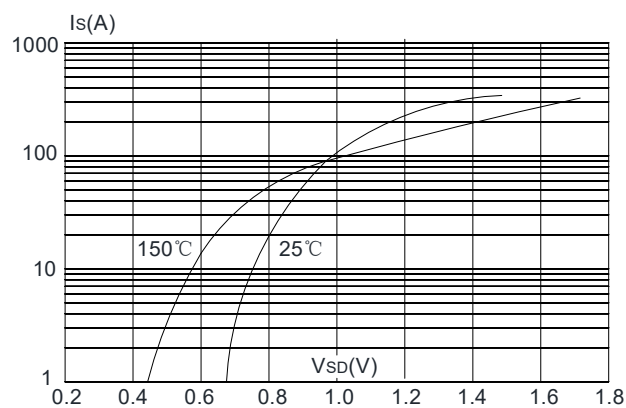


Figure 4: Body Diode Characteristics

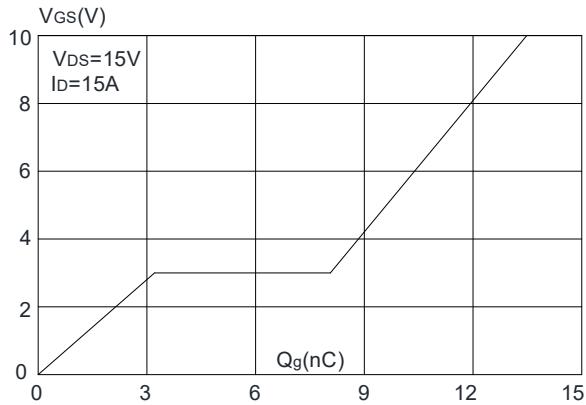


Figure 5: Gate Charge Characteristics

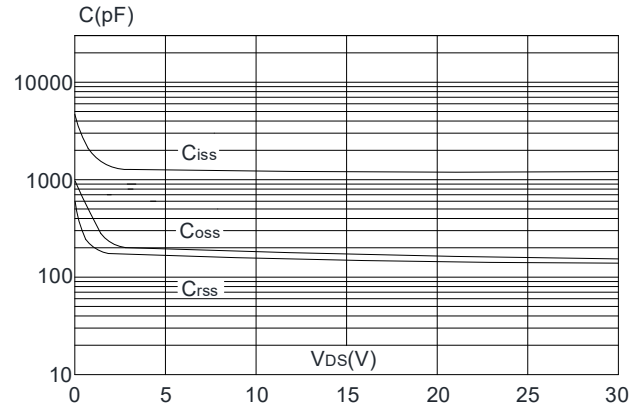


Figure 6: Capacitance Characteristics

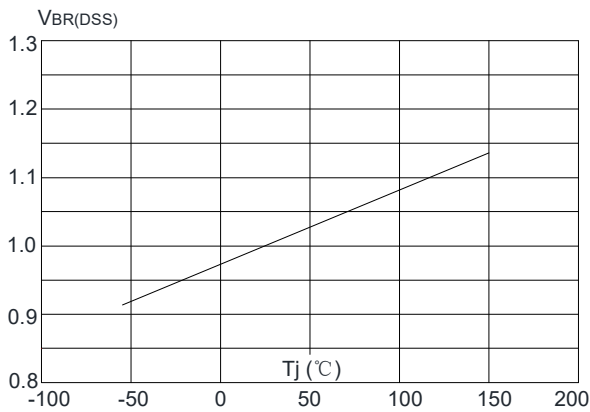


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

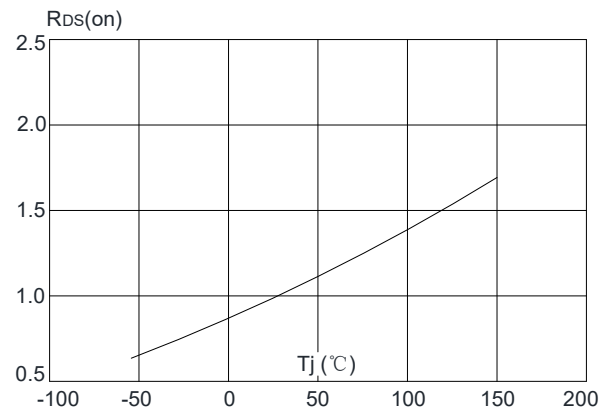


Figure 8: Normalized on Resistance vs. Junction Temperature

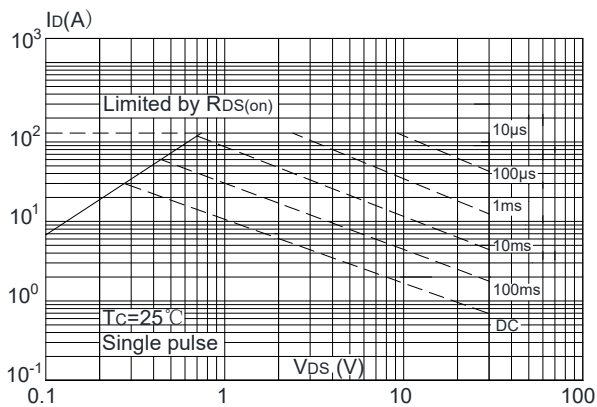


Figure 9: Maximum Safe Operating Area

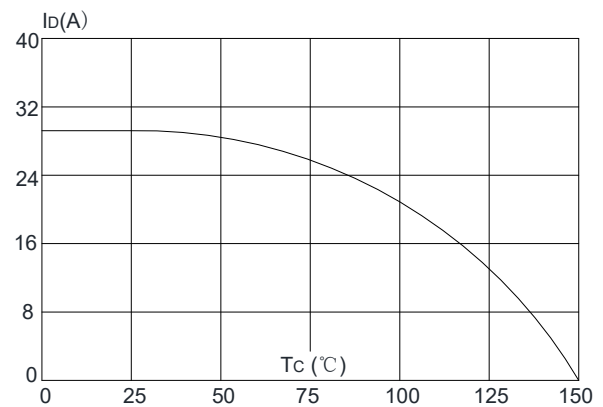


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

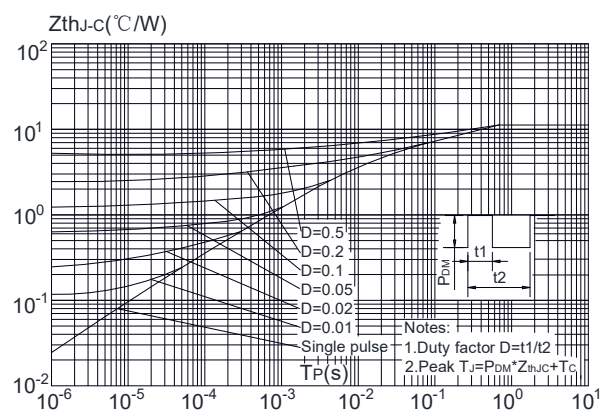
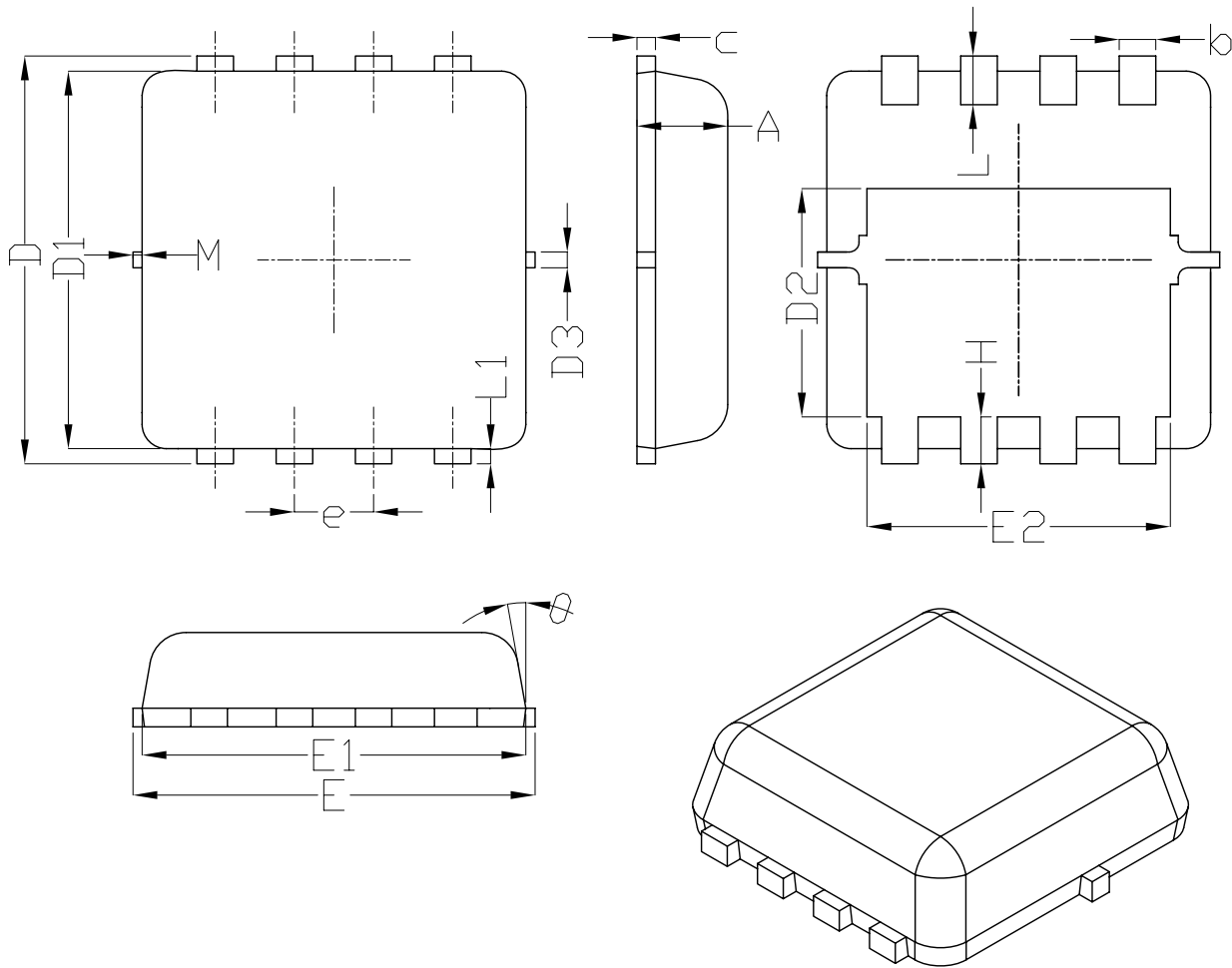


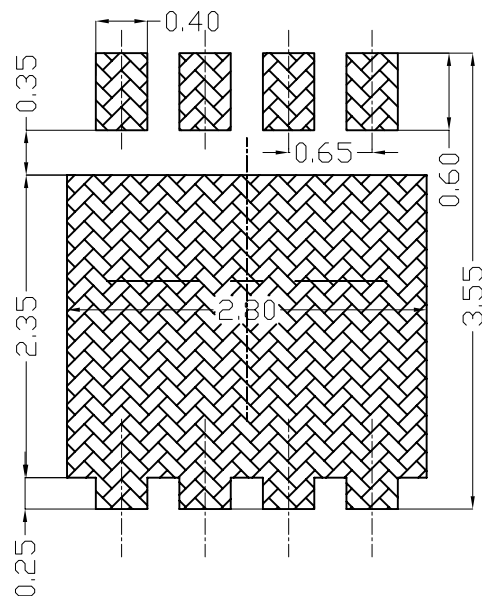
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

DFN3X3-8 Package Information:



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15

* Not specified



UNIT: mm

Marking Information:

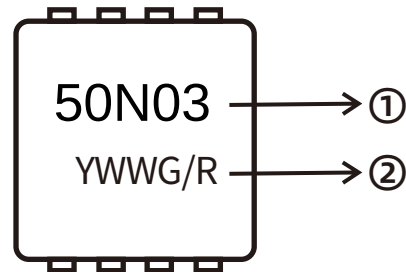
①. Part NO.

②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2024-03-06	Release of final version

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