TMG250N03CNF

N -Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

General Features

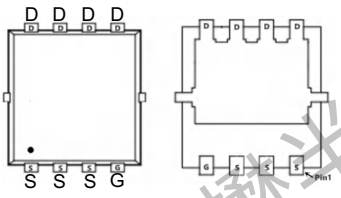
V_{DS} = 30V I_D =250A

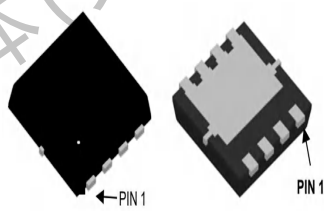
$R_{DS(ON)}$ =0.75mΩ (typ) V_{GS}=10V

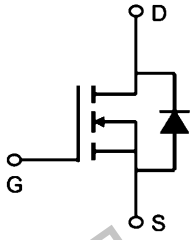
100% UIS Tested
100% R_g Tested

Green Product

CNF:DFN5x6-8L(CLIP)







Marking: G250N03

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℃	Continuous Drain Current, V_{GS} @ 10V	250	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	163	A
I_{DM}	Pulsed Drain Current	925	A
EAS	Single Pulse Avalanche Energy	156	mJ
P_D@T_C=25℃	Total Power Dissipation	93	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

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

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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	T_J=25°C	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V	-	-	1	μA
	T_J=125°C			-	1.5	-	
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	-	0.75	0.92	mΩ
			V_{GS} = 4.5V, I_D =10A	-	0.93	1.1	
Forward Transconductance[4]		g_{fs}	V_{DS} = 10V, I_D = 20A	-	130	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = 15V, V_{GS} =0V, f =1MHz	-	5903	-	pF
Output Capacitance		C_{oss}		-	3216	-	
Reverse Transfer Capacitance		C_{rss}		-	204	-	
Gate Resistance		R_g	f = 1MHz	-	1.3	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = 4.5V, V_{DS} = 15V, I_D= 30A	-	40	-	nC
Gate-Source Charge		Q_{gs}		-	23	-	
Gate-Drain Charge		Q_{gd}		-	9.9	-	
Turn-On Delay Time		$t_{d(on)}$	V_{GS} =4.5V, V_{DD} = 15V, R_G = 3Ω, I_D= 15A	-	43	-	ns
Rise Time		t_r		-	80	-	
Turn-Off Delay Time		$t_{d(off)}$		-	52	-	
Fall Time		t_f		-	32	-	
Body Diode Reverse Recovery Time		t_{rr}	I_F=30A, dI/dt=100A/μs	-	67	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	90	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = 10A, V_{GS} = 0V	-	-	1.4	V
Continuous Source Current	T_C=25°C	I_S	-	-	-	250	A

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Typical Characteristics

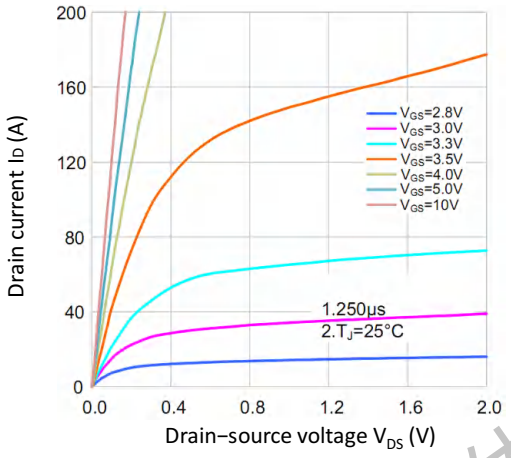


Figure 1. Output Characteristics

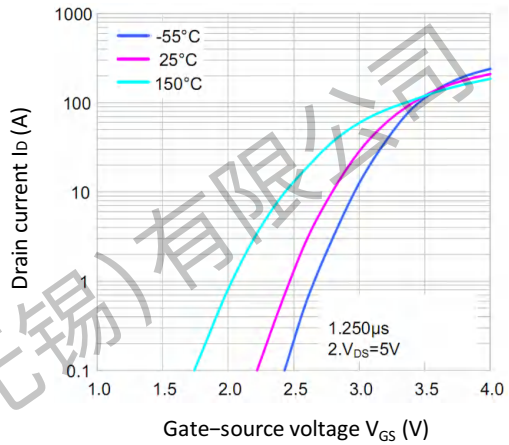


Figure 2. Transfer Characteristics

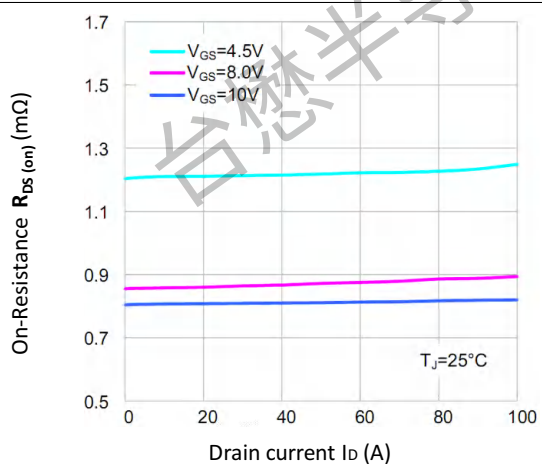


Figure 3. $R_{DS(ON)}$ vs. I_D

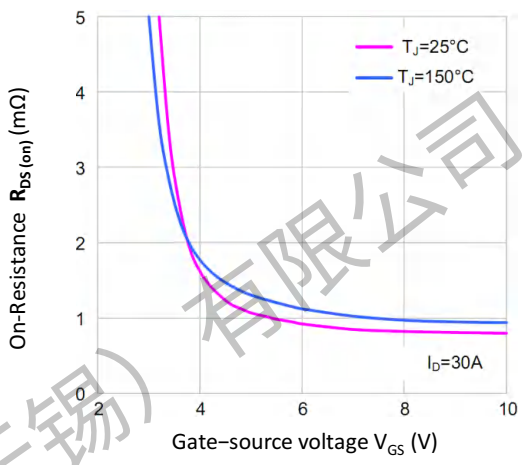


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

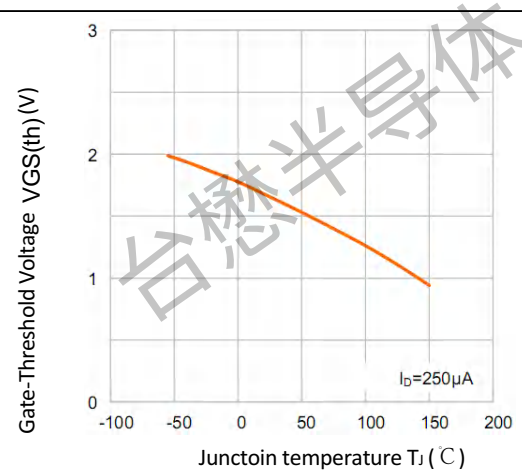


Figure 5. $V_{GS(th)}$ vs. T_J

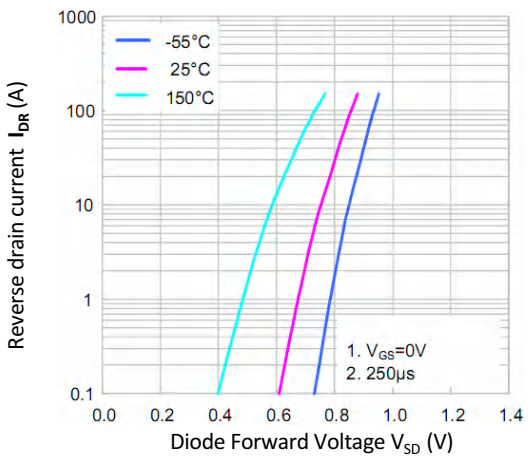


Figure 6. I_{DR} vs. V_{SD}

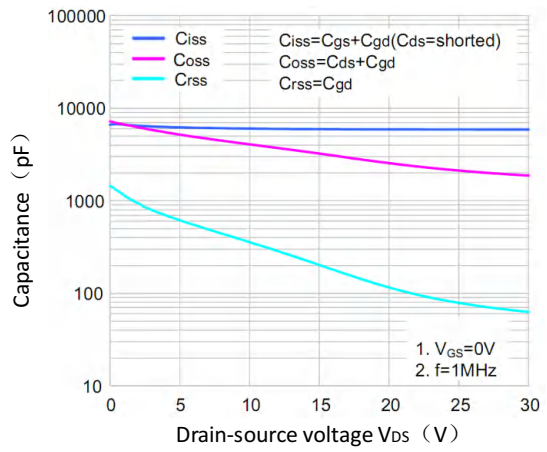


Figure 7. Capacitance Characteristics

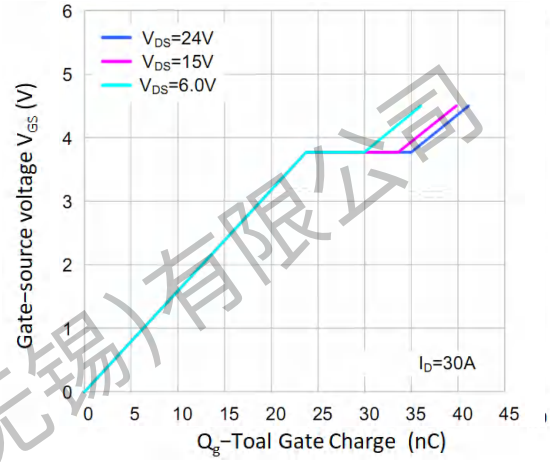


Figure 8 Gate Charge Characteristics

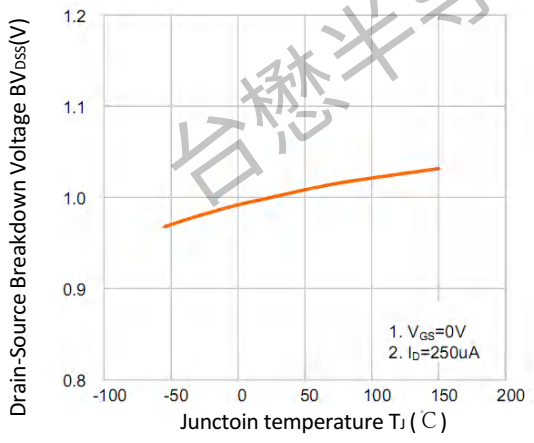


Figure 9. BV_{DSS} VS T_J

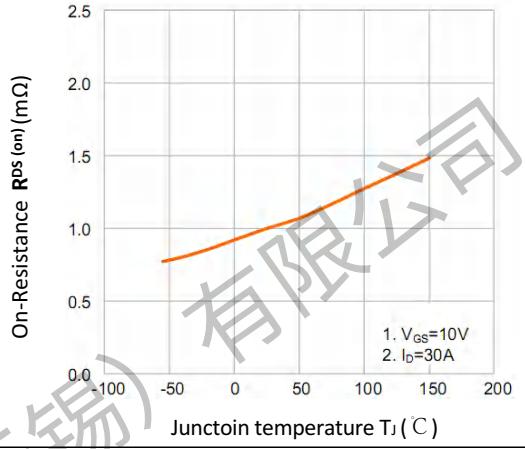


Figure10. $R_{DS(ON)}$ VS T_J

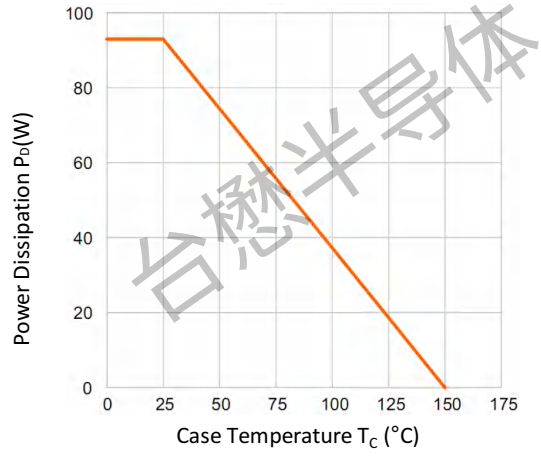


Figure 11. Power Dissipation

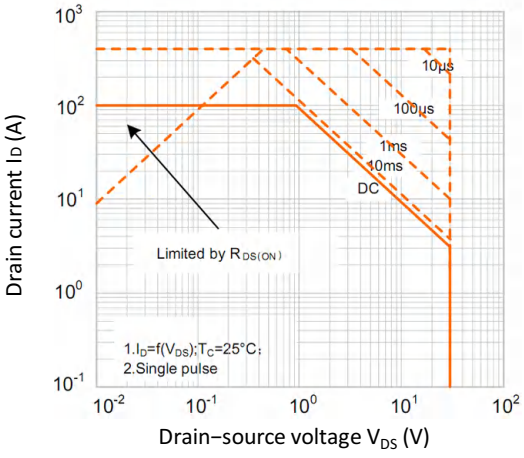
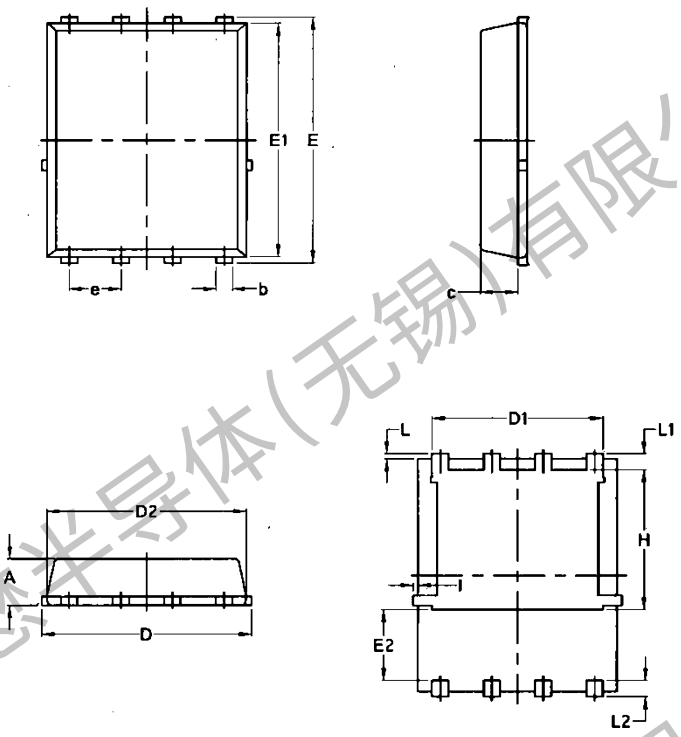


Figure 12. Safe Operating Area

Package Mechanical Data:DFN5x6-8L(CLIP)



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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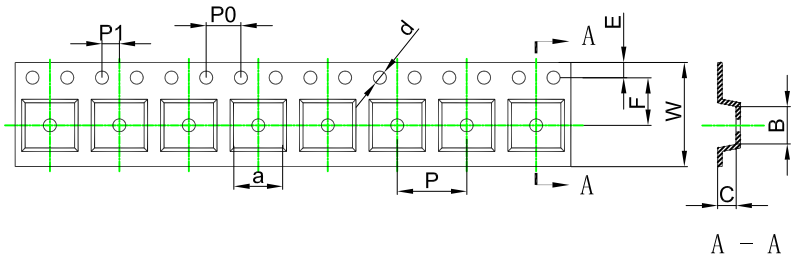
PDFN5×6-8L Embossed Carrier Tape



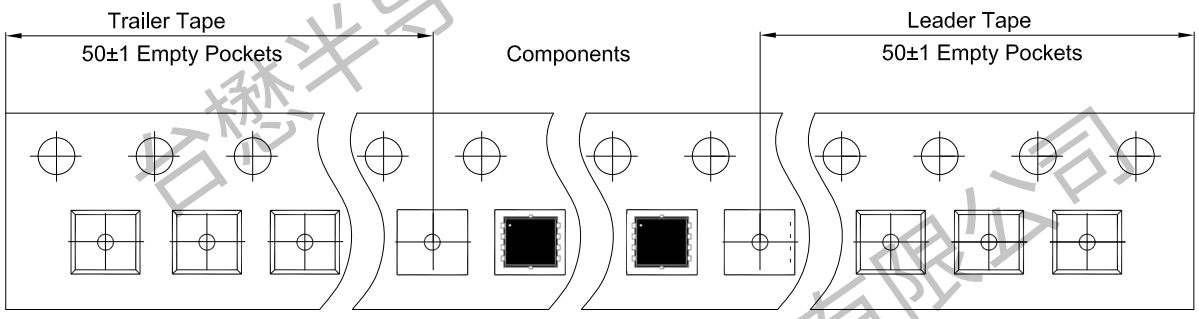
Packaging Description:

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).

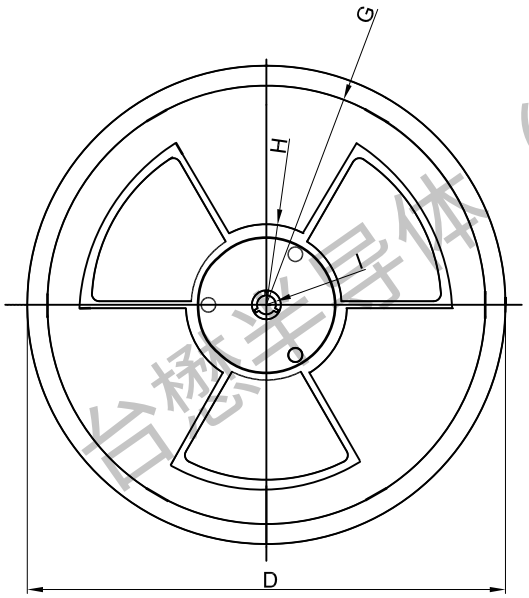
ALL DIM IN mm

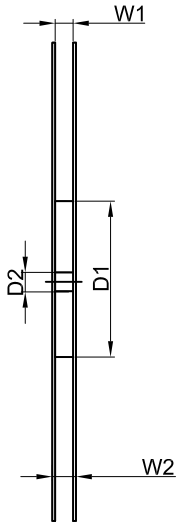
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
PDFN5×6-8L	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFN5×6-8L Tape Leader and Trailer



PDFN5×6-8L 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
2023.10.28	23.10	Original	