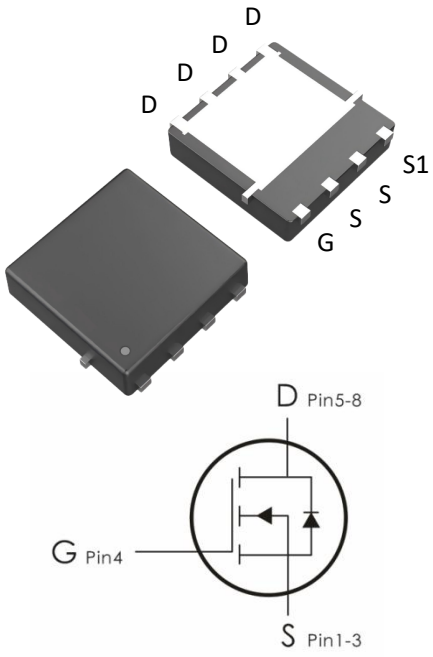
Description：

This N-Channel MOSFET uses advanced SGT 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=90A,$R_{DS(ON)}$<2.8mΩ @V_{GS}=10V（Typ：2.5mΩ）
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.
6) MSL3

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
DOZ90N03T	90N03T	DFN3*3-8	5000 pcs/Reel

Absolute Maximum Ratings：(T_c=25℃ 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[1]	90	A
	Continuous Drain Current-T_c=100℃[1]	63	
I_{DM}	Pulsed Drain Current[2]	360	
P_D	Power Dissipation	65	W
E_{AS}	Single pulse avalanche energy[3]	100	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	2	℃/W

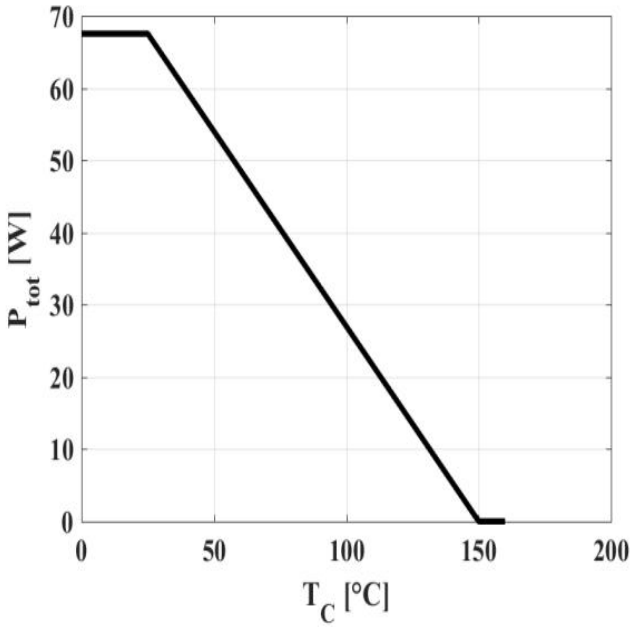
Electrical Characteristics: (T_c=25℃ unless otherwise noted)

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}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
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=250μA	1.2	1.7	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=10V,I_D=20A	---	2.5	2.8	mΩ
		V_{GS}=4.5V,I_D=10A	---	3.6	4.5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	2500	---	pF
C_{oss}	Output Capacitance		---	580	--	
C_{rss}	Reverse Transfer Capacitance		---	114	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=15V, I_D=20A, R_G=1.6Ω ,V_{GS}=10V	---	11	---	ns
t_r	Rise Time		---	8	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	46	---	ns
t_f	Fall Time		---	8	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=20A	---	38.6	---	nC
Q_{gs}	Gate-Source Charge		---	5.3	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	5	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=20A	---	---	1.1	V
I_S	Continuous Drain Curren	V_D=V_G=0V	---	---	90	A
I_{SM}	Pulsed Drain Current		---	---	360	A
Trr	Reverse Recovery Time	I_F=15A,T_J=25℃ dI/dt=100A/us	---	25	---	ns
Qrr	Reverse Recovery Charge		---	50	---	nC

Notes:

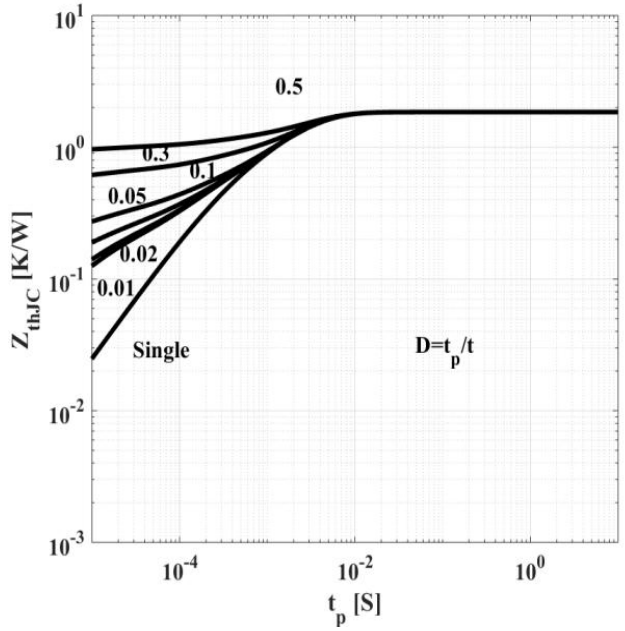
1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=15V,V_G=10V,L=0.5mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

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



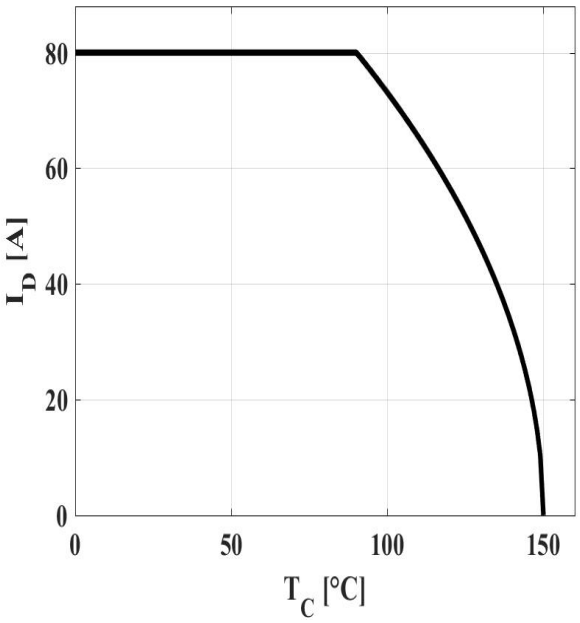
$P_{tot} = f(T_c)$

Figure 1: Power Dissipation



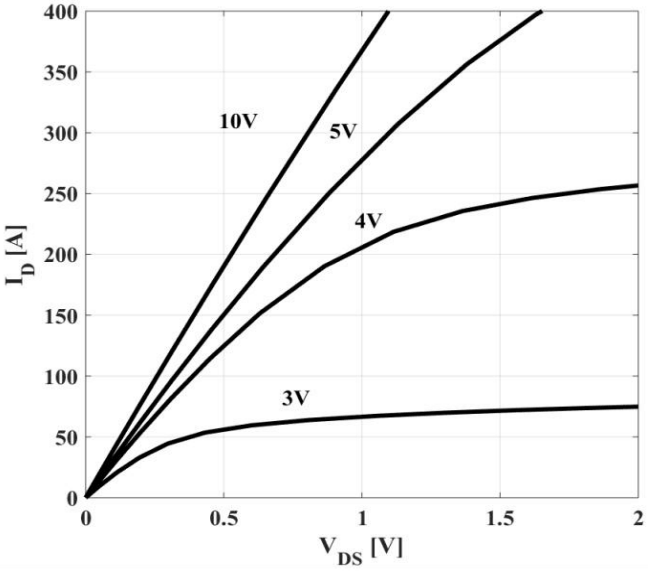
$Z_{(thJC)} = f(t_p)$; parameter: $D = t_p/T$

Figure 2: Max. Transient Thermal Impedance



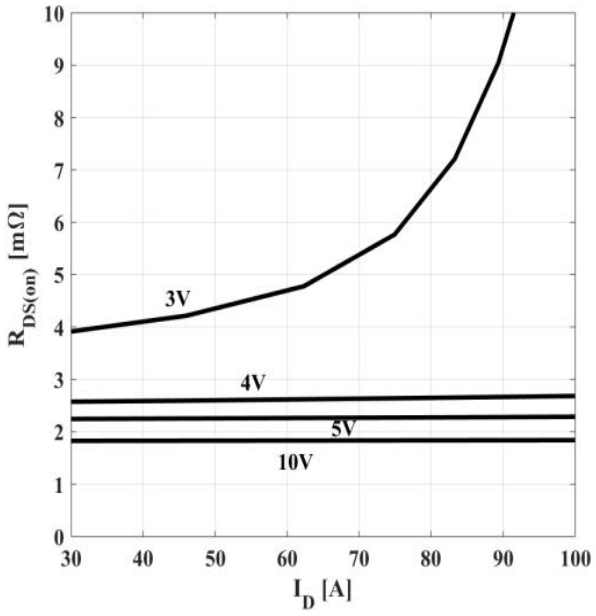
$I_D = f(T_C)$; $V_{GS} \geq 10V$

Figure 3: Drain Current



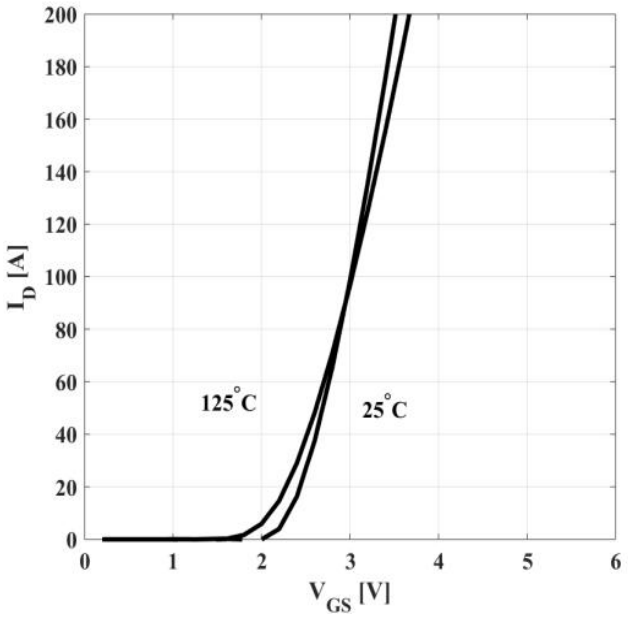
$I_D = f(V_{DS})$; Tj= 25ºC; parameter: V_{GS}

Figure 4: Typ. Output Characteristics



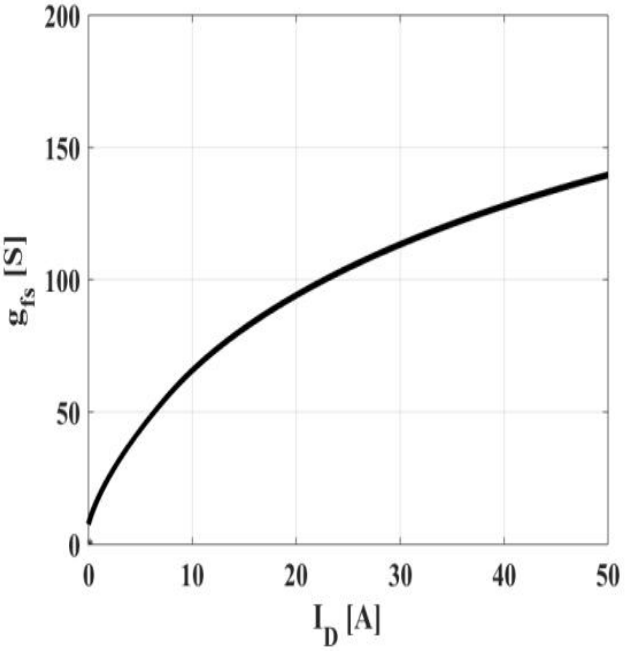
$R_{DS(ON)}$=f(I_D); T_j=25ºC; parameter: V_{GS}

Figure 5: Typ. Drain-Source On-State Resistance



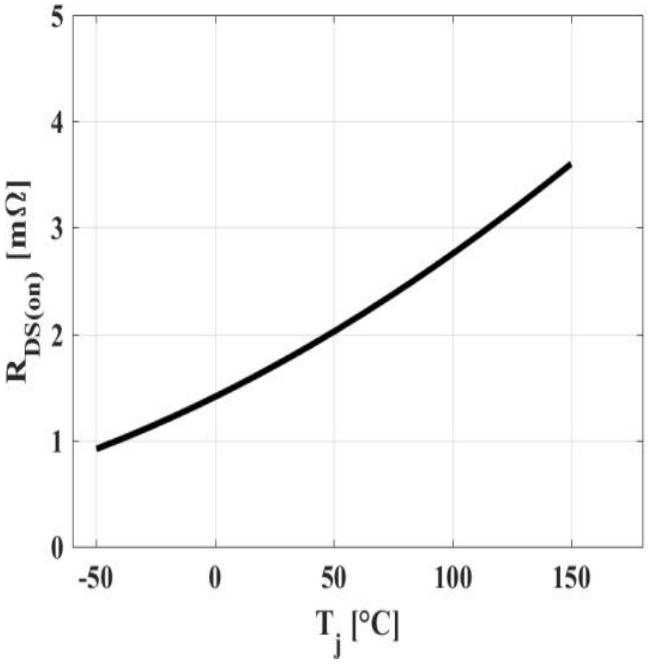
I_D = f(V_{GS}); |V_{DS}| >2|I_D|$R_{DS(on)max}$; parameter: T_j

Figure 6: Typ. Transfer Characteristics



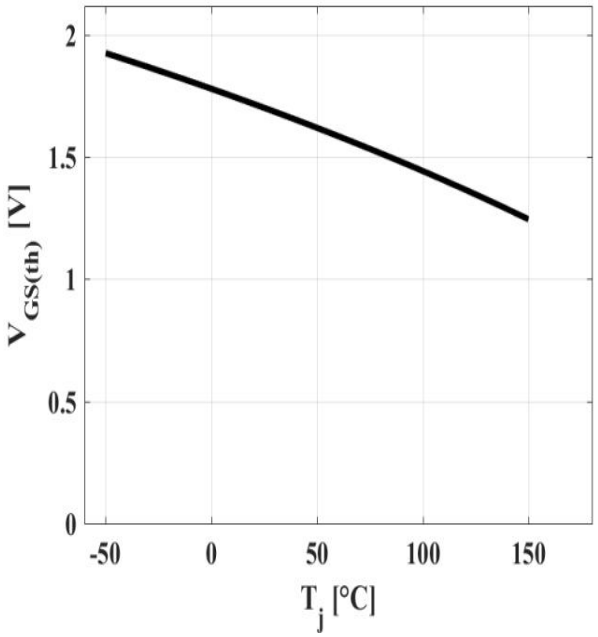
g_{fs}=f(I_D); T_j=25℃

Figure 7: Typ. Forward Transconductance



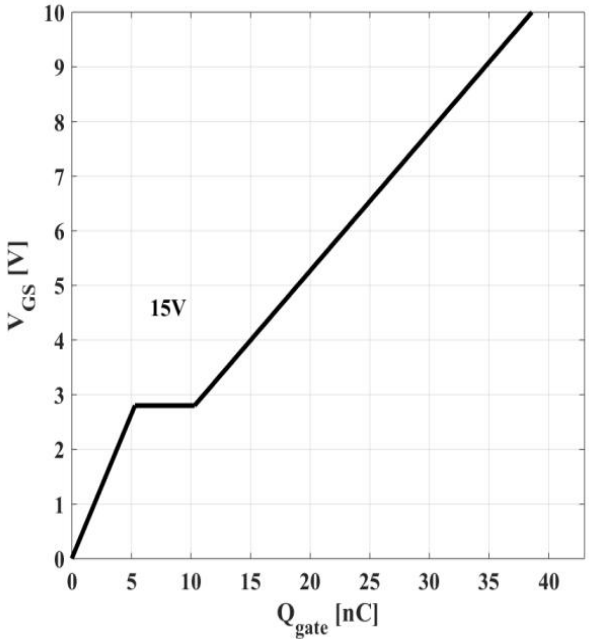
$R_{DS(ON)}$=f(T_j); I_D=20A; V_{GS}=10V

Figure 8 : Typ. Drain-Source On-State Resistance



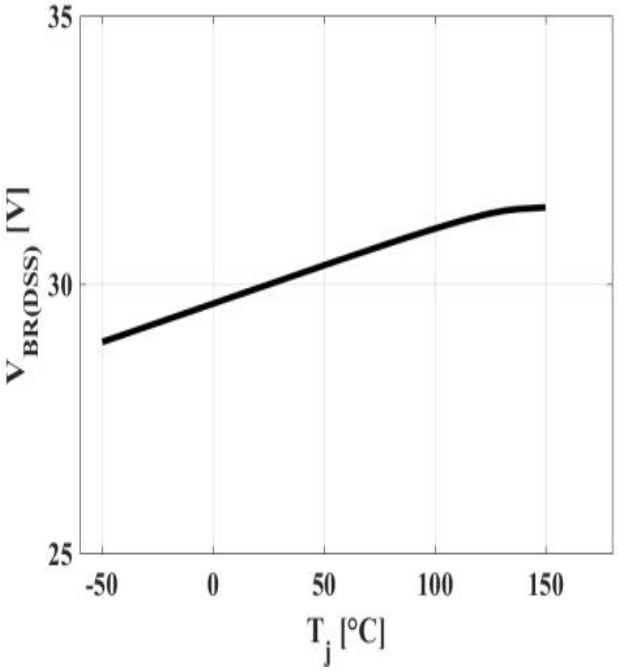
$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$; $I_{DS}=250\mu A$

Figure 9 : Typ. Gate Threshold Voltage



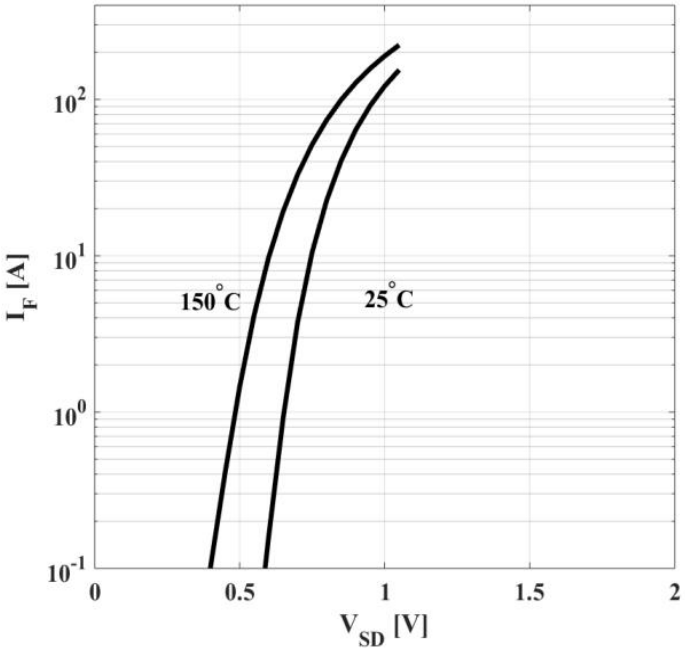
$V_{GS}= f(Q_{gate})$, $I_D= 20A$ pulsed

Figure 10: Typ. Gate Charge



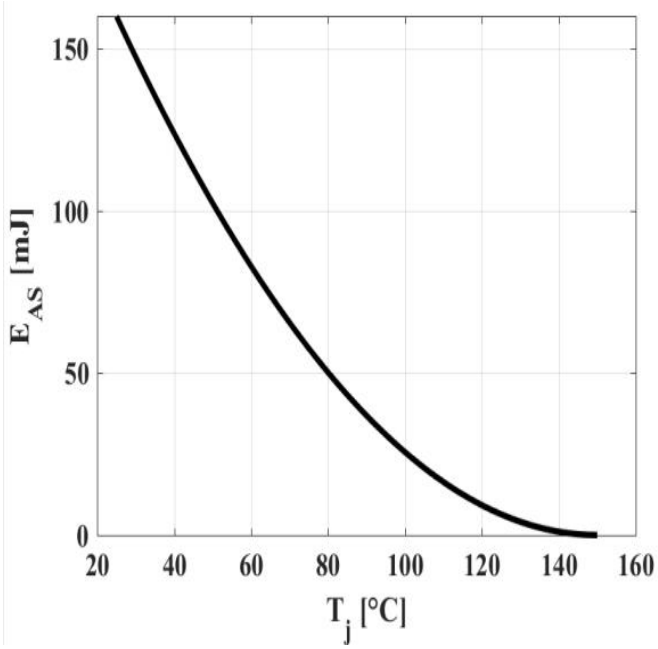
$V_{BR(DSS)}=f(T_j)$; $I_D=1mA$

Figure 11: Drain-Source Breakdown Voltage



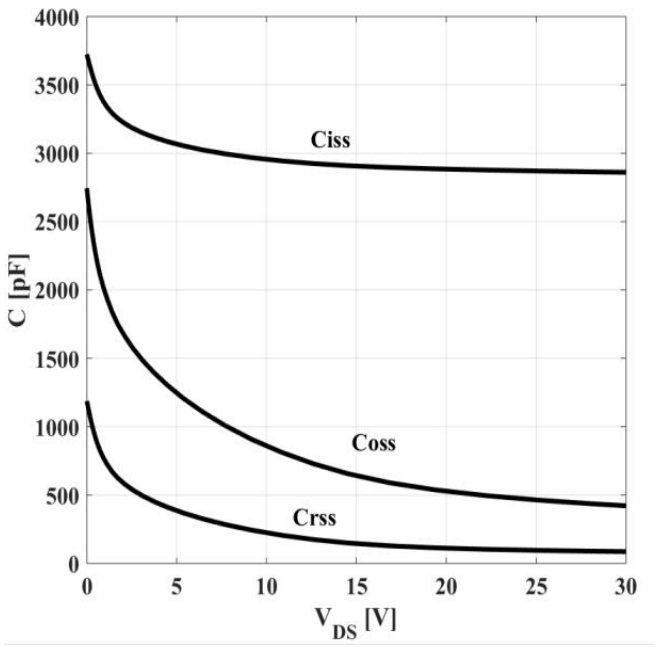
$I_F=f(V_{SD})$; parameter: T_j

Figure 12: Forward Characteristics of Reverse Diode



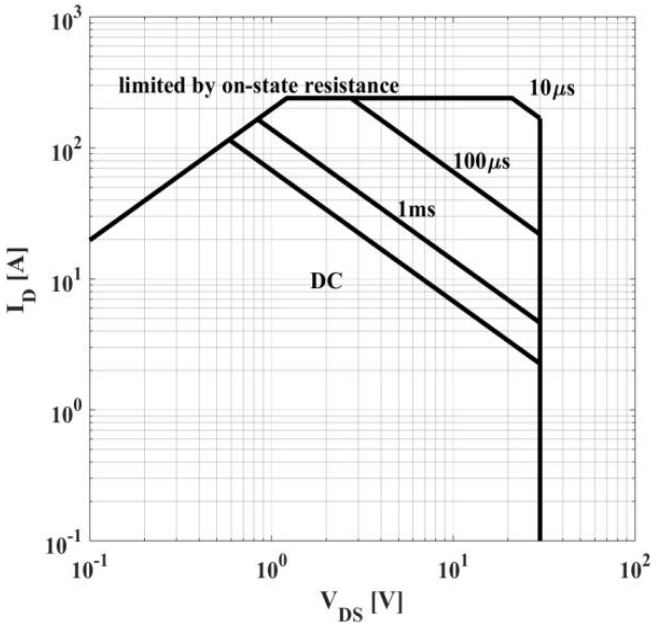
$E_{AS}=f(T_j)$; I_D=20.0A; V_{DD}=15V

Figure 13: Avalanche Energy



C=f V_{DS} ; V_{GS}=0; f=1MHz

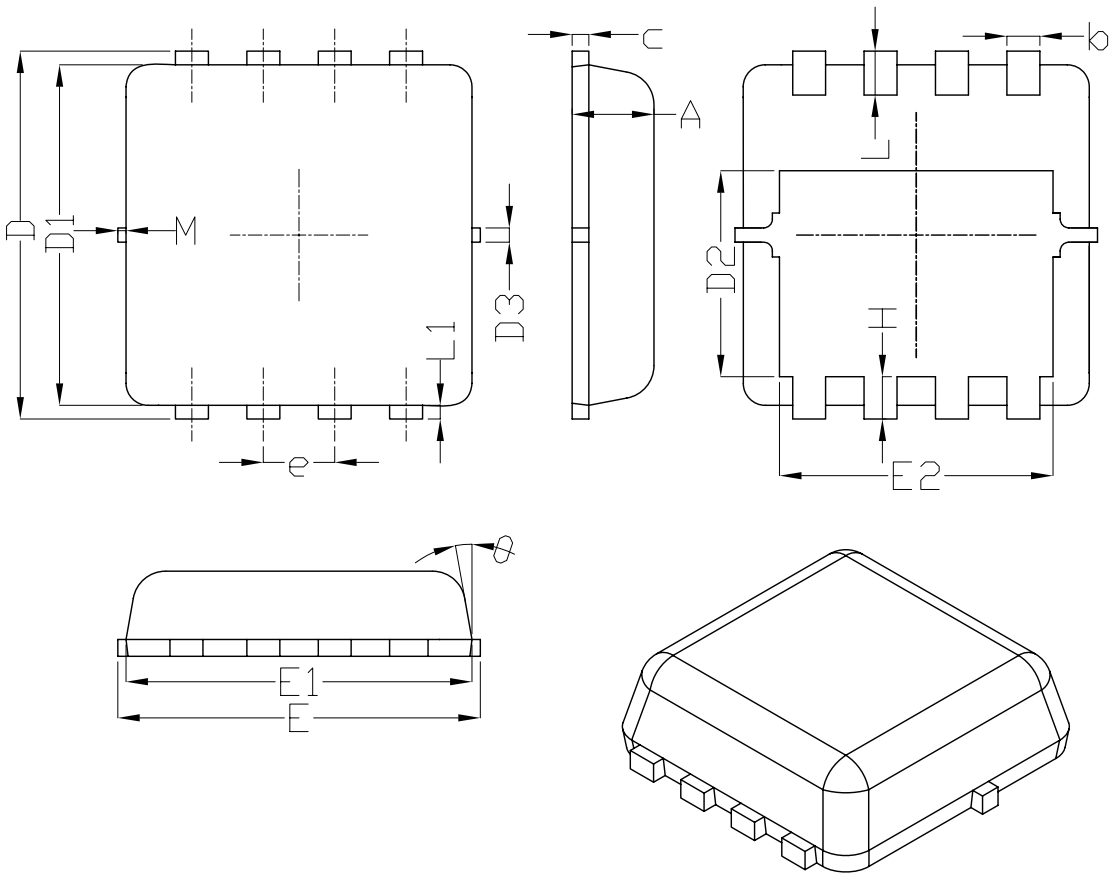
Figure 14: Typ. Capacitances



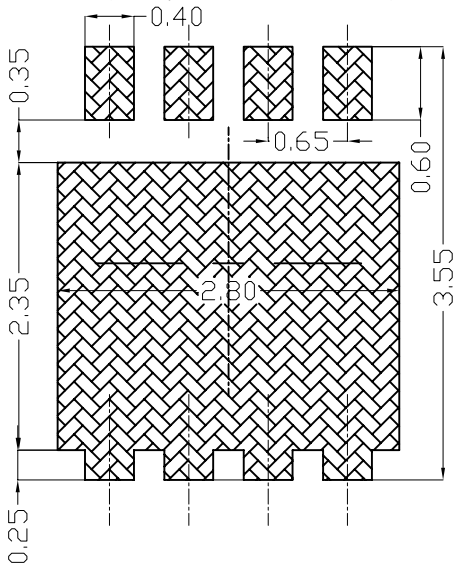
$I_D=f(V_{DS})$; T_C=25ºC; V_{GS}>7V; parameter: t_p

Figure 15: Safe Operating Area

DFN3X3-8 Package Outline Data



Land Pattern
(Only for Reference)

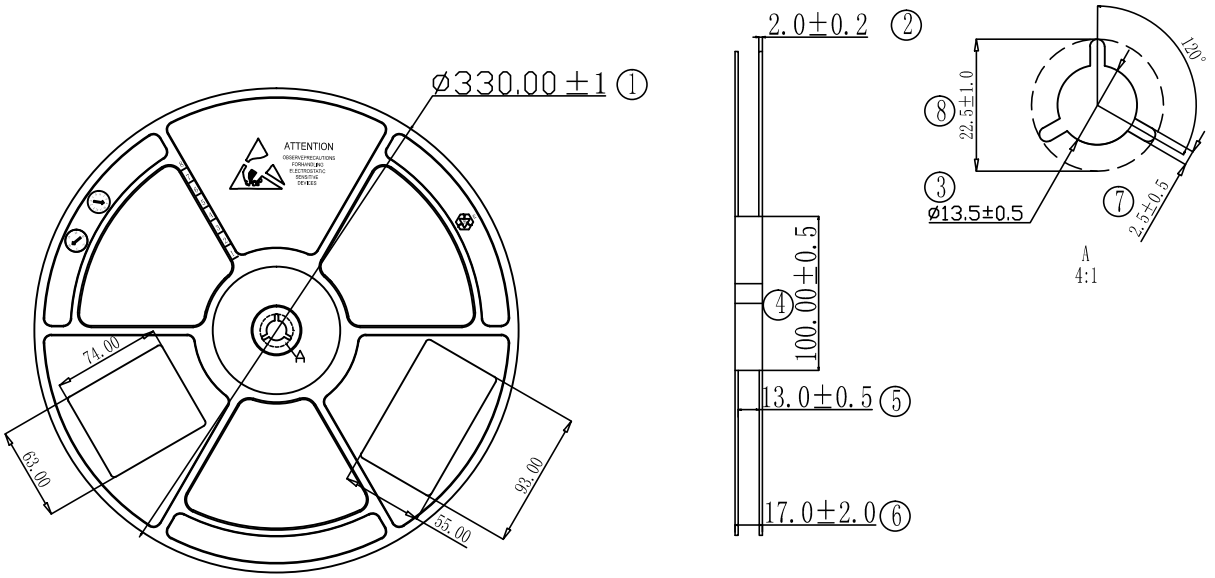


UNIT: mm

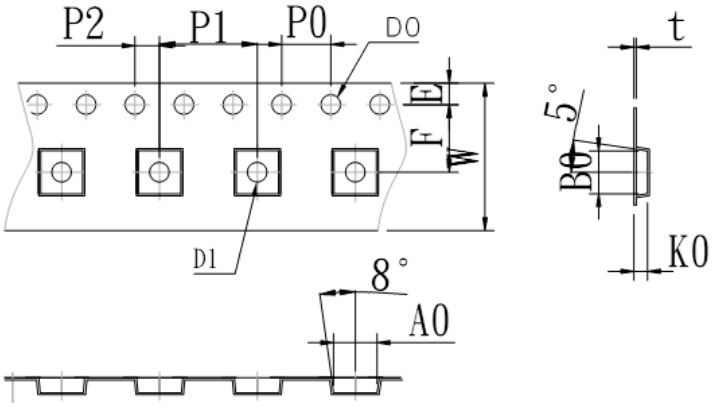
SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15
* Not specified			

Tape & Reel Information

Dimensions in mm



Symbol	A0	B0	K0	D0	D1	P0	P1	10*P0
Spec	3.55±0.10	3.45±0.10	1.13±0.10	1.55±0.10	1.55±0.10	4.00±0.10	8.00±0.10	40.0±0.10
Symbol	W	E	F	P2	t			
Spec	12.00±0.10	1.75±0.10	5.50±0.10	2.00±0.10	0.20±0.05			



Pulling direction

Marking Information：

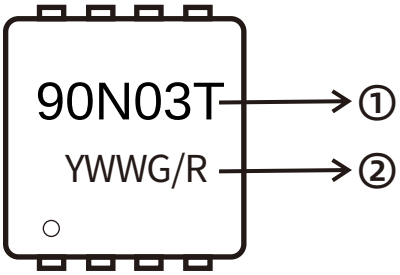
①. Part NO.

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	2025-02-10	Release of final version

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