TMG80N03DF

N -Channel Enhancement Mosfet

General Description

- Low R $_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

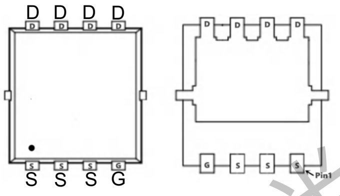
General Features

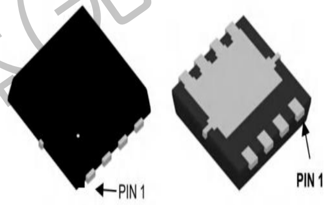
V_{DS} = 30V I_D =80A

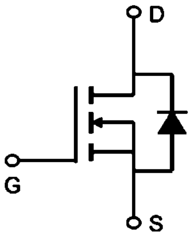
$R_{DS(ON)}$ =2.5mΩ(typ.)@ V_{GS}=10V

100% UIS Tested
100% R_g Tested

DF:PDFN3x3-8L







Marking:G80N03

Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25˚C	Continuous Drain Current, V $_{GS}$ @ 10V	80	A
I_D@T_C=100˚C	Continuous Drain Current, V $_{GS}$ @ 10V	60	A
I_{DM}	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy	100	mJ
I_{AS}	Avalanche Current	---	A
P_D@T_C=25˚C	Total Power Dissipation	65	W
T_{STG}	Storage Temperature Range	-55 to 175	˚C
T_J	Operating Junction Temperature Range	-55 to 175	˚C

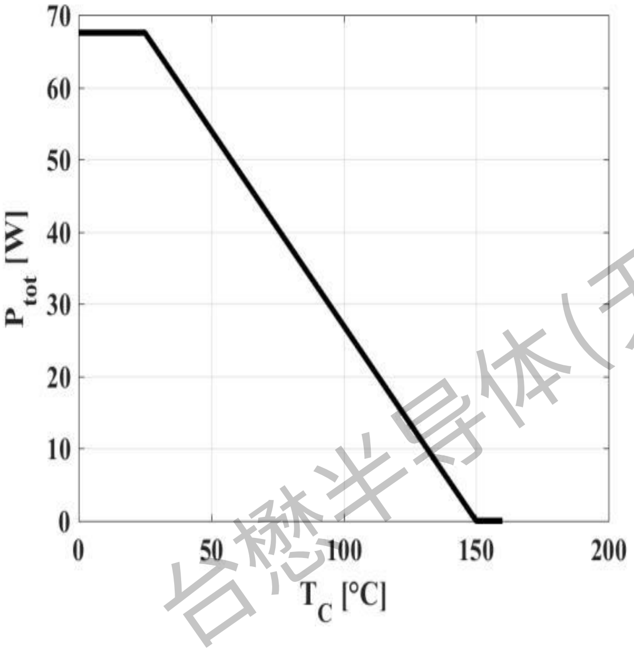
Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-Ambient [1]	---	---	˚C/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	---	2	˚C/W

Electrical Characteristics (T_J=25℃ unless otherwise specified)

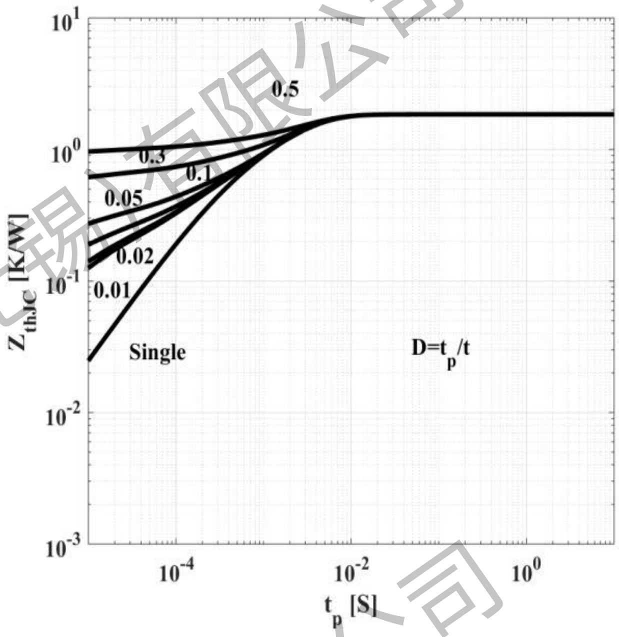
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=0.25mA	0.9	1.2	1.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=20A	---	2.5	3	mΩ
		V_{GS}=4.5V,I_D=20A	---	3.5	4	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	2500	---	pF
C_{oss}	Output Capacitance		---	580	---	pF
C_{rss}	Reverse Transfer Capacitance		---	114	---	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V R_G=1.6Ω， I_D=20A	---	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	Gate Charge Total	V_{GS}=0 to10V, V_{DD}=15V, I_D=20A	---	38.6	---	nC
Q_{gs}	Gate-Source Charge		---	5.3	---	nC
Q_{gd}	Gate-Drain Charge		---	5	---	nC
$V_{plateau}$	Gate Plateau Voltage		---	2.8	---	V
Drain-Source Diode Characteristics						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Units**
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_{SD}=20A	---	0.79	1.1	V
trr	Reverse Recovery Time	V_R=15V,I_F=20A dI_F/dt=100A/us	---	25	---	ns
qrr	Reverse Recovery Charge		---	50	---	nC

Typical Characteristics：



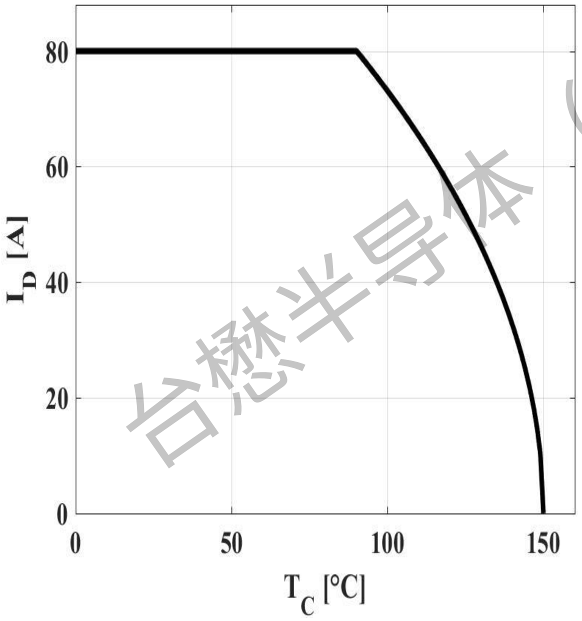
$P_{tot} = f(T_c)$

Figure 1: Power Dissipation



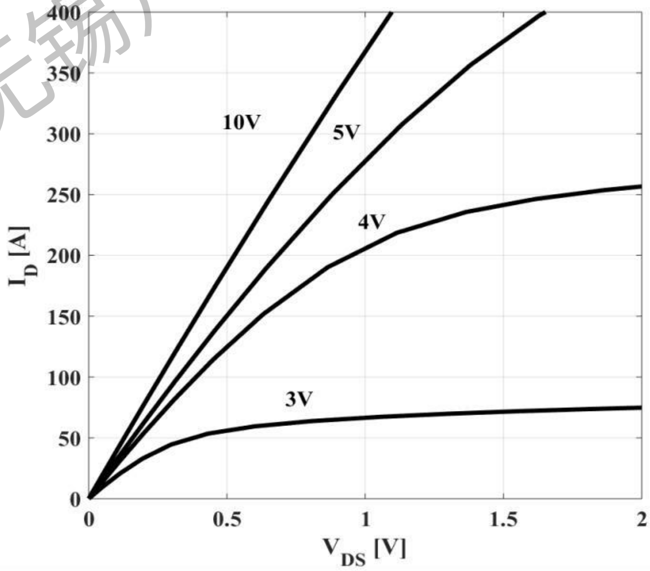
$Z_{(thJC)} = f(t_p)$; parameter: $D = t_p/T$

Figure 2: Max. Transient Thermal Impedance



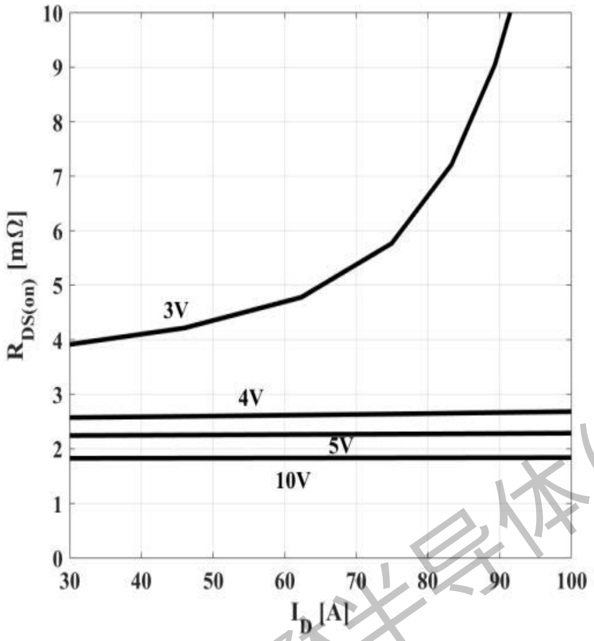
$I_D = f(T_C)$; $V_{GS} \geq 10V$

Figure 3: Drain Current



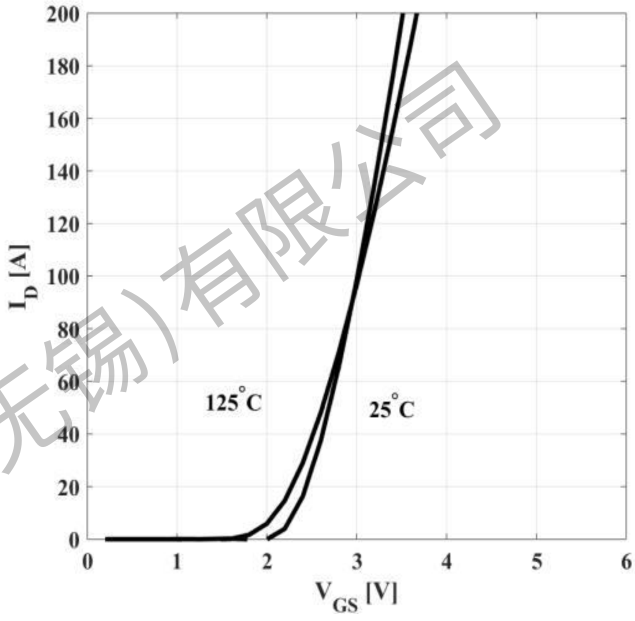
$I_D = f(V_{DS})$; Tj= 25ºC; parameter: V_{GS}

Figure 4: Typ. Output Characteristics



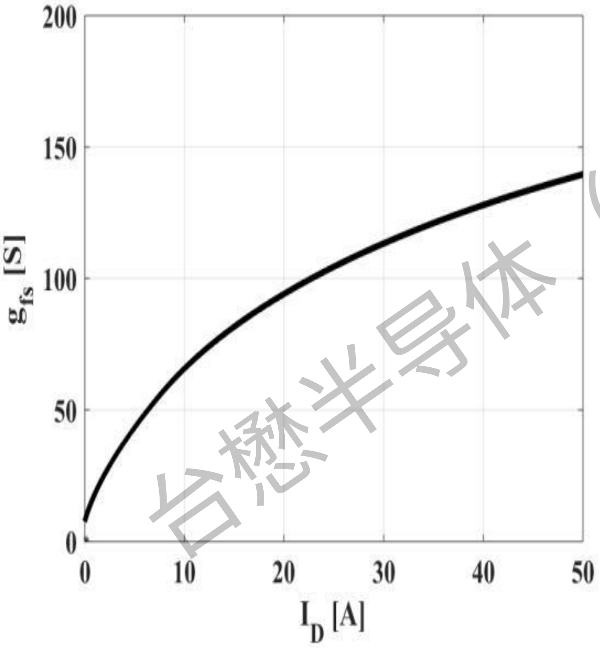
$R_{DS(ON)}$ =f(I_D); T_j=25ºC; parameter: V_{GS}

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



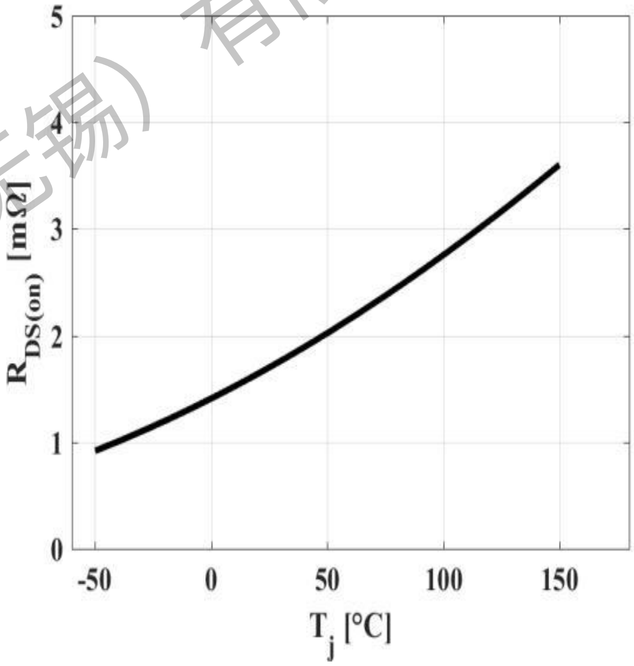
$I_D = f(V_{GS}); |V_{DS}| > 2|I_D|R_{DS(on)max}$; parameter: T_j

Figure 6: Typ. Transfer Characteristics



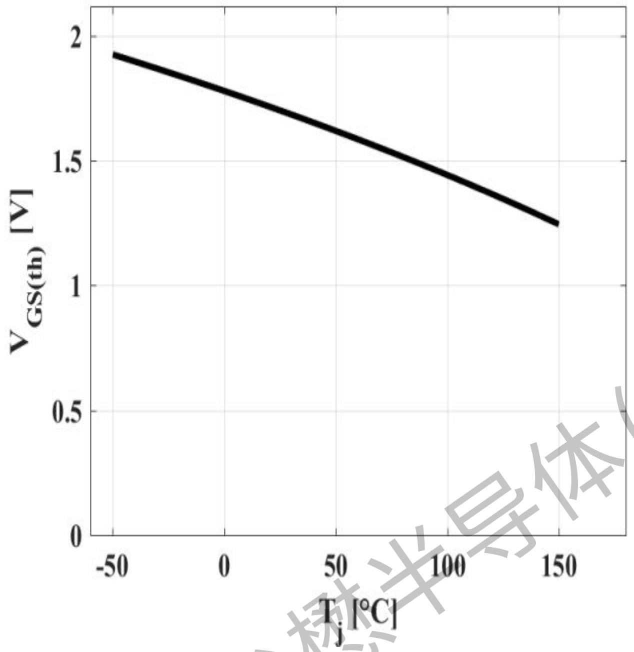
g_{fs}=f(I_D); T_j=25℃

Figure 7: Typ. Forward Transconductance



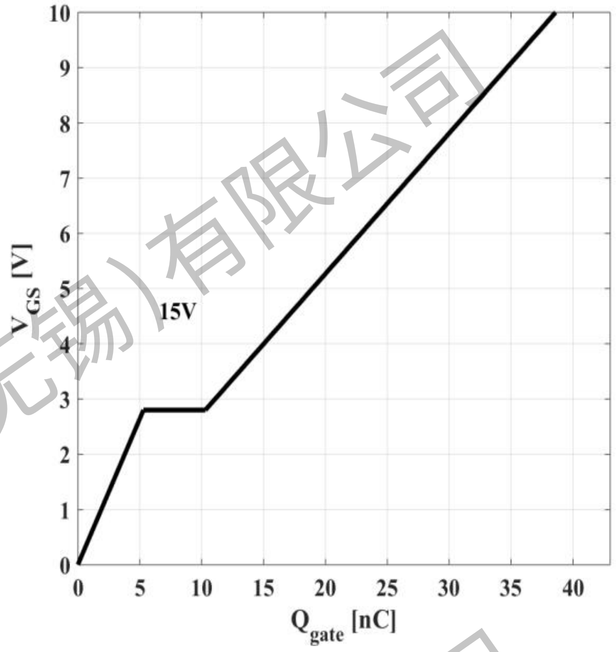
$R_{DS(ON)}$=f(T_j); I_D=20A; V_{GS}=10V

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



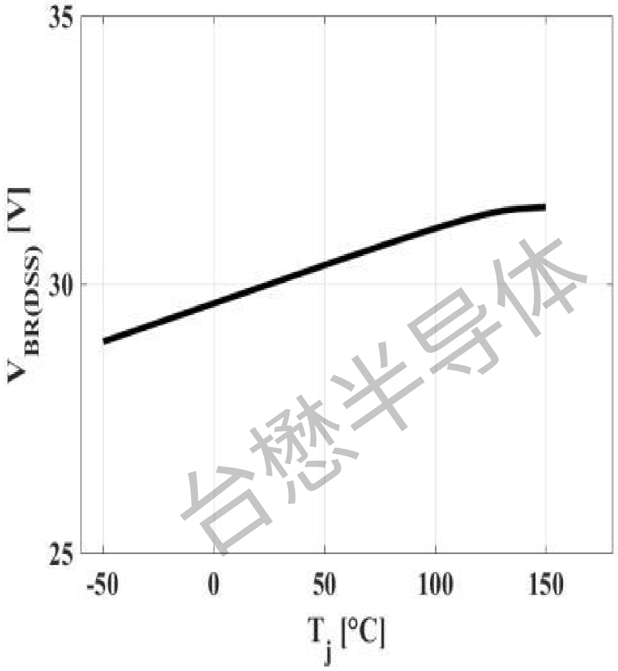
$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$; $I_{DS}=250\mu A$

Figure 9 : Typ. Gate Threshold Voltage



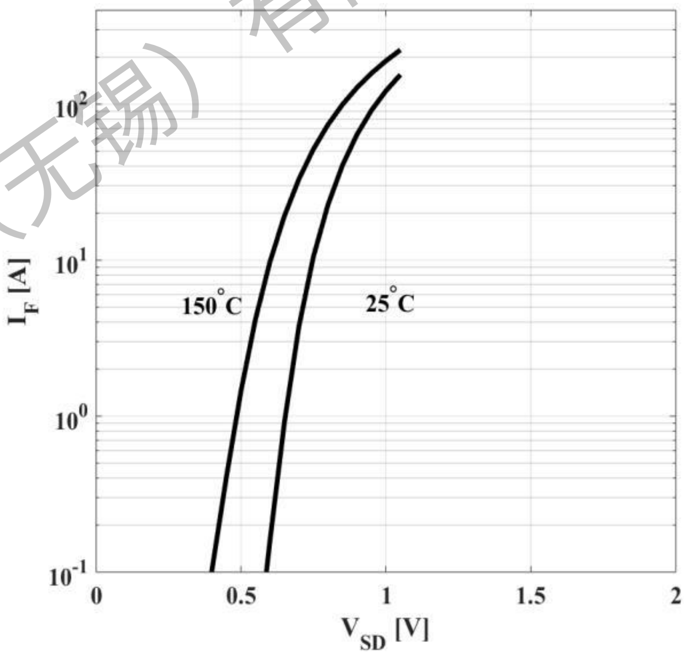
$V_{GS}= f(Q_{gate})$, $I_D= 20A$ pulsed

Figure 10: Typ. Gate Charge



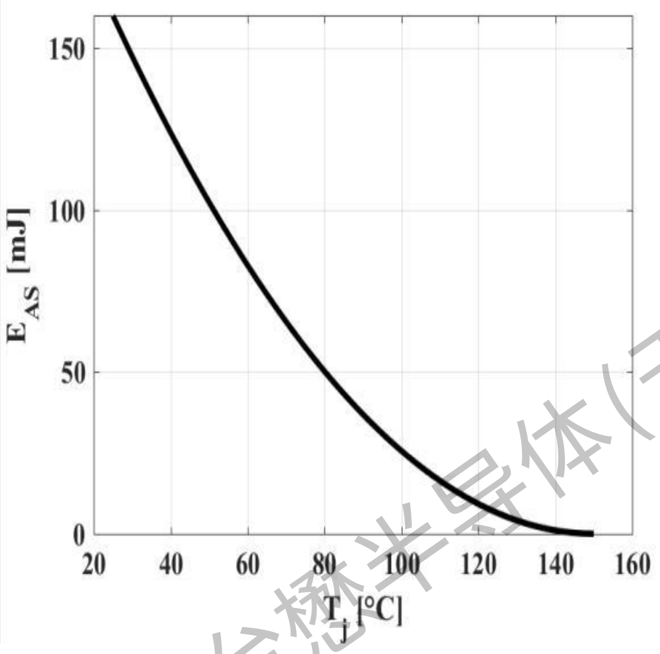
$V_{BR(DSS)}=f(T_j)$; $I_D=1mA$

Figure 11: Drain-Source Breakdown Voltage



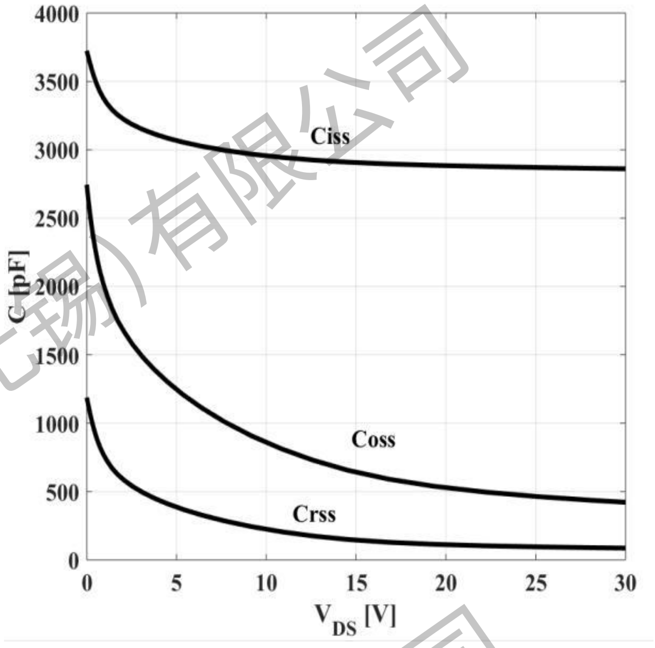
$I_F=f(V_{SD})$; parameter: T_j

Figure 12: Forward Characteristics of Reverse Diode



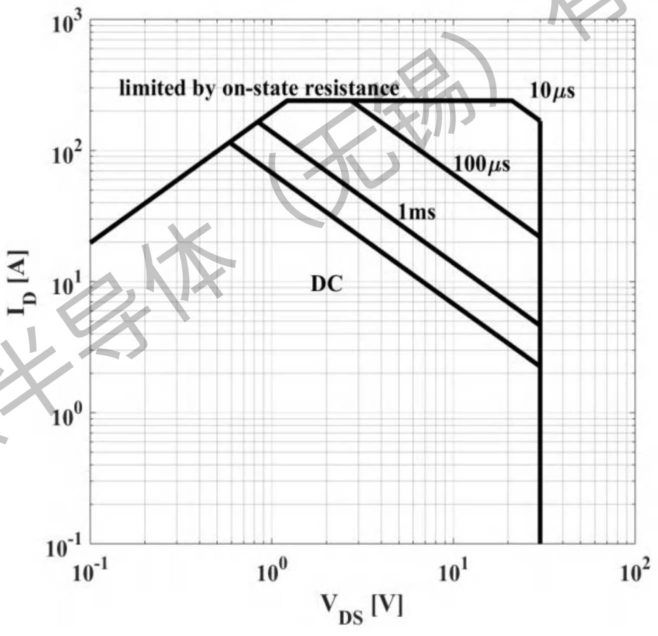
E_{AS}=f(T_j); I_D=20.0A; V_{DD}=15V

Figure 13: Avalanche Energy



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

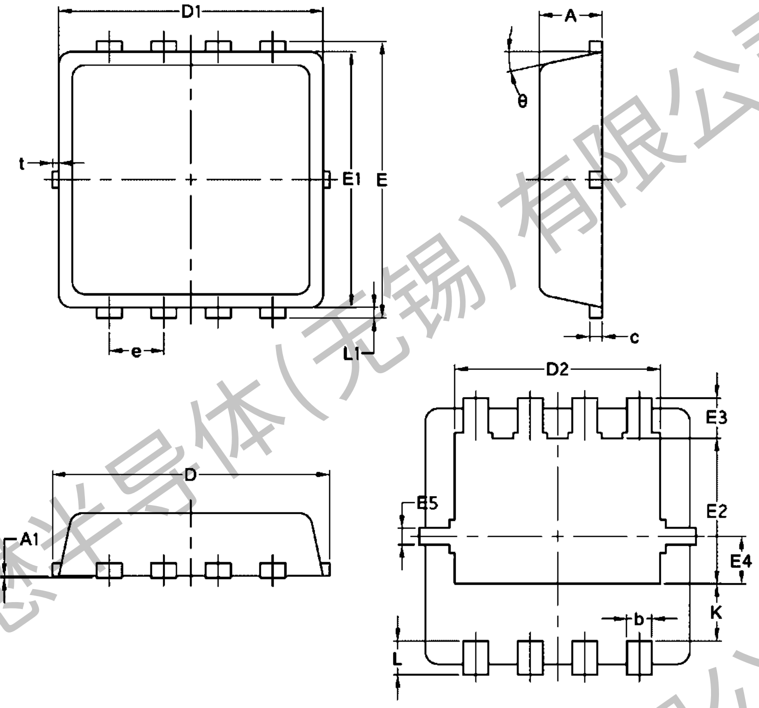
Figure 14: Typ. Capacitances



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

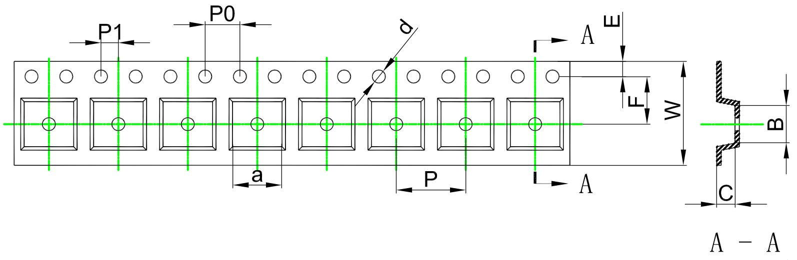
Figure 15: Safe Operating Area

Package Mechanical Data:DFN3x3-8L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14

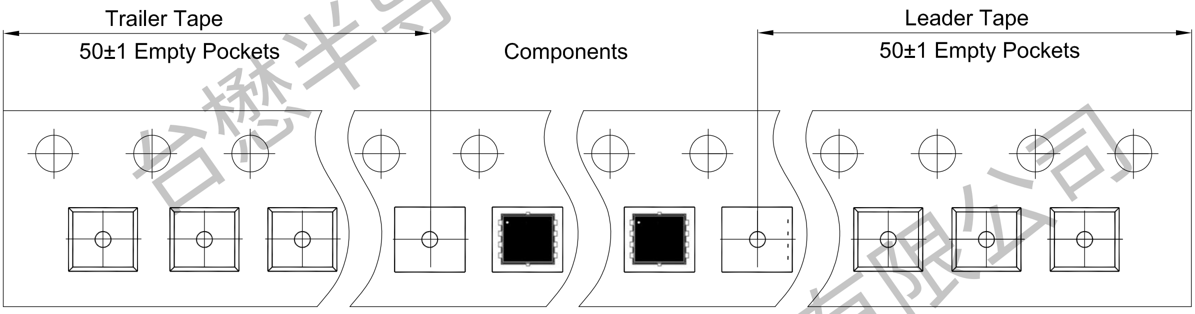
PDFN3×3-8L Embossed Carrier Tape



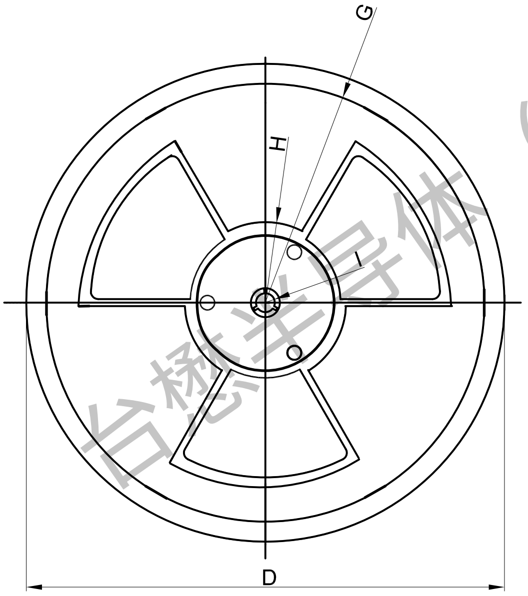
Packaging Description:
SOP-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).
ALL DIM IN mm

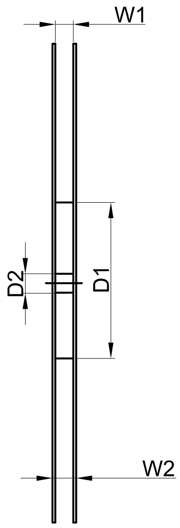
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
PDFN3×3-8L	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFN3×3-8L Tape Leader and Trailer



PDFN3×3-8L Reel





Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13"Dia	Ø330.00	100.00	13.00	R135.00	R55.00	R6.50	12.00	14.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
5,000 pcs	13 inch	10,000 pcs	370×355×52	50,000 pcs	400×360×368	

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Revision history:

Date	Rev	Description	Page
2023.05.14	23.05	Original	