

TM15N10SI

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

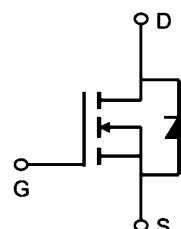
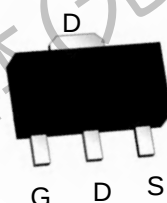
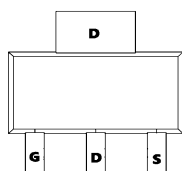
General Features

$V_{DS}=100V$ $I_D=15A$
 $R_{DS(ON)} = 75m\Omega (typ.) @ V_{GS} = 10V$

100% UIS Tested
100% R_g Tested



SI:SOT-89-3L



Marking: 15N10 OR 9968

Absolute Maximum Ratings ($T_C = 25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	15	A
$I_D @ T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	13	A
I_{DM}	Pulsed Drain Current	26	A
EAS	Single Pulse Avalanche Energy	12	mJ
I_{AS}	Avalanche Current, Single pulse ($L=0.5mH$)	7	A
$P_D T_A=25^\circ C$	Total Power Dissipation	3.5	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	---	6.6	$^\circ C/W$

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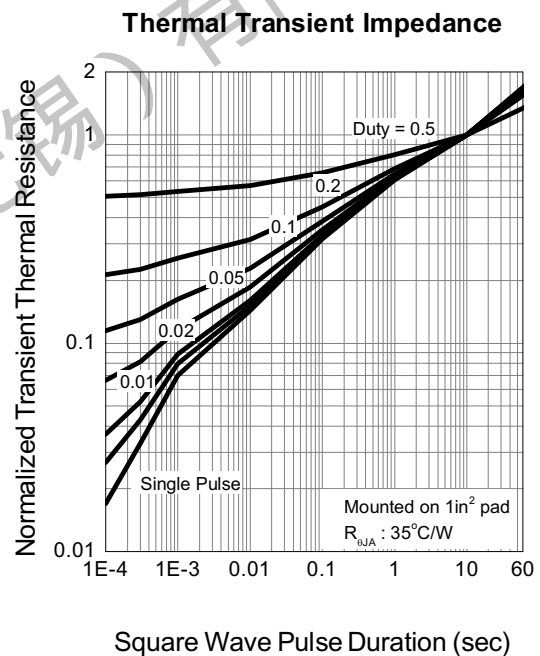
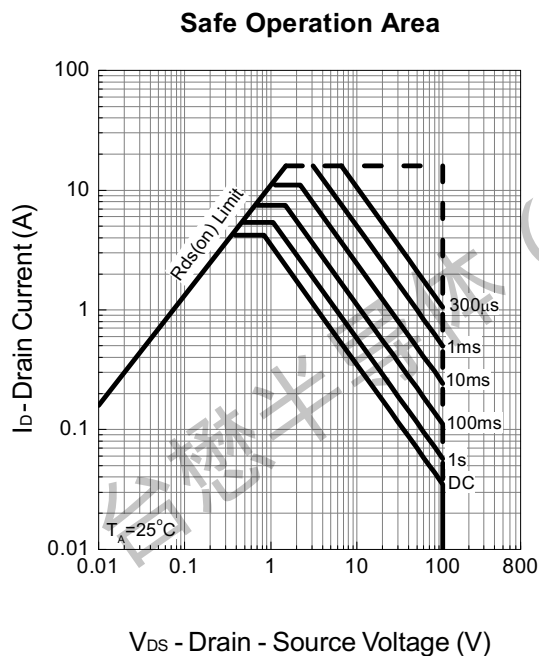
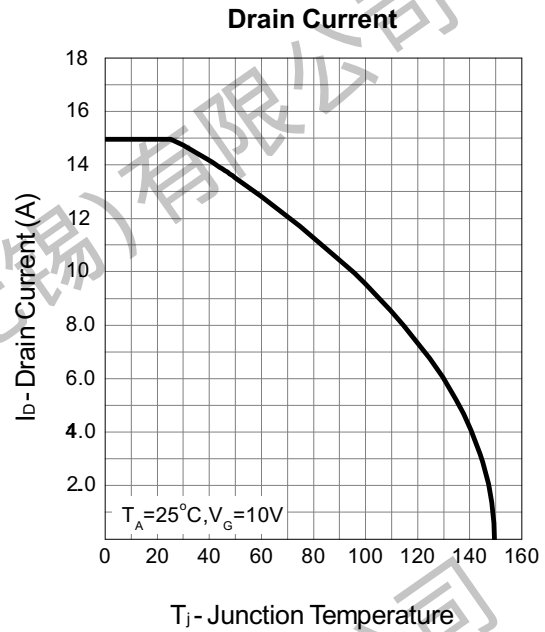
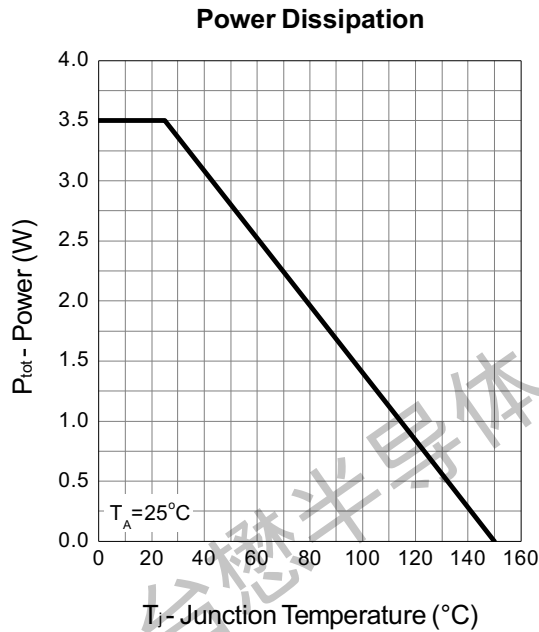
Electrical Characteristics (T_c=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
Static Characteristics							
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100	-	-	V	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =80V, V _{GS} =0V T _J =85°C	-	-	1 30	μA	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1	2	3	V	
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA	
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =4A V _{GS} =4.5V, I _{DS} =3.5A	- ---	75 ---	100 ---	mΩ mΩ	
Diode Characteristics							
V _{SD} ^d	Diode Forward Voltage	I _{SD} =3A, V _{GS} =0V	-	0.8	1.3	V	
t _{rr}	Reverse Recovery Time	I _{SD} =3A, dI _{SD} /dt=100A/μs	-	27	-	ns	
Q _{rr}	Reverse Recovery Charge		-	36	-	nC	
Dynamic Characteristics ^e							
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	2.5	-	Ω	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz	-	740	960	pF	
C _{oss}	Output Capacitance		-	45	-		
C _{rss}	Reverse Transfer Capacitance		-	24	-		
t _{d(ON)}	Turn-on Delay Time		V _{DD} =30V, R _L =30Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	11	20	ns
t _r	Turn-on Rise Time			-	6	11	
t _{d(OFF)}	Turn-off Delay Time	-		27	49		
t _f	Turn-off Fall Time	-		5	10		
Gate Charge Characteristics ^e							
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =4.5V, I _{DS} =4A	-	7.7	-	nC	
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _{DS} =4A	-	16	23		
Q _{gs}	Gate-Source Charge		-	2.5	-		
Q _{gd}	Gate-Drain Charge		-	3	-		

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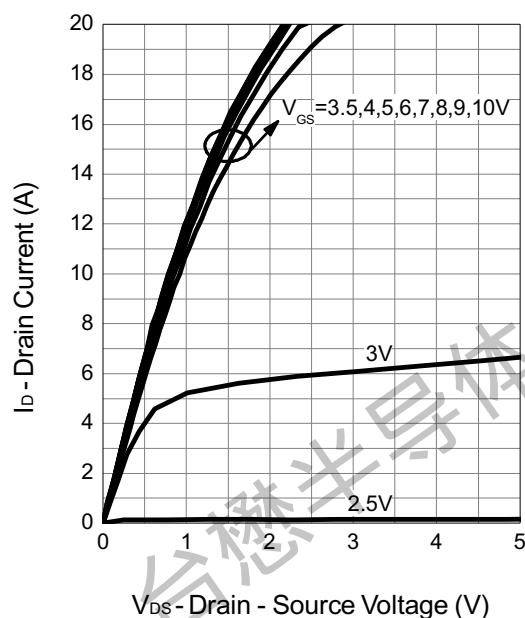
Typical Characteristics



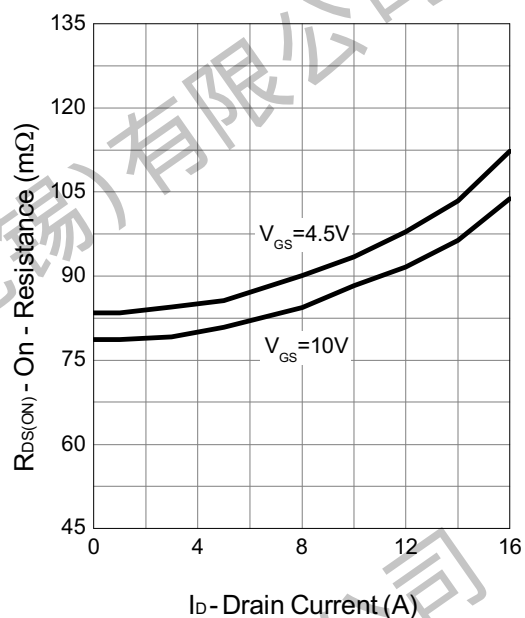
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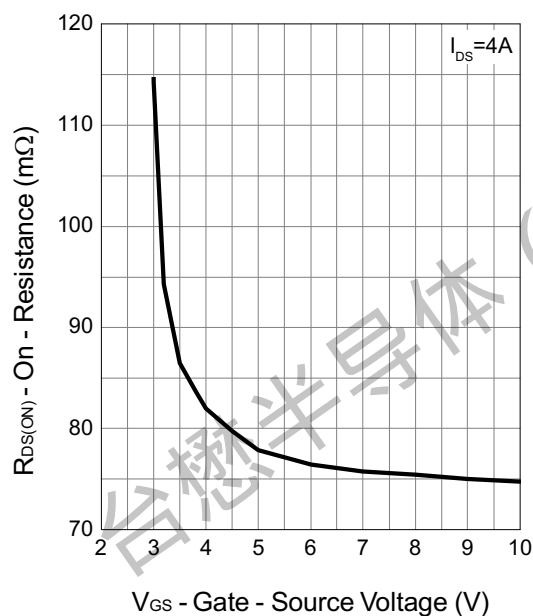
Output Characteristics



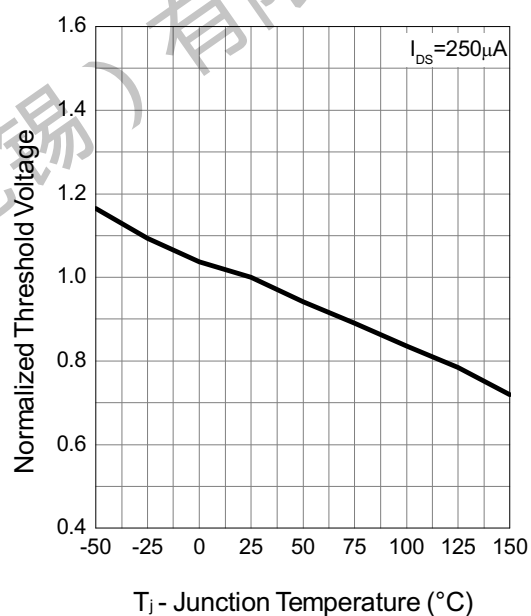
Drain-Source On Resistance



Gate-Source On Resistance



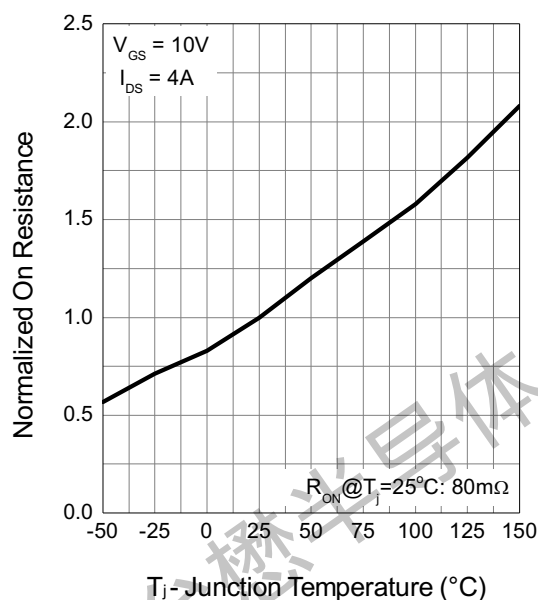
Gate Threshold Voltage



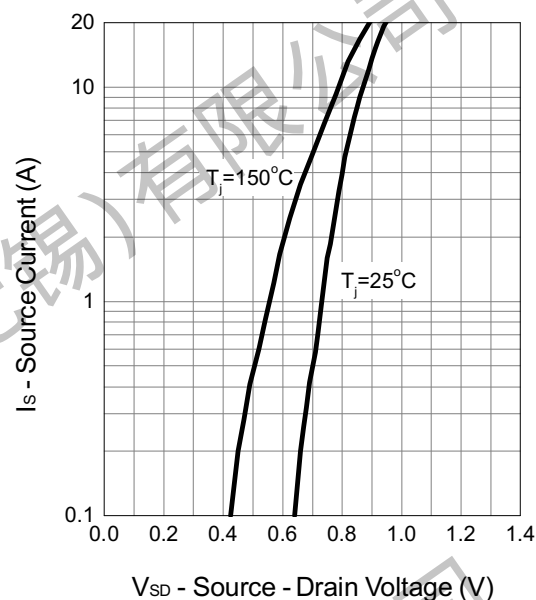
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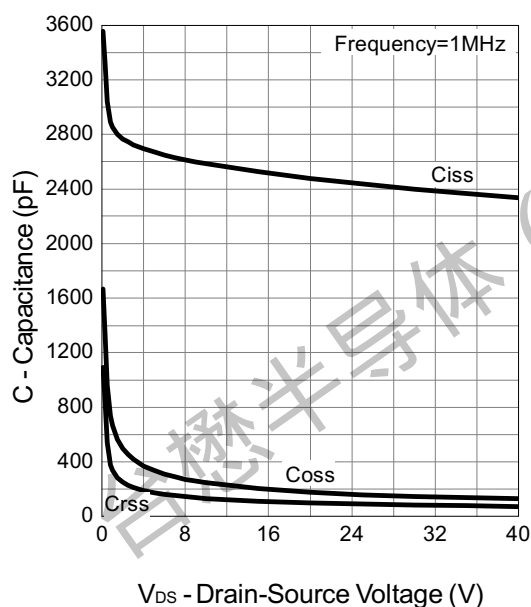
Drain-Source On Resistance



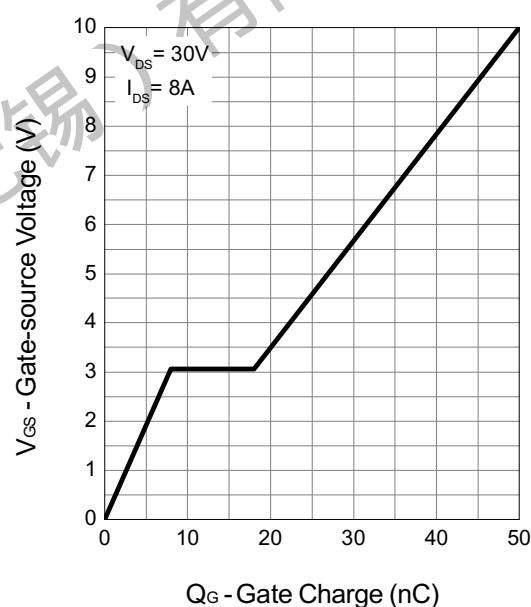
Source-Drain Diode Forward



Capacitance



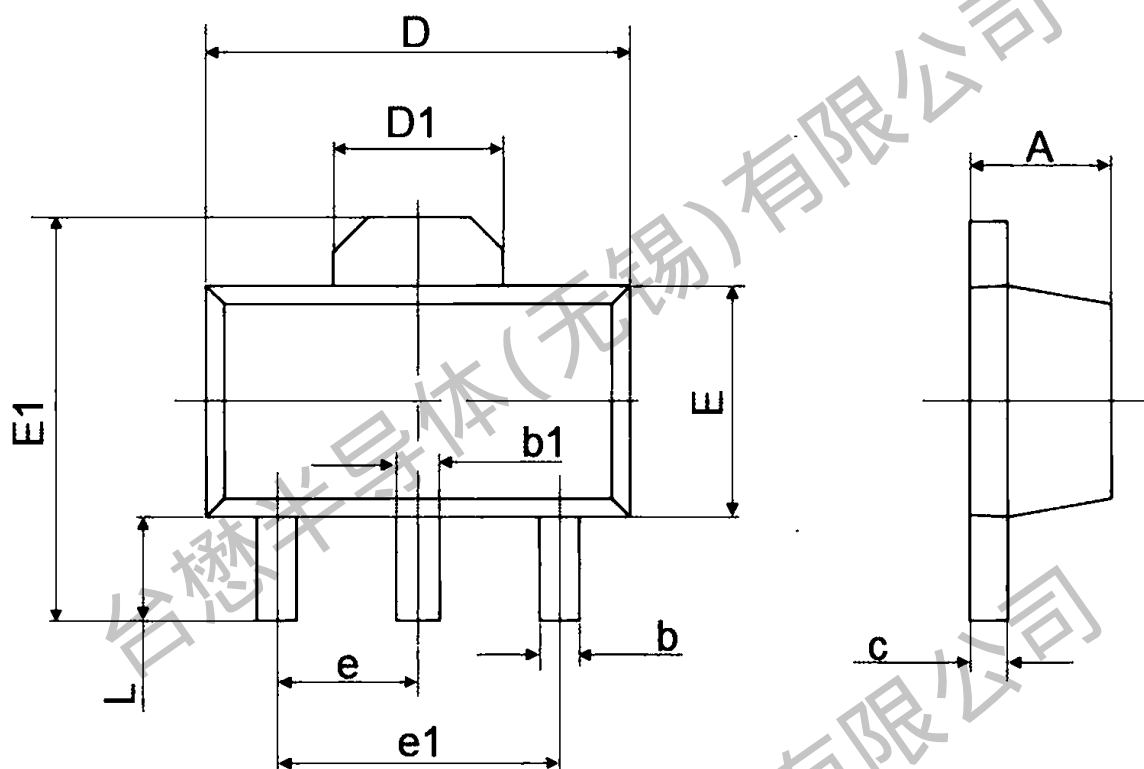
Gate Charge



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Package Mechanical Data:SOT-89-3L

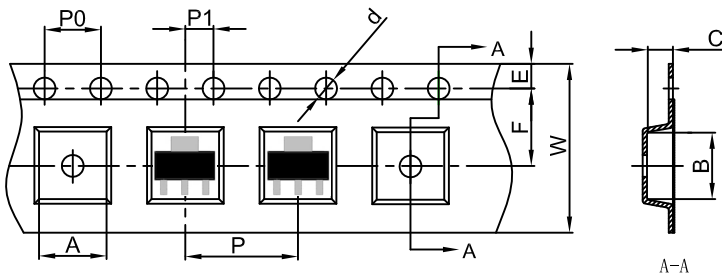


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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SOT-89-3L Embossed Carrier Tape



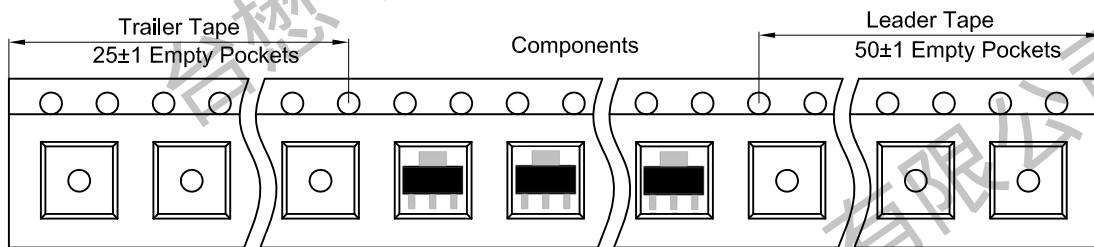
Packaging Description:

SOT-89-3L 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 1,000 units per 7" or 18.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

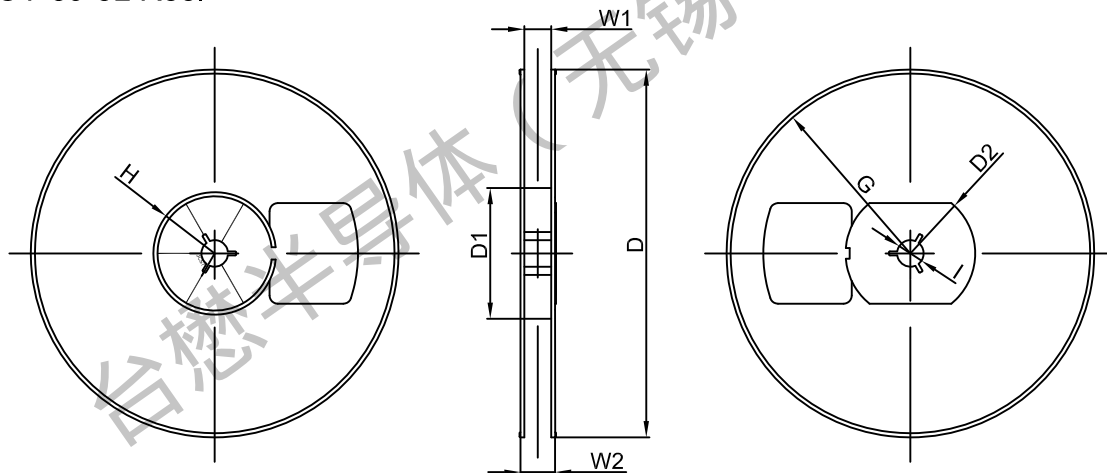
ALL DIM IN mm

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-89-3L	4.85	4.45	1.85	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOT-89-3L Tape Leader and Trailer



SOT-89-3L Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø180.00	60.00	R32.00	R86.50	R30.00	Ø13.00	13.20	16.50

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
1000 pcs	7 inch	10,000 pcs	205×195×220	40,000 pcs	430×415×240	

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Revision history:

Date	Rev	Description	Page
2023.06.14	23.06	Original	