TM30H02DF

N+N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

Product Summary

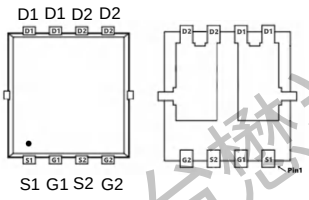
V_{DS} = 20V I_D =30A

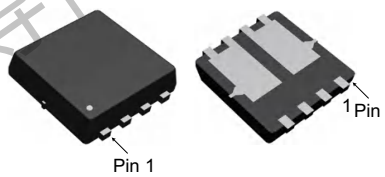
$R_{DS(ON)}$ = 6.3mΩ (Typ.) @ V_{GS}=4.5V

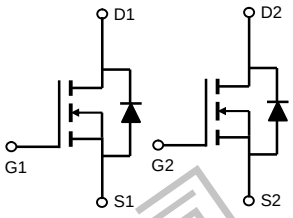
100% UIS Tested
100% R_g Tested

Green Product

DF:DFN3x3-8L







Marking:30H02

Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	30	A
Pulsed Drain Current (note)	I_{DM}	140	A
Thermal Resistance from Junction to Ambient (note)	$R_{\theta JA}$	75	℃/W
Thermal Resistance,Junction to Case	$R_{\theta JC}$	5.4	℃/W
Junction Temperature	T_J	175	℃
Storage Temperature	T_{STG}	-55~+175	℃

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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	20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=20V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	0.5	0.7	0.9	V
$R_{DS(ON)}$	Drain-Source On Resistance[3]	V_{GS}=4.5V,I_D=25A	---	6.3	8	mΩ
		V_{GS}=2.5V,I_D=10A	---	8.8	13	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	---	1450	---	pF
C_{oss}	Output Capacitance		---	230	--	
C_{rss}	Reverse Transfer Capacitance		---	210	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=10V, I_D=10A, R_G=3Ω,V_{GS}=4.5V	---	10	---	ns
t_r	Rise Time		---	21	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	39	---	ns
t_f	Fall Time		---	19	---	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=10V, I_D=25A	---	19	---	nC
Q_{gs}	Gate-Source Charge		---	3	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	6.4	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=30A	---	---	1.2	V
I_S	Continuous Drain Curren	V_D=V_G=0V	---	---	30	A
I_{SM}	Pulsed Drain Current		---	---	140	A
Trr	Reverse Recovery Time	I_F=20A,T_J=25℃ dI/dt=100A/us	---	25	---	ns
Qrr	Reverse Recovery Charge		---	20	---	nC

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

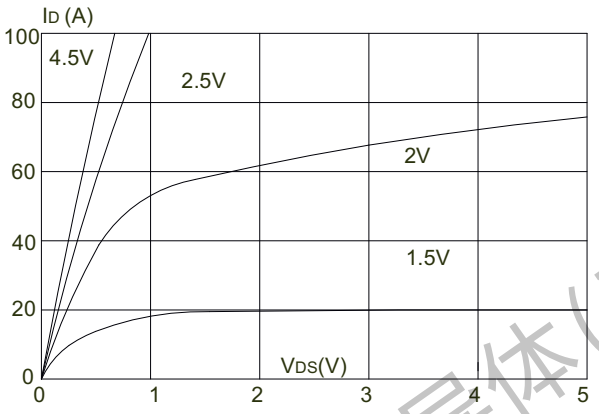


Figure1: Output Characteristics

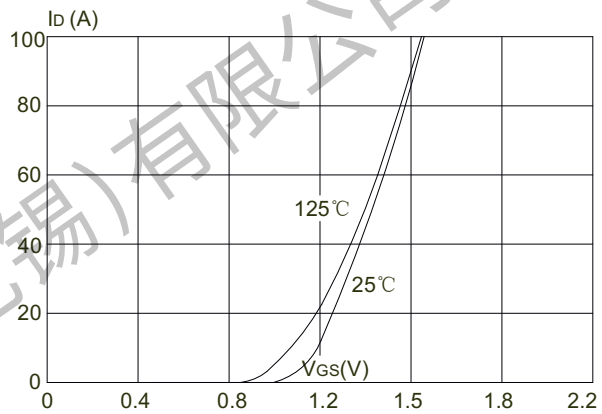


Figure 2: Typical Transfer Characteristics

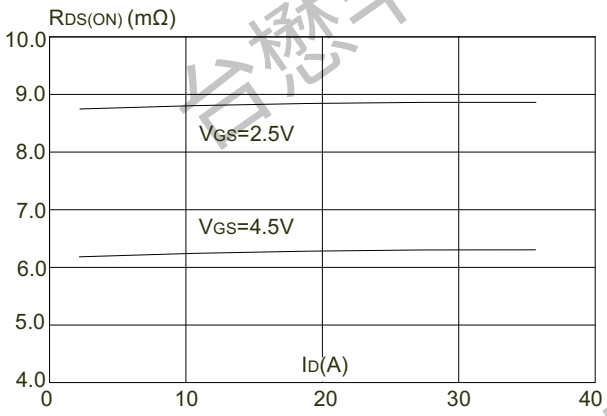


Figure 3: On-resistance vs. Drain Current

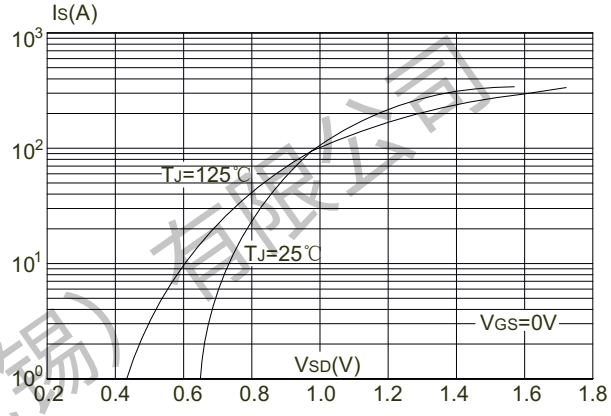


Figure 4: Body Diode Characteristics

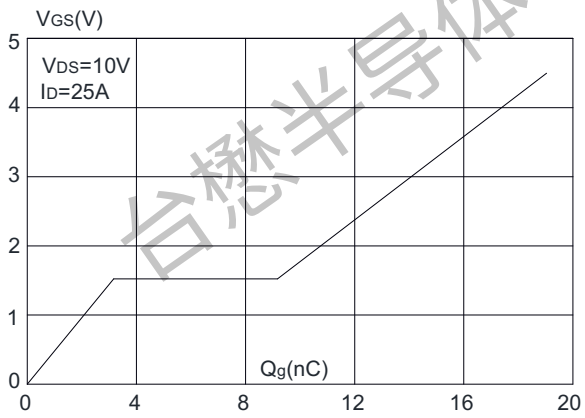


Figure 5: Gate Charge Characteristics

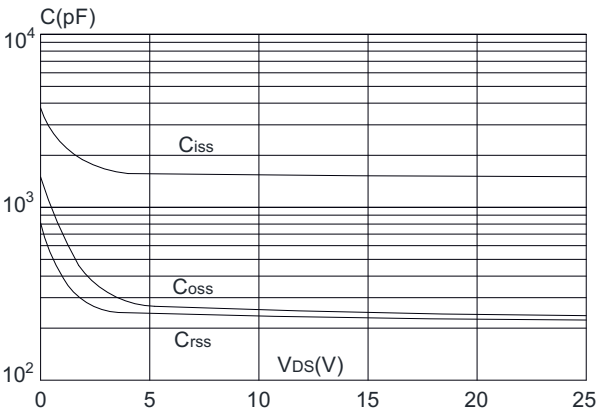


Figure 6: Capacitance Characteristics

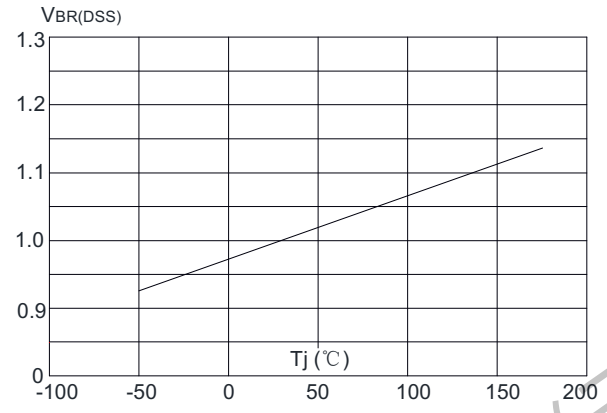


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

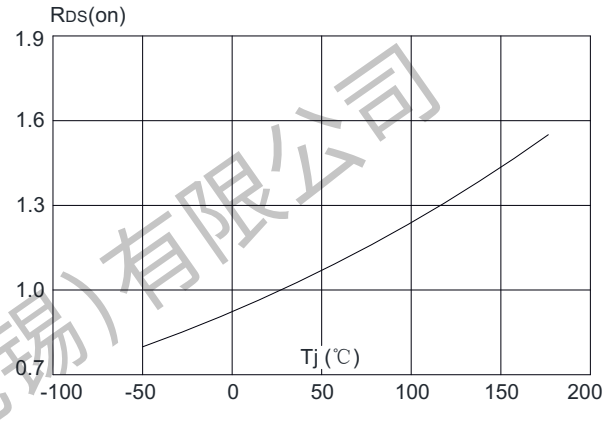


Figure 8: Normalized on Resistance vs. Junction Temperature

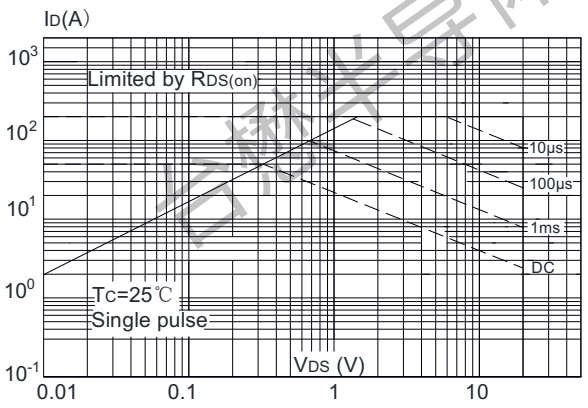


Figure 9: Maximum Safe Operating Area

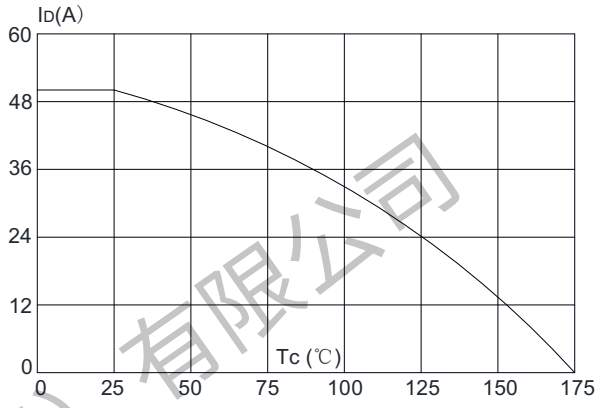


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

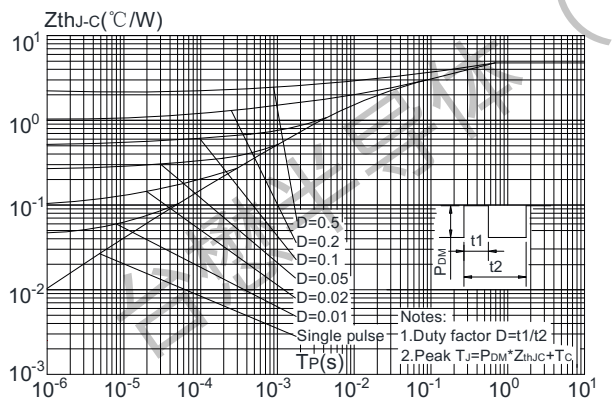
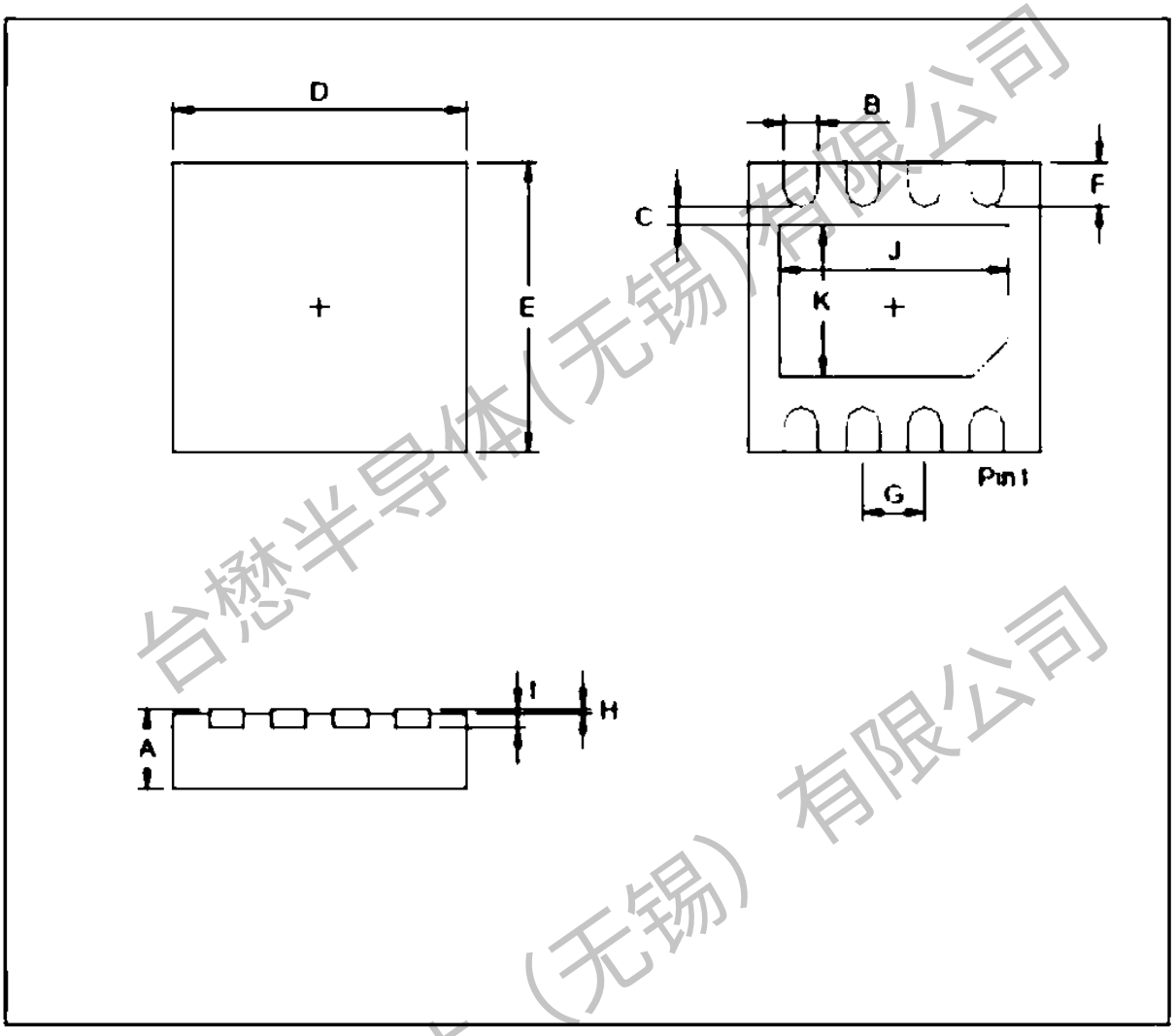


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Mechanical Data:DFN3x3-8L



Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.7		0.8	I		0.203	
B	0.25		0.35	J	2.2		2.4
C	0.2			K	1.4		1.6
D	2.924		3.076				
E	2.924		3.076				
F	0.324		0.476				
G		0.65					
H	0		0.05				

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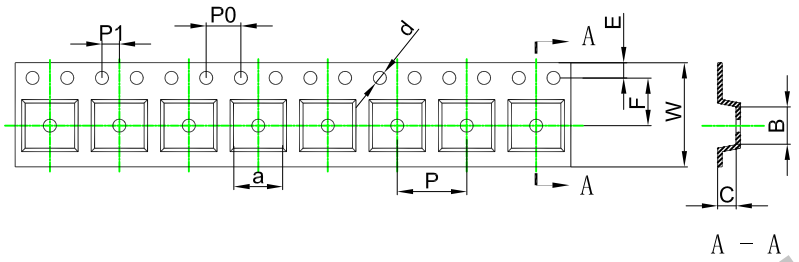
PDFN3×3-8L Embossed Carrier Tape



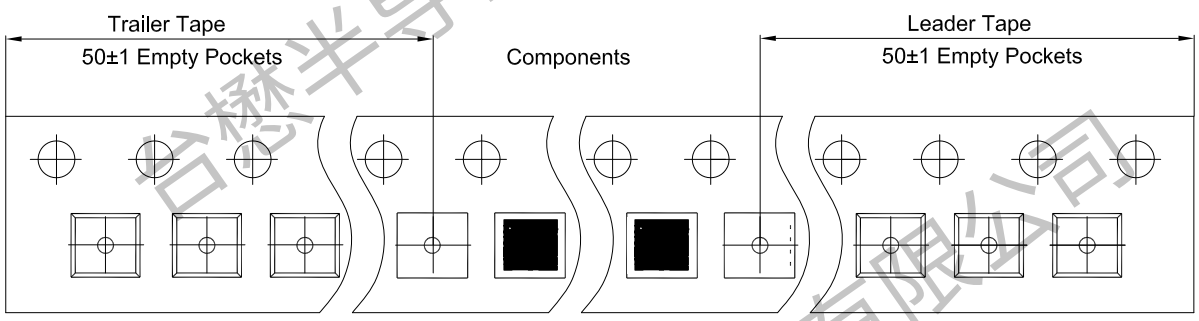
Packaging Description:

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).

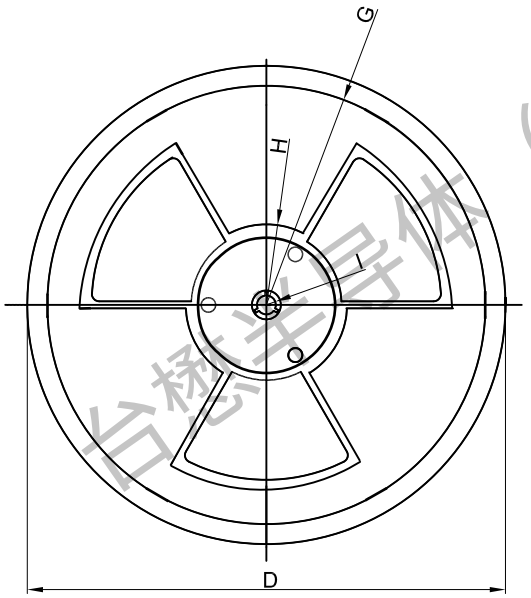
ALL DIM IN mm

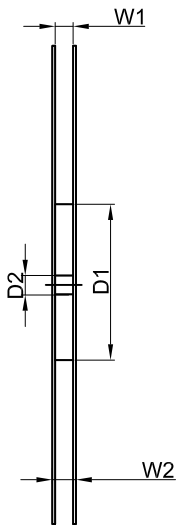
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
PDFN3×3-8L	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

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
2024.06.07	24.06	Original	