

TM80PL03DF

P-Channel Enhancement Mosfet

General Description

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

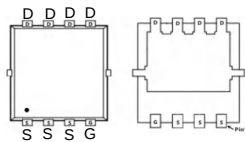
Applications

- Load switch
- PWM

General Features

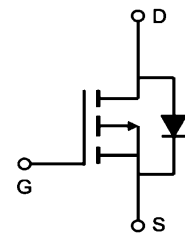
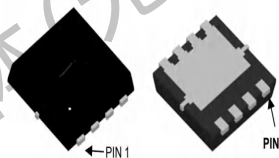
$V_{DS} = -25V$ $I_D = -80A$
 $R_{DS(ON)} = 4.5 m\Omega (typ.) @ V_{GS} = -4.5V$

100% UIS Tested
100% R_g Tested



Marking: 80PL03

DF:DFN3x3-8L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-25	V
V_{GS}	Gate-Source Voltage	± 18	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $-V_{GS} @ -4.5V$	-80	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $-V_{GS} @ -4.5V$	-52	A
I_{DM}	Pulsed Drain Current	-296	A
E_{AS}	Avalanche Energy	98	mJ
$P_D @ T_C = 25^\circ C$	Total Power Dissipation	41.6	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	3.6	$^\circ C/W$

TM80PL03DF

P-Channel Enhancement Mosfet

Electrical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-25	---	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V, T_j=25^\circ\text{C}$	--	---	-1	μA
		$V_{DS}=-16V, V_{GS}=0V, T_j=125^\circ\text{C}$	--	--	-100	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=10V$	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-10V$	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=-4.5V, I_D=-19A$	--	4.5	6.0	m Ω
		$V_{GS}=-2.5V, I_D=-19A$	--	5.9	7.6	m Ω
		$V_{GS}=-1.8V, I_D=-19A$	--	---	---	m Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.7	-0.9	-1.2	V
Pulse width $t_p \leq 300\mu s, \delta \leq 2\%$						

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$	--	6.3	--	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-10V, f=1.0\text{MHz}$	--	6199	--	pF
C_{oss}	Output Capacitance		--	885.6	--	
C_{rss}	Reverse Transfer Capacitance		--	976	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)	$T_C = 25^\circ\text{C}$	--	--	-80	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-200	A
V_{SD}	Diode Forward Voltage	$I_S=-19A, V_{GS}=0V$	--	--	-1.2	V
Pulse width $t_p \leq 300\mu s, \delta \leq 2\%$						

TM80PL03DF

P-Channel Enhancement Mosfet

Typical Performance Characteristics

Figure1: Output Characteristics

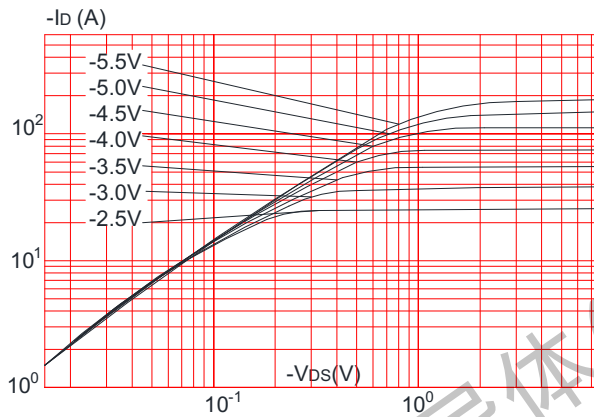


Figure 2: Typical Transfer Characteristics

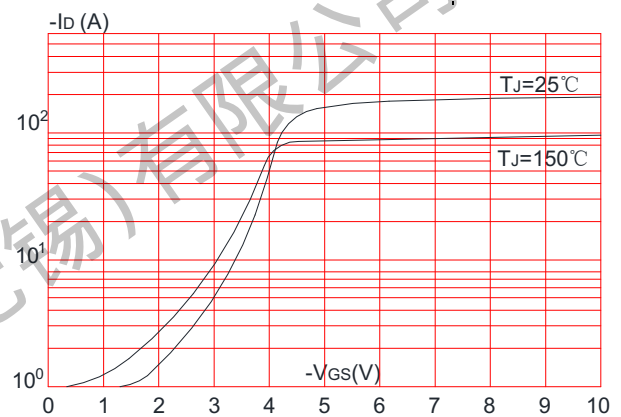


Figure 3: On-resistance vs. Drain Current

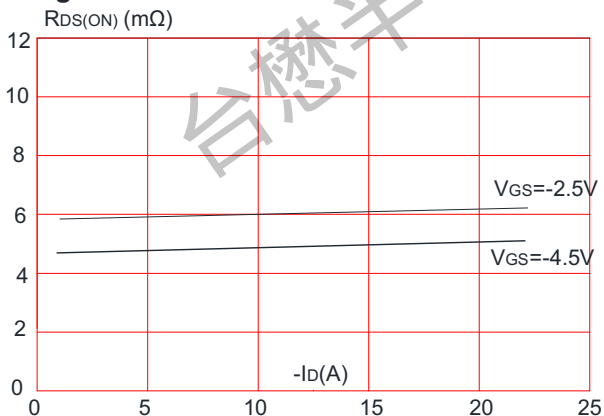


Figure 4: Body Diode Characteristics

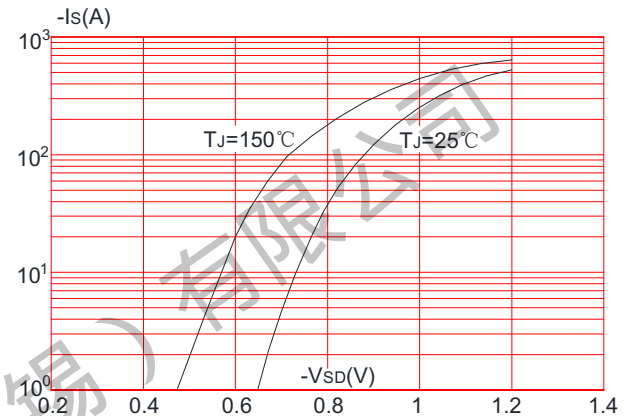


Figure 5: Gate Charge Characteristics

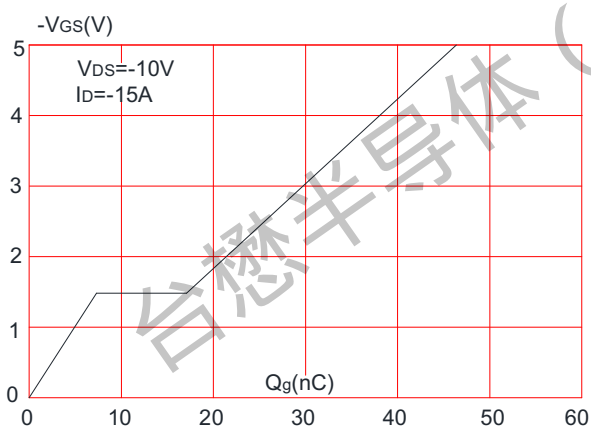
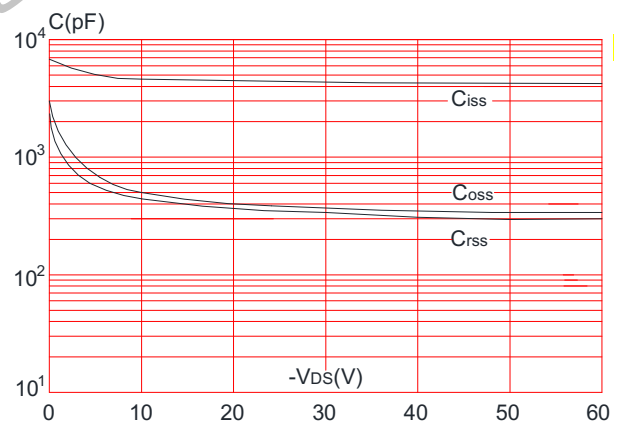


Figure 6: Capacitance Characteristics



TM80PL03DF

P-Channel Enhancement Mosfet

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

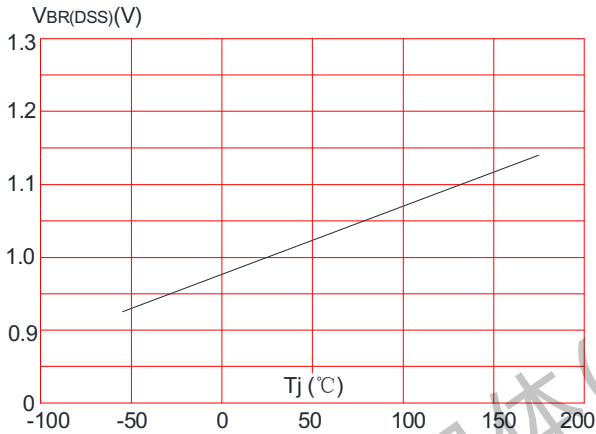


Figure 8: Normalized on Resistance vs. Junction Temperature

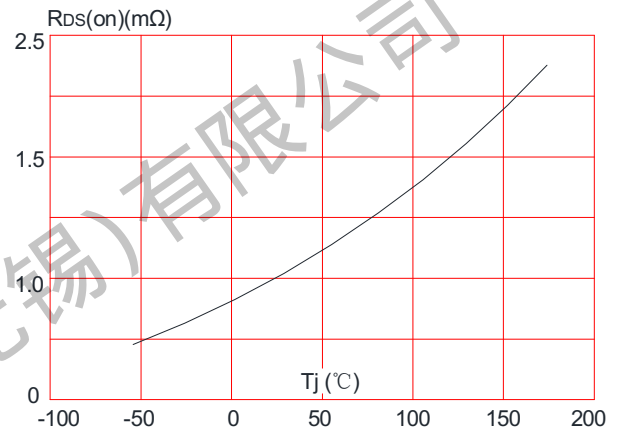


Figure 9: Maximum Safe Operating Area

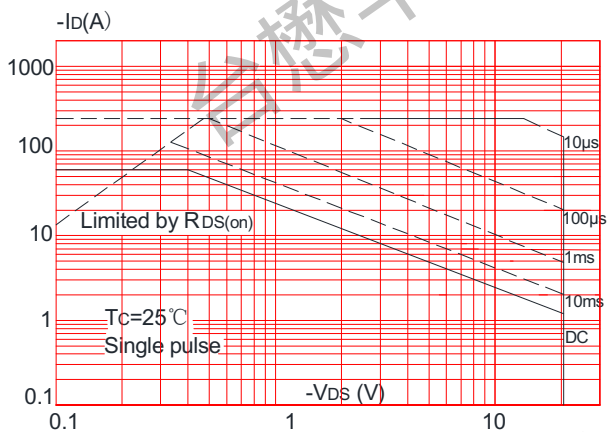


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

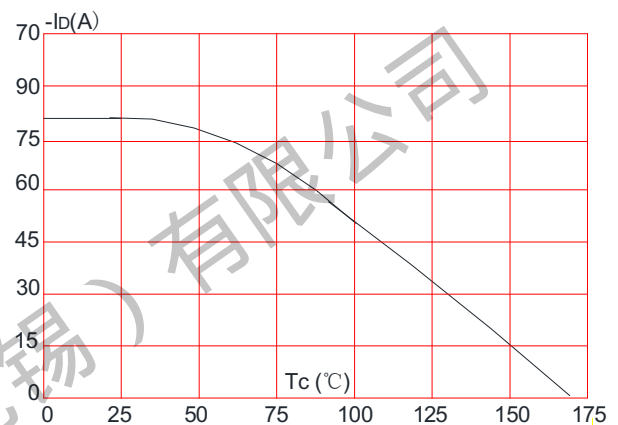
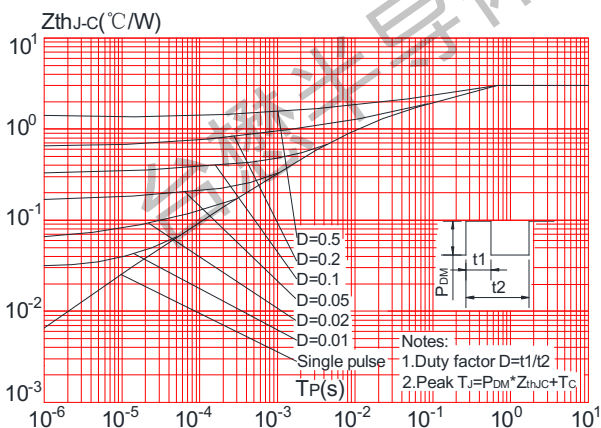


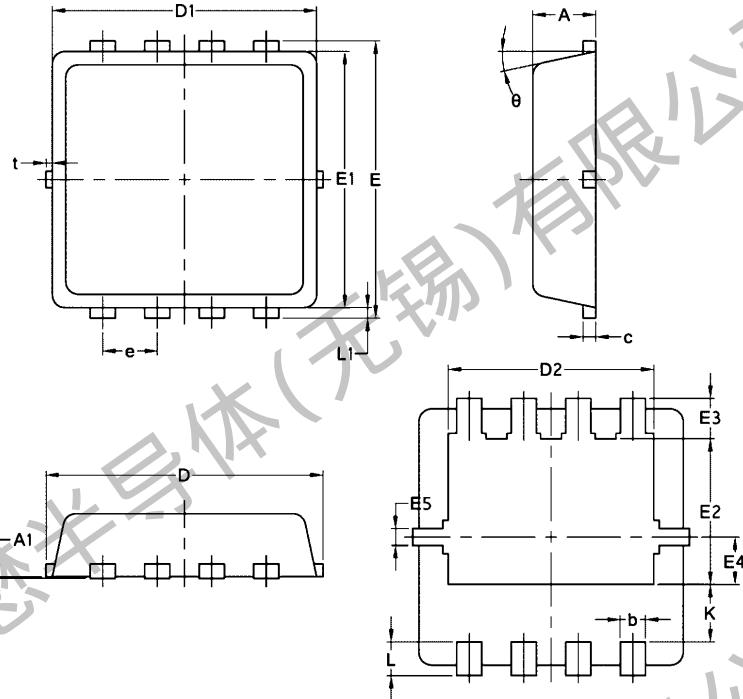
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TM80PL03DF

P-Channel Enhancement Mosfet

Package Mechanical Data:DFN3x3-8L

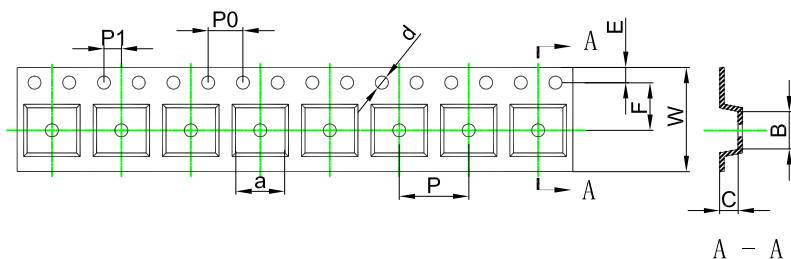


Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40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

TM80PL03DF

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PDFN3×3-8L Embossed Carrier Tape



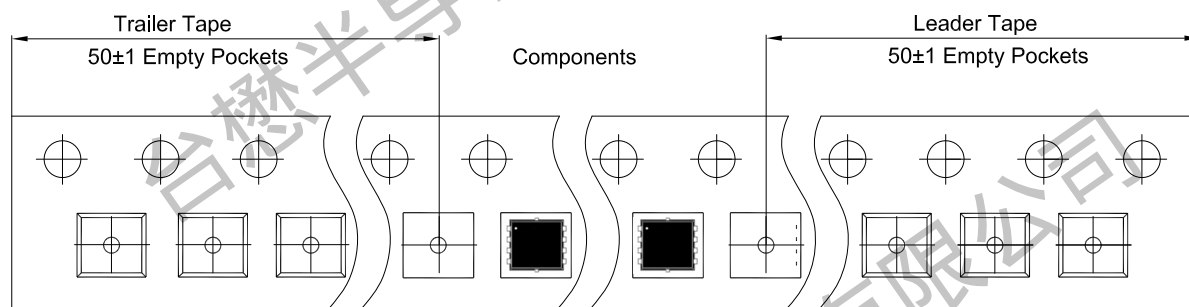
Packaging Description:

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).

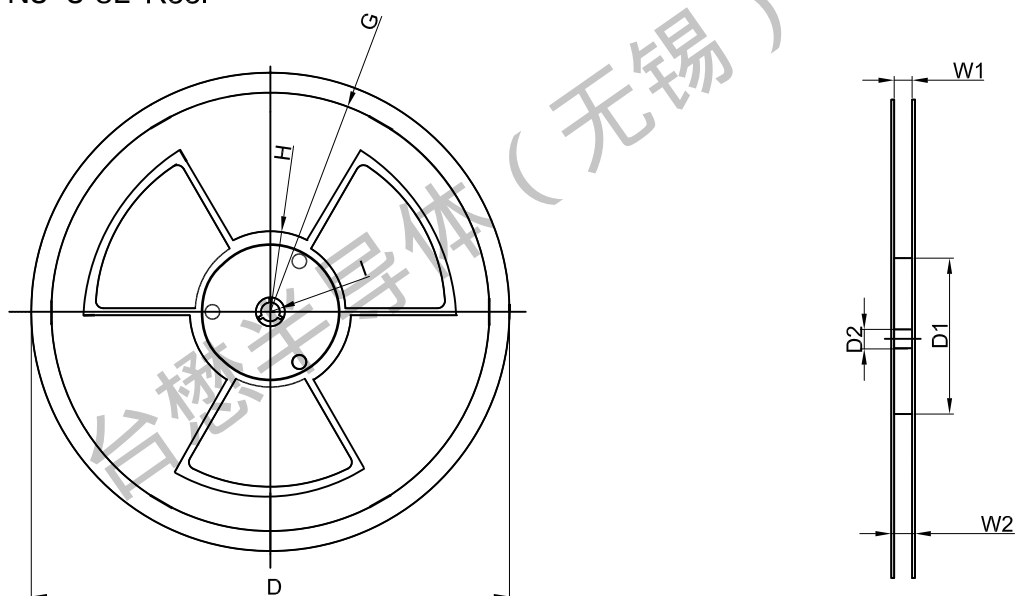
ALL DIM IN mm

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
2023.07.19	23.07	Original	