


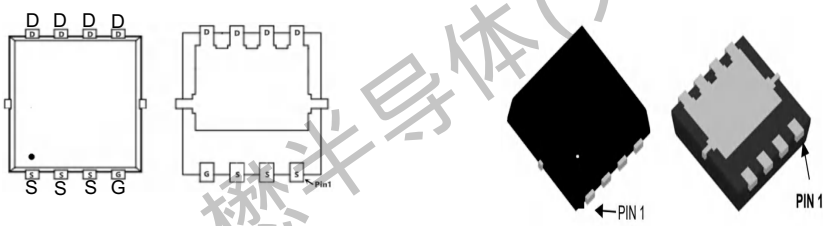


TMG150N03CDF

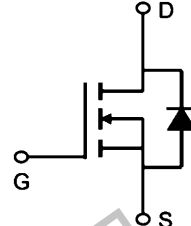
N-Channel Enhancement Mosfet

<p>General Description</p> <ul style="list-style-type: none"> • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM 	<p>General Features</p> <p>$V_{DS} = 30V$ $I_D = 150A$</p> <p>$R_{DS(ON)} = 1.35m\Omega$ (typ.) @ $V_{GS} = 10V$</p> <p>100% UIS Tested 100% R_g Tested</p> 
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CDF:DFN3x3-8L(CLIP)



Marking: G150N03



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	150	A
$I_D @ T_c = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	108	A
I_{DM}	Pulsed Drain Current ²	525	A
E_{AS}	Single Pulse Avalanche Energy ²	180	mJ
$P_D @ T_c = 25^\circ C$	Total Power Dissipation ⁴	3.5	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	3.6	$^\circ C/W$

TMG150N03CDF

N-Channel Enhancement Mosfet

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30	-	-	V
Gate-body Leakage Current	I _{gss}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	T _J =25°C	-	-	1	μA
		T _J =100°C	-	-	100	
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.9	1.2	1.5	V
Drain-Source On-Resistance ⁴	R _{DS(on)}	V _{GS} = 10V, I _D = 20A	-	1.35	1.8	mΩ
		V _{GS} = 4.5V, I _D = 15A	-	1.9	2.5	
Forward Transconductance ⁴	g _{fs}	V _{DS} = 10V, I _D = 20A	-	85	-	S
Dynamic Characteristics⁵						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz	-	2554	-	pF
Output Capacitance	C _{oss}		-	924	-	
Reverse Transfer Capacitance	C _{rss}		-	73.5	-	
Gate Resistance	R _g	f = 1MHz	-	0.98	-	Ω
Switching Characteristics⁵						
Total Gate Charge	Q _g	V _{GS} = 10V, V _{DS} = 15V, I _D = 20A	-	39.1	-	nC
Gate-Source Charge	Q _{gs}		-	6.7	-	
Gate-Drain Charge	Q _{gd}		-	5.9	-	
Turn-On Delay Time	t _{d(on)}	V _{GS} = 10V, V _{DD} = 15V, R _G = 3Ω, I _D = 20A	-	10	-	ns
Rise Time	t _r		-	7.3	-	
Turn-Off Delay Time	t _{d(off)}		-	38.6	-	
Fall Time	t _f		-	16.4	-	
Body Diode Reverse Recovery Time	t _{rr}	I _F = 20A, dI/dt = 100A/μs	-	54	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	27	-	nC
Drain-Source Body Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	I _S = 20A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	I _S	T _C = 25°C	-	-	150	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)} = 150°C.
2. The test condition is V_{DD} = 25V, V_{GS} = 10V, L = 0.4mH, I_{AS} = 30A.
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.



TMG150N03CDF

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Typical Characteristics

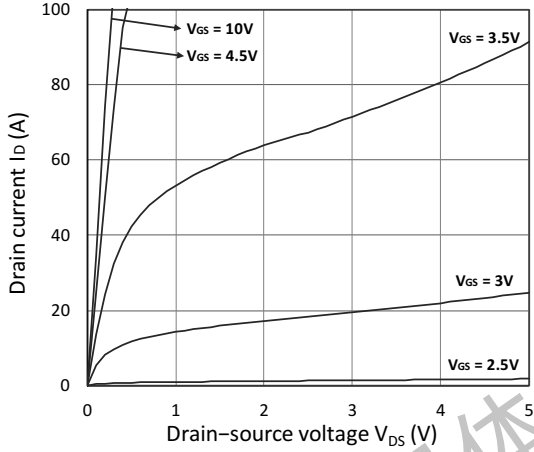


Figure 1. Output Characteristics

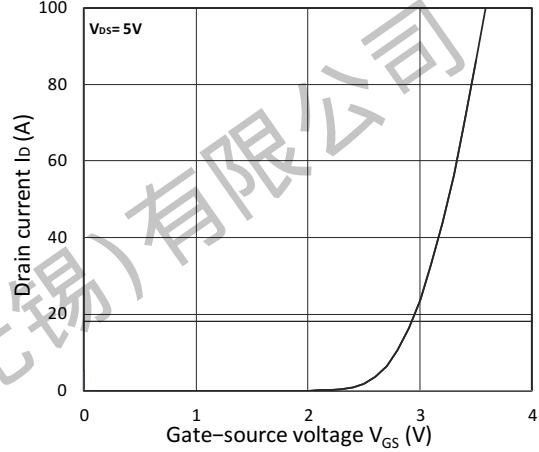


Figure 2. Transfer Characteristics

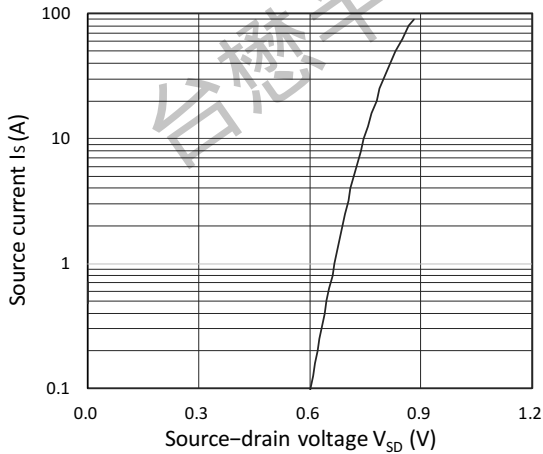


Figure 3. Forward Characteristics of Reverse

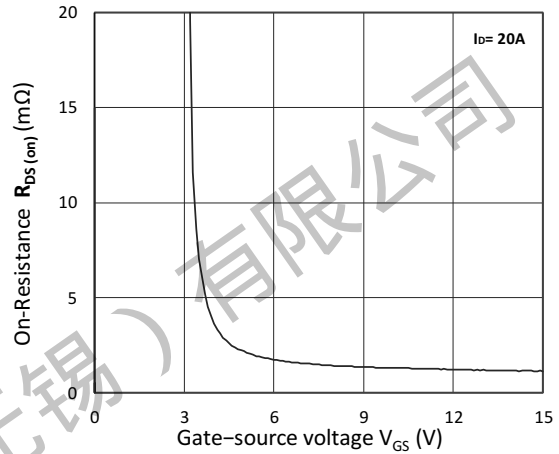


Figure 4. $R_{DS(on)}$ vs. V_{GS}

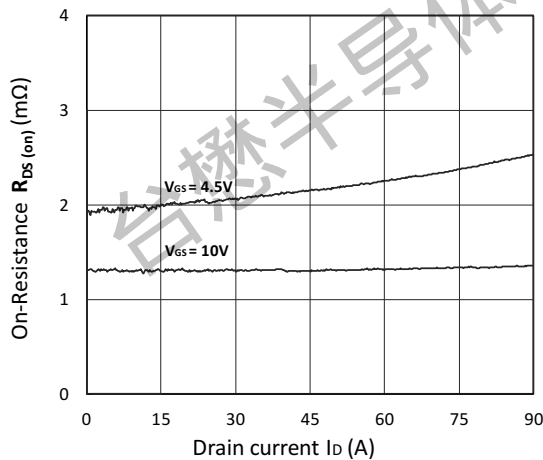


Figure 5. $R_{DS(on)}$ vs. I_D

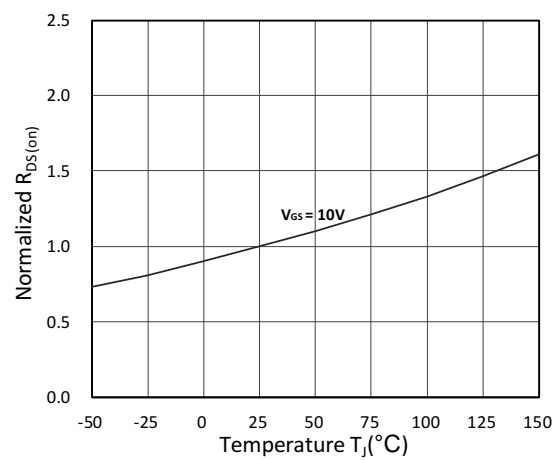


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature



TMG150N03CDF

N-Channel Enhancement Mosfet

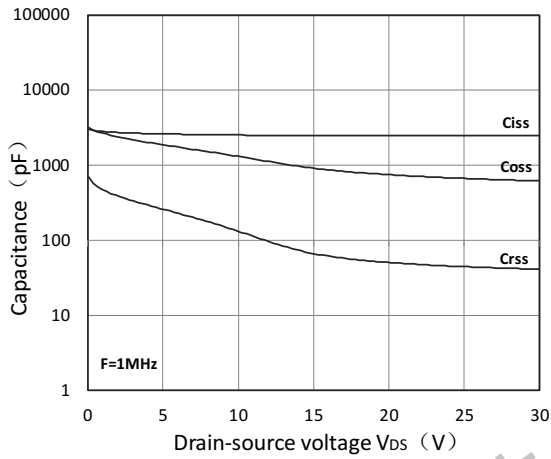


Figure 7. Capacitance Characteristics

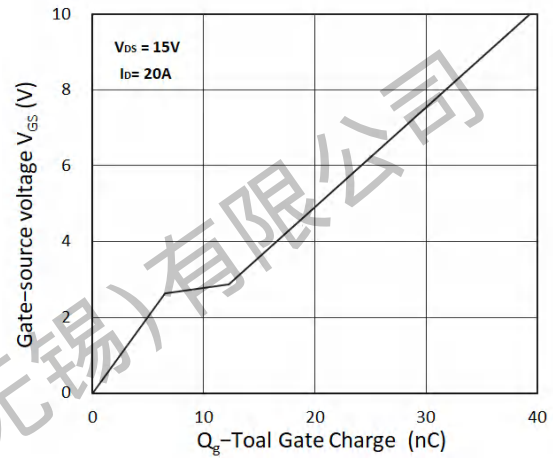


Figure 8. Gate Charge Characteristics

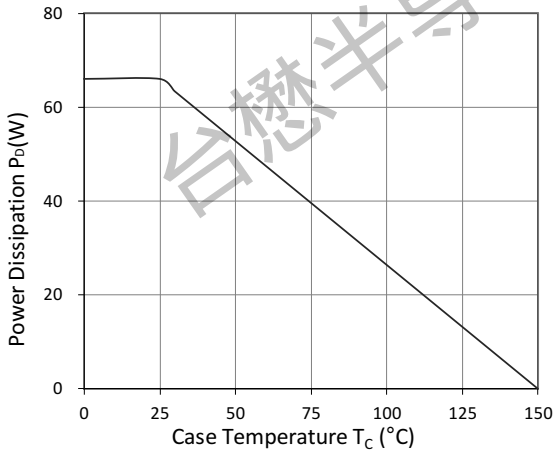


Figure 9. Power Dissipation

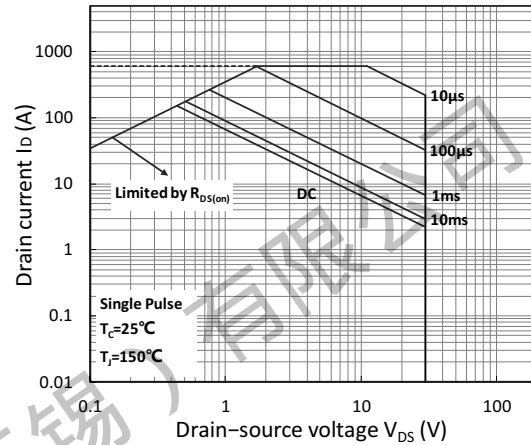


Figure 10. Safe Operating Area

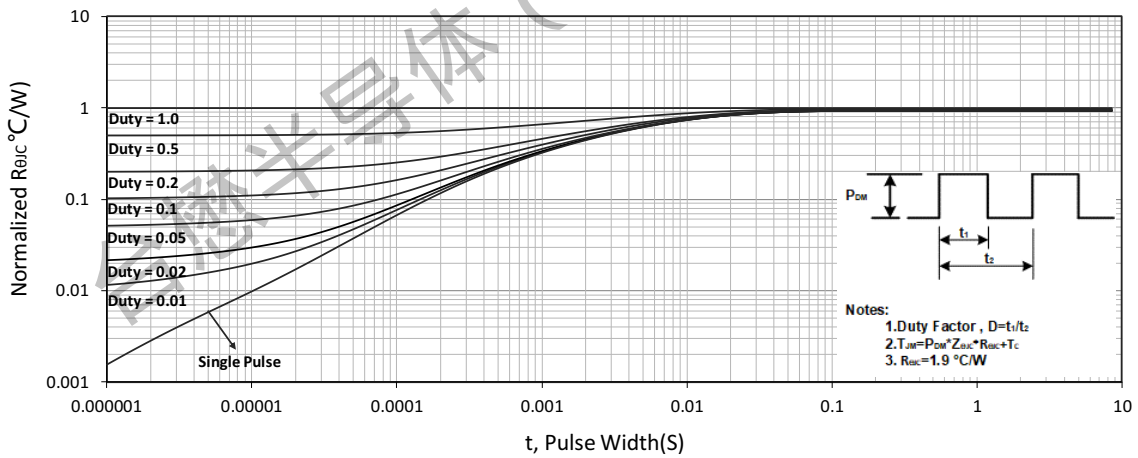
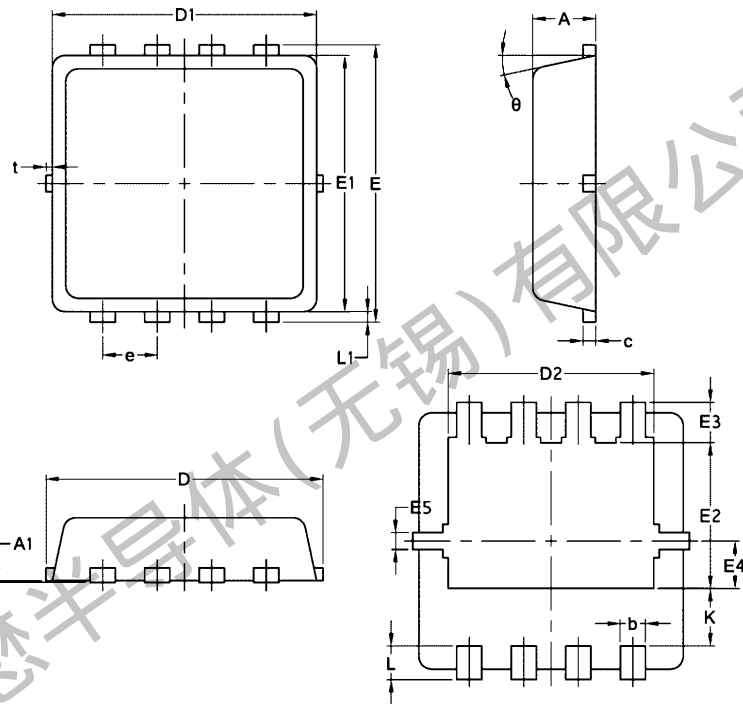


Figure 11. Normalized Maximum Transient Thermal Impedance

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Package Mechanical Data:DFN3x3-8L(CLIP)

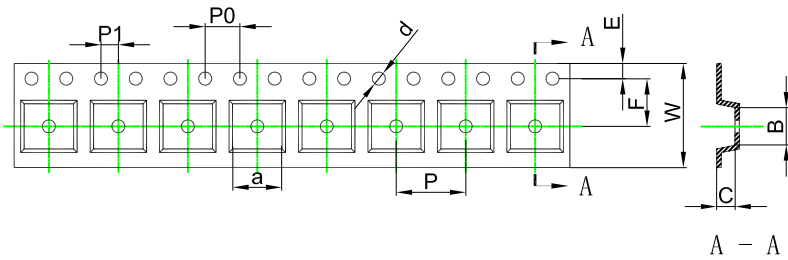


Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40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

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PDFN3x3-8L Embossed Carrier Tape



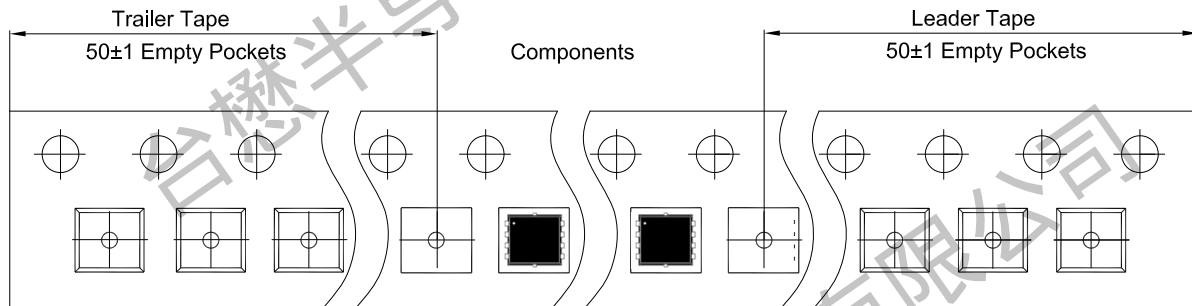
Packaging Description:

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).

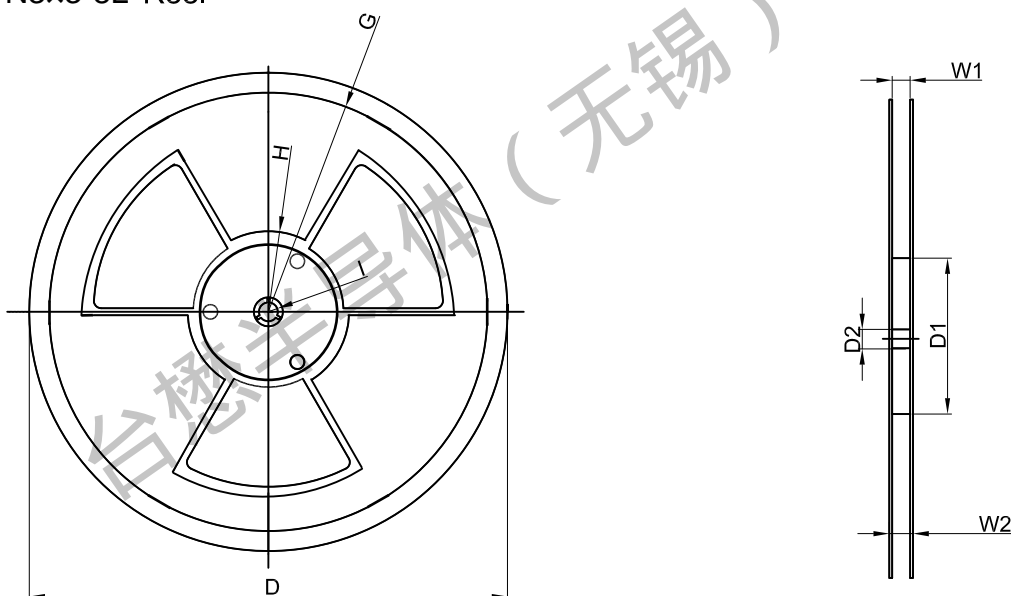
ALL DIM IN mm

Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
PDFN3x3-8L	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFN3x3-8L Tape Leader and Trailer



PDFN3x3-8L 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
2023.09.14	23.09	Original	