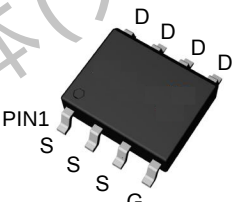
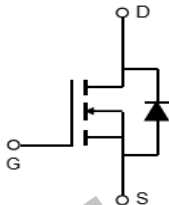


TM10N10S

N-Channel Enhancement Mosfet

General Description • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant Applications • Load switch • PWM	General Features $V_{DS} = 100V$ $I_D = 10A$ $R_{DS(ON)} = 88m\ \Omega$ (typ.) @ $V_{GS} = 10V$ 100% UIS Tested 100% R_g Tested 																																																							
D D D D S S S G PIN1 Marking:10N10 S:SOP-8L  																																																								
Absolute Maximum Ratings ($T_A = 25^{\circ}C$ Unless Otherwise Noted) <table><tr><th>Symbol</th><th>Parameter</th><th>Rating</th><th>Units</th></tr><tr><td>V_{DS}</td><td>Drain-Source Voltage</td><td>100</td><td>V</td></tr><tr><td>V_{GS}</td><td>Gate-Source Voltage</td><td>± 20</td><td>V</td></tr><tr><td>$I_D@T_A=25^{\circ}C$</td><td>Continuous Drain Current, V_{GS} @ 10V¹</td><td>10</td><td>A</td></tr><tr><td>$I_D@T_A=100^{\circ}C$</td><td>Continuous Drain Current, V_{GS} @ 10V¹</td><td>6</td><td>A</td></tr><tr><td>I_{DM}</td><td>Pulsed Drain Current²</td><td>48</td><td>A</td></tr><tr><td>EAS</td><td>Single Pulse Avalanche Energy³</td><td>6.1</td><td>mJ</td></tr><tr><td>$P_D@T_A=25^{\circ}C$</td><td>Total Power Dissipation⁴</td><td>5</td><td>W</td></tr><tr><td>T_{STG}</td><td>Storage Temperature Range</td><td>-55 to 150</td><td>$^{\circ}C$</td></tr><tr><td>T_J</td><td>Operating Junction Temperature Range</td><td>-55 to 150</td><td>$^{\circ}C$</td></tr></table> Thermal Data <table><tr><th>Symbol</th><th>Parameter</th><th>Typ.</th><th>Max.</th><th>Unit</th></tr><tr><td>$R_{\theta JA}$</td><td>Thermal Resistance Junction-ambient ¹</td><td>---</td><td>80</td><td>$^{\circ}C/W$</td></tr><tr><td>$R_{\theta JC}$</td><td>Thermal Resistance Junction-Case¹</td><td>---</td><td>25</td><td>$^{\circ}C/W$</td></tr></table>		Symbol	Parameter	Rating	Units	V_{DS}	Drain-Source Voltage	100	V	V_{GS}	Gate-Source Voltage	± 20	V	$I_D@T_A=25^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V ¹	10	A	$I_D@T_A=100^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V ¹	6	A	I_{DM}	Pulsed Drain Current ²	48	A	EAS	Single Pulse Avalanche Energy ³	6.1	mJ	$P_D@T_A=25^{\circ}C$	Total Power Dissipation ⁴	5	W	T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$	T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$	Symbol	Parameter	Typ.	Max.	Unit	$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	80	$^{\circ}C/W$	$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	25	$^{\circ}C/W$
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TM10N10S

N-Channel Enhancement Mosfet

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =3A	-	88	99	mΩ
		V _{GS} =4.5V, I _D =2A	-	100	120	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	620	-	pF
C _{oss}	Output Capacitance		-	40	-	pF
C _{rss}	Reverse Transfer Capacitance		-	25	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =2A, V _{GS} =10V	-	12	-	nC
Q _{gs}	Gate-Source Charge		-	2.2	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	2.5	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V, I _D =3A, R _G =1.8Ω, V _{GS} =10V	-	7	-	ns
t _r	Turn-on Rise Time		-	5	-	ns
t _{d(off)}	Turn-off Delay Time		-	16	-	ns
t _f	Turn-off Fall Time		-	6	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Maximum Continuous Drain to Source Diode Forward Current		-	-	10	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =3A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =3A, dI/dt=100A/μs	-	21	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	21	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition : T_J=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_G=25Ω, I_{AS}=4A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

TM10N10S

N-Channel Enhancement Mosfet

Typical Performance Characteristics

Figure1: Output Characteristics

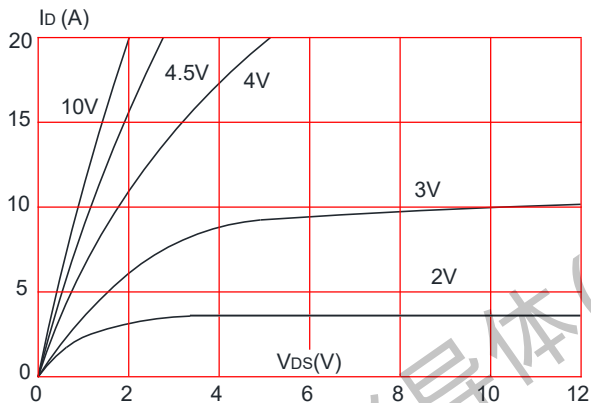


Figure 2: Typical Transfer Characteristics

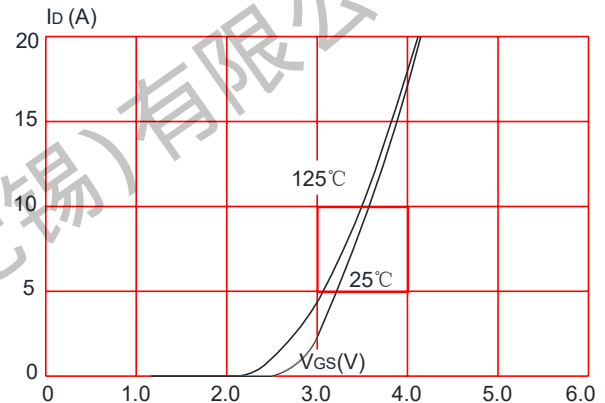


Figure 3: On-resistance vs. Drain Current

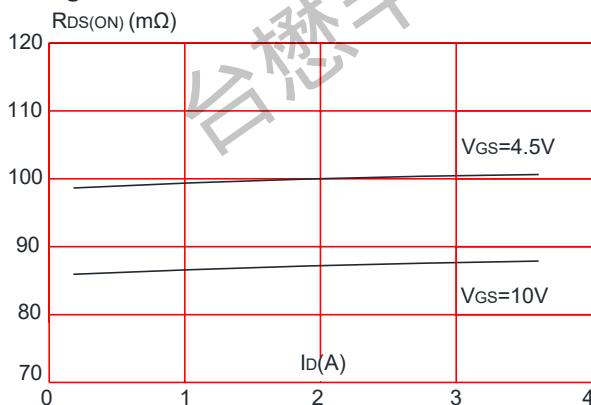


Figure 4: Body Diode Characteristics

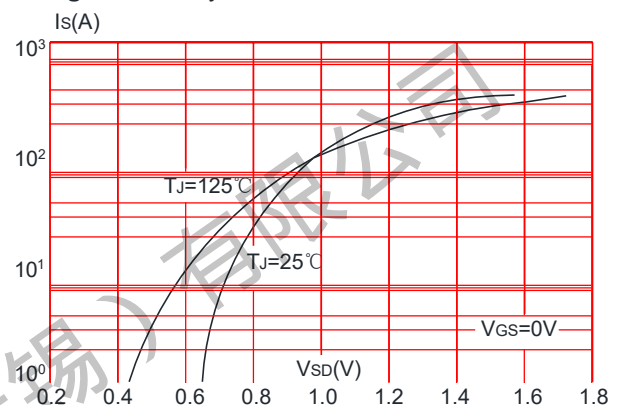


Figure 5: Gate Charge Characteristics

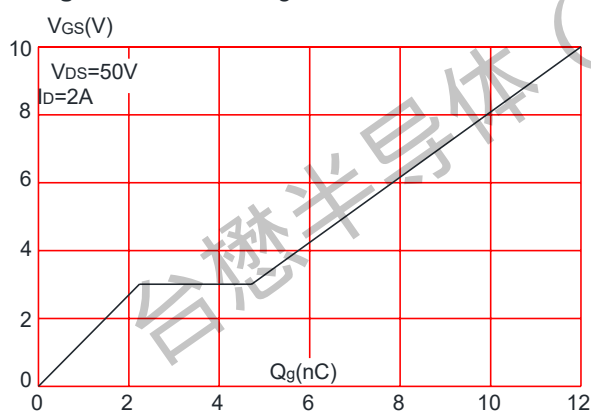
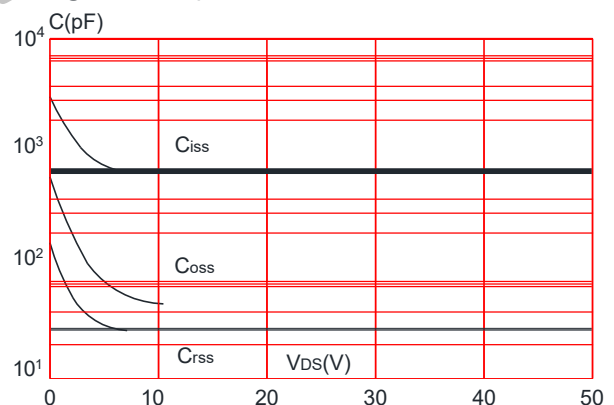


Figure 6: Capacitance Characteristics



TM10N10S

N-Channel Enhancement Mosfet

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

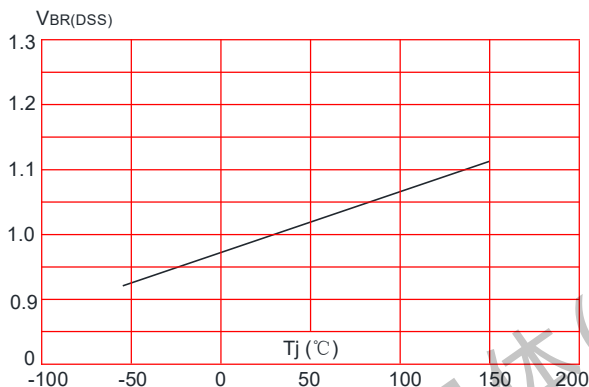


Figure 8: Normalized on Resistance vs. Junction Temperature

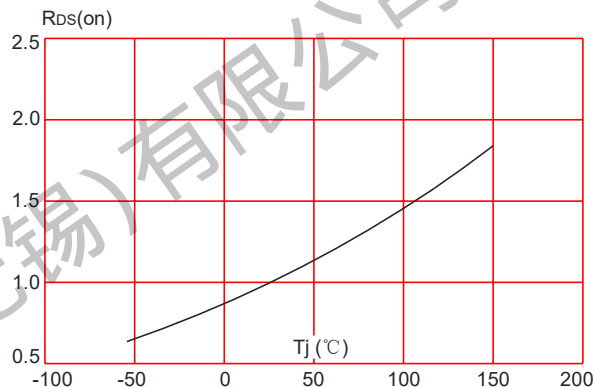


Figure 9: Maximum Safe Operating Area

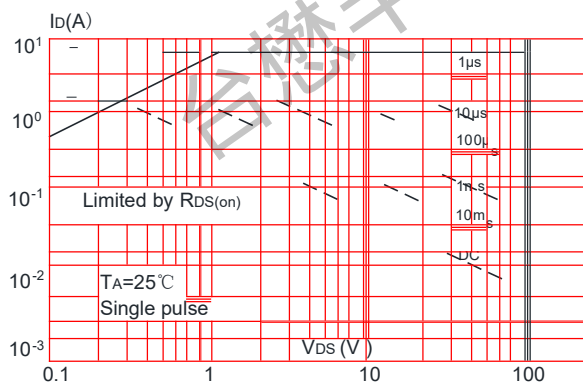


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

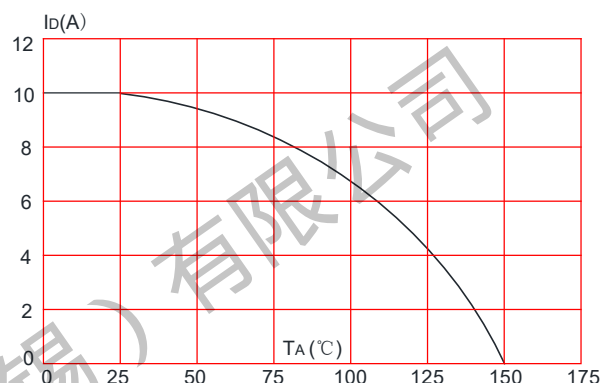
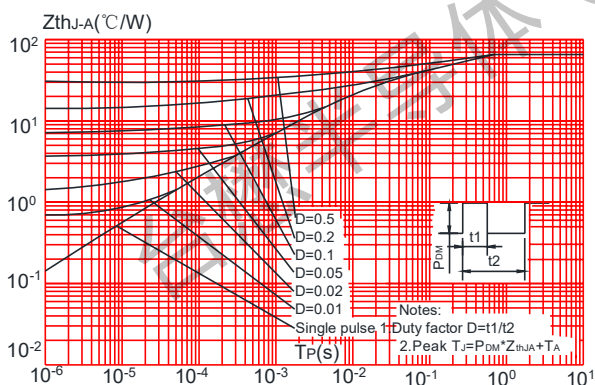


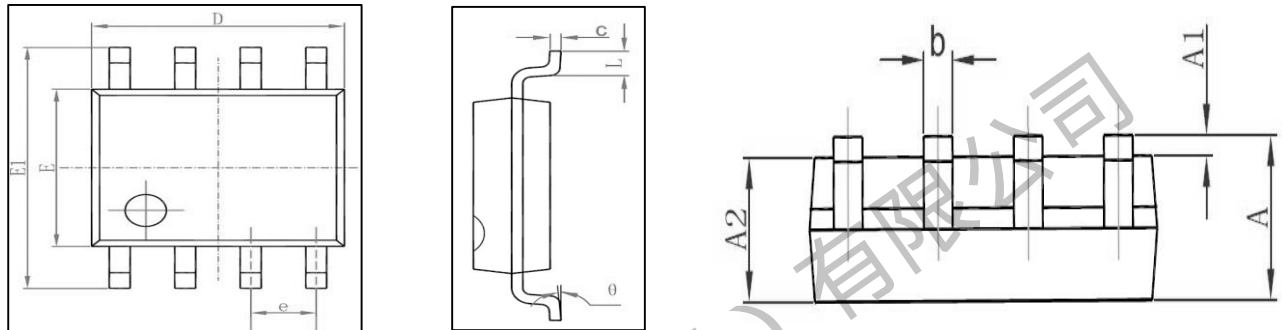
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



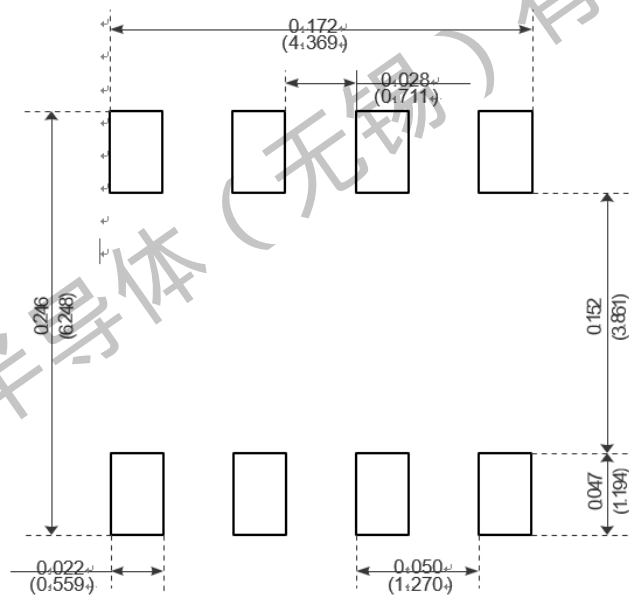
TM10N10S

N-Channel Enhancement Mosfet

Package Mechanical Data:SOP-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

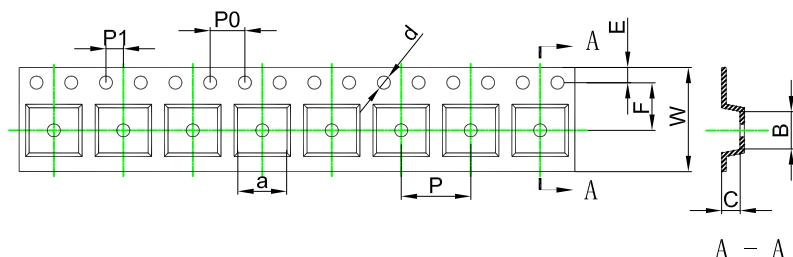


Recommended Minimum Pads

TM10N10S

N-Channel Enhancement Mosfet

SOP-8L Embossed Carrier Tape



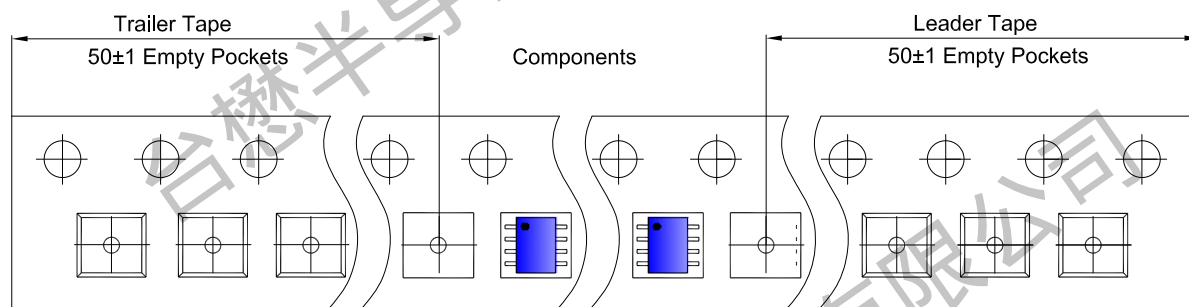
Packaging Description:

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).

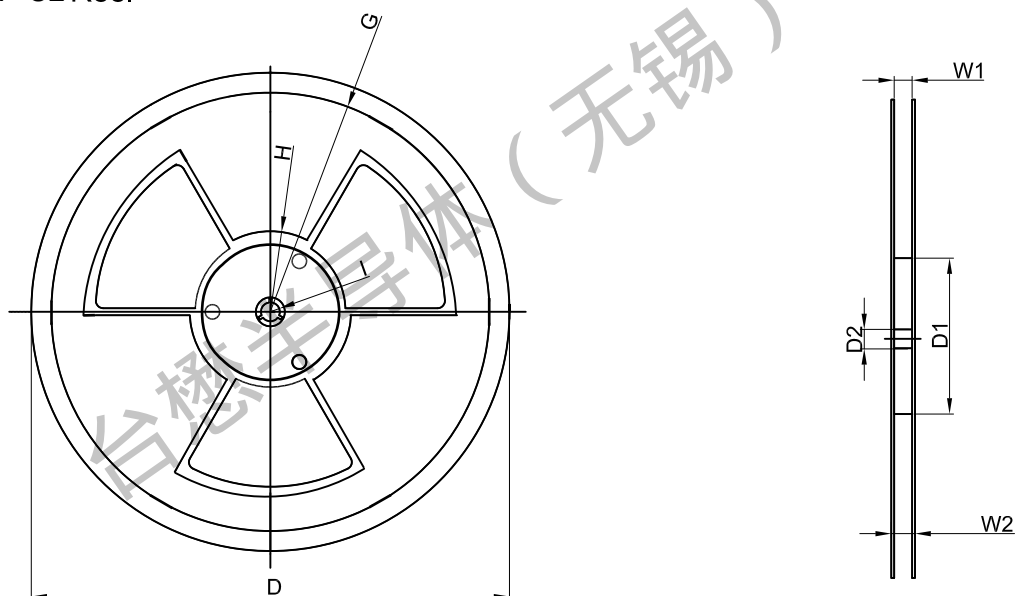
ALL DIM IN mm

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

SOP-8L Tape Leader and Trailer



SOP-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)
3,000 pcs	13 inch	6,000 pcs	370×355×52	48,000 pcs	400×360×368	

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Revision history:

Date	Rev	Description	Page
2023.05.14	23.05	Original	