TM100P06D

P-Channel Enhancement Mosfet

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

Applications
- Load switch
- PWM

General Features

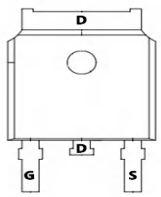
V_{DS} =-60V I_D =-100A

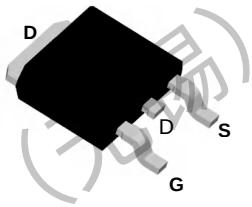
$R_{DS(ON)}$=8.5mΩ (typ.)@V_{GS}=-10V

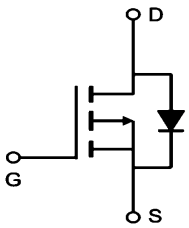
100% UIS Tested
100% R_g Tested

Green Product

D:TO-252-3L







Marking: 100P06

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ - 10V	-100	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ - 10V	-75	A
I_{DM}	Pulsed Drain Current	-420	A
EAS	Single Pulse Avalanche Energy	196	mJ
I_{AS}	Avalanche Current, Single pulse L=0.5mH	-28	A
P_D@T_C=25°C	Total Power Dissipation	89.3	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	6.6	°C/W

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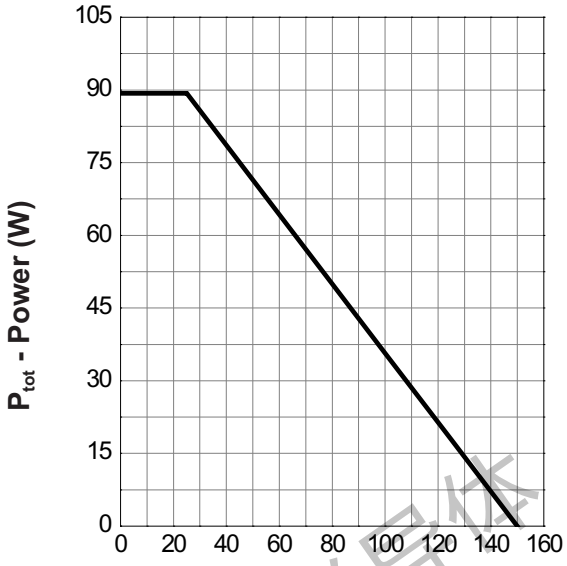
Electrical Characteristics (T_A = 25°C unless otherwise noted)

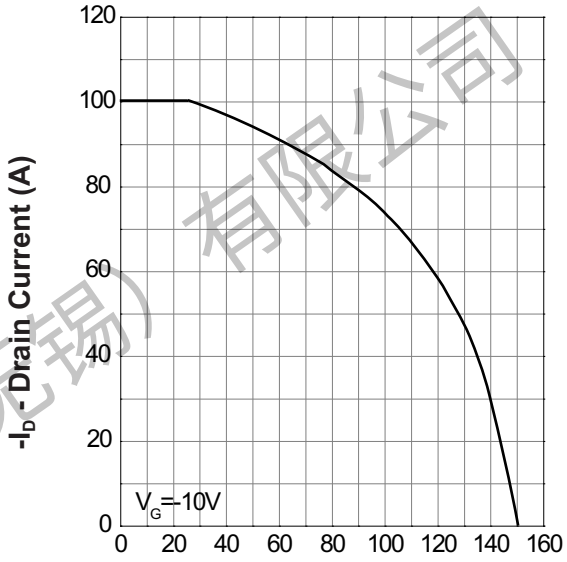
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-48V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1	-1.5	-2	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [c]	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-30A	-	8.5	10	mΩ
		V_{GS}=-4.5V, I_{DS}=-30A	-	11	14	mΩ
Diode Characteristics						
V_{SD} [c]	Diode Forward Voltage	I_{SD}=-15A, V_{GS}=0V	-1	-2	-3	V
t_{rr}	Reverse Recovery Time	I_{SD}=-30A, dI_{SD}/dt=100A/μs	-	47	-	ns
Q_{rr}	Reverse Recovery Charge		-	72	-	nC
Dynamic Characteristics [d]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	2	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-30V, Frequency=1.0MHz	-	5800	-	pF
C_{oss}	Output Capacitance		-	350	-	
C_{rss}	Reverse Transfer Capacitance		-	185	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-30V, R_L=30Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	23	41	ns
t_r	Turn-on Rise Time		-	15	27	
$t_{d(OFF)}$	Turn-off Delay Time		-	114	205	
t_f	Turn-off Fall Time		-	47	85	
Gate Charge Characteristics [d]						
Q_g	Total Gate Charge	V_{DS}=-30V, V_{GS}=-10V, I_{DS}=-30A	-	89	125	nC
Q_{gs}	Gate-Source Charge		-	21	-	
Q_{gd}	Gate-Drain Charge		-	24	-	

Typical Operating Characteristics

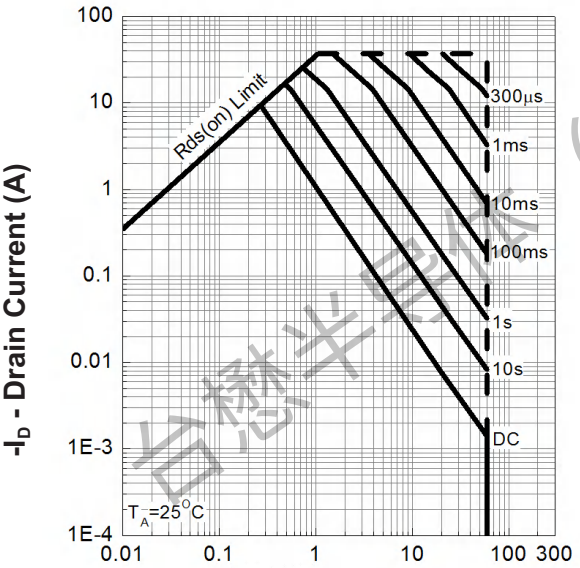
Power Dissipation



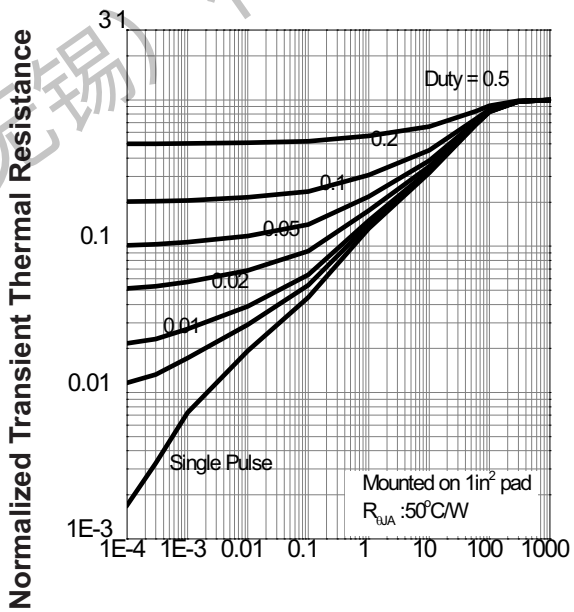
Drain Current



Safe Operation Area



Thermal Transient Impedance



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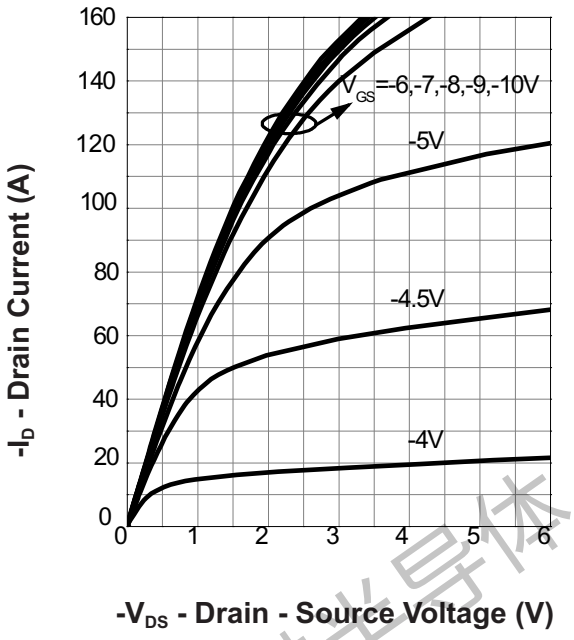
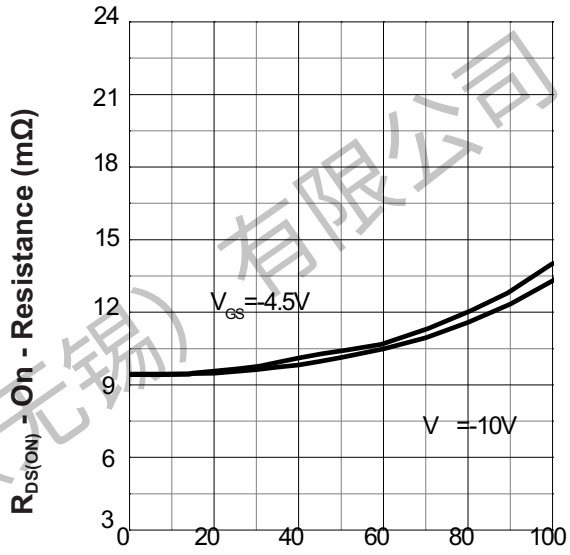
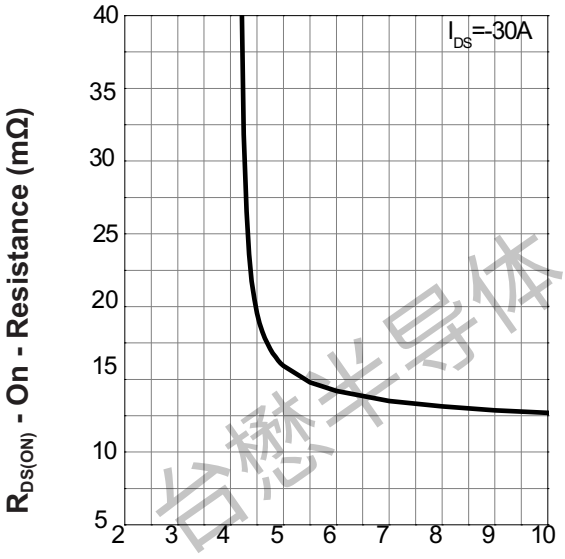
Output Characteristics



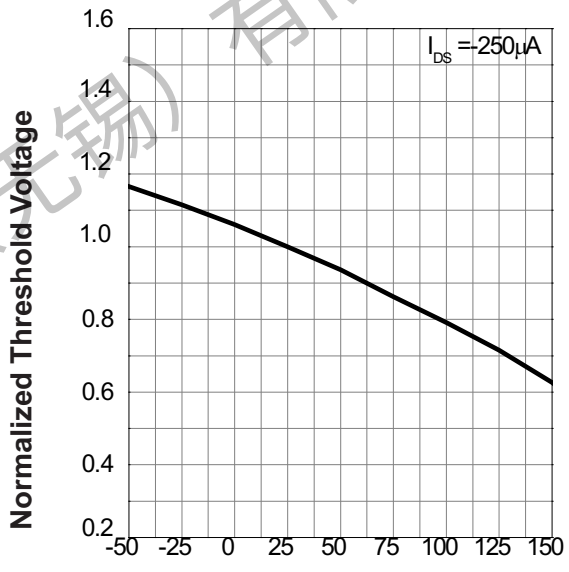
Drain-Source On Resistance



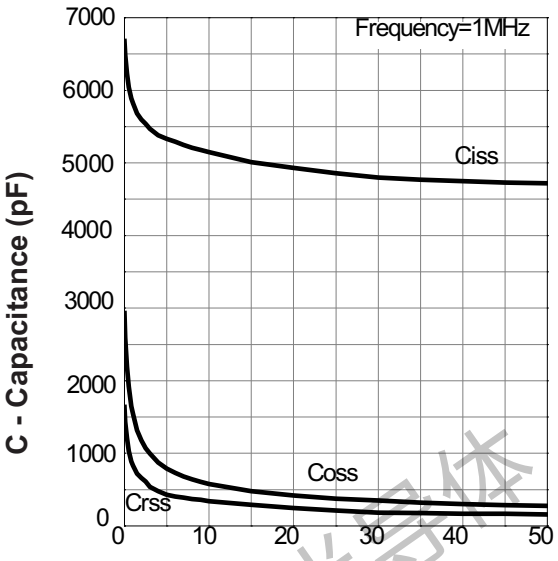
Gate-Source On Resistance



Gate Threshold Voltage

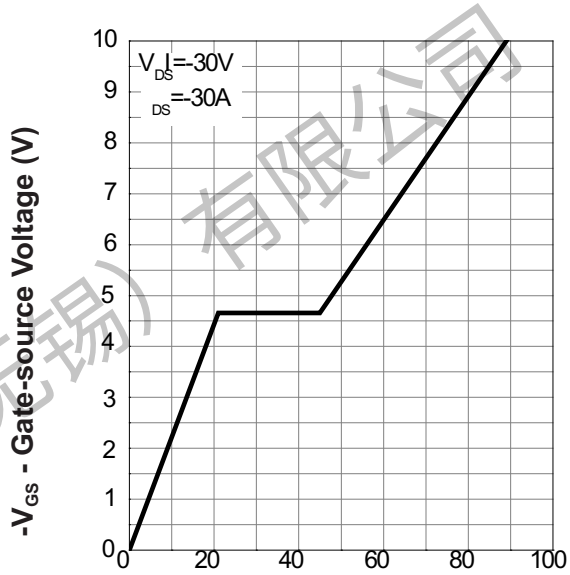


Capacitance



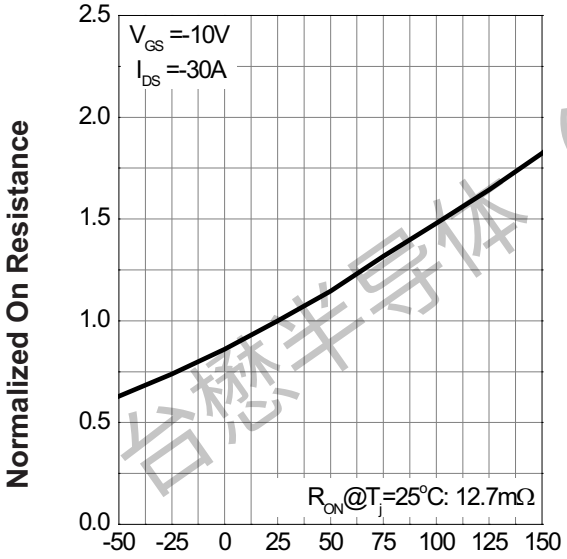
$-V_{DS}$ - Drain-Source Voltage (V)

Gate Charge



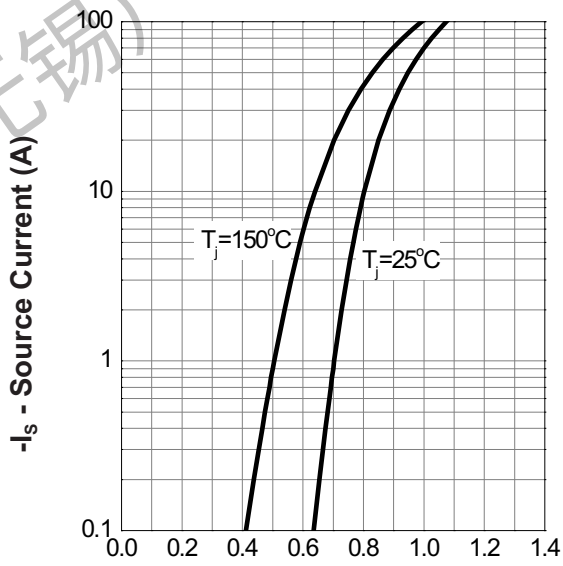
Q_G - Gate Charge (nC)

Drain-Source On Resistance



T_j - Junction Temperature (°C)

Source-Drain Diode Forward



$-V_{SD}$ - Source - Drain Voltage (V)

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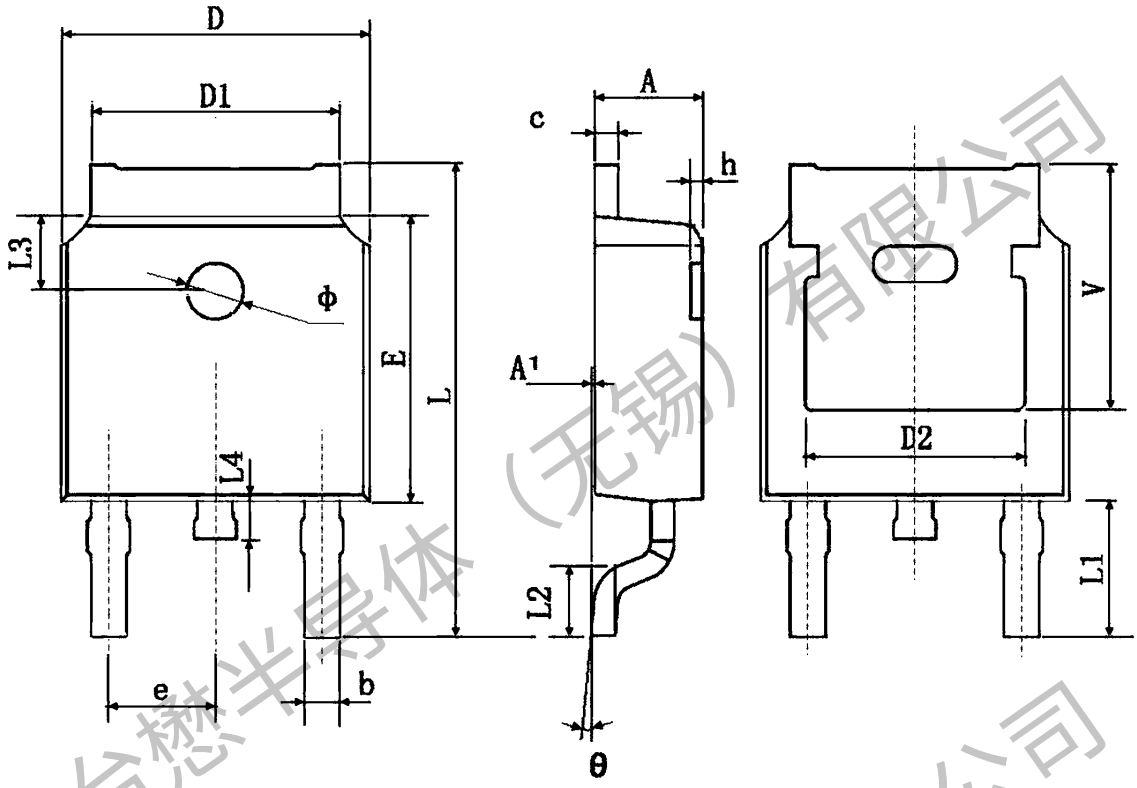
Package Mechanical Data: TO-252-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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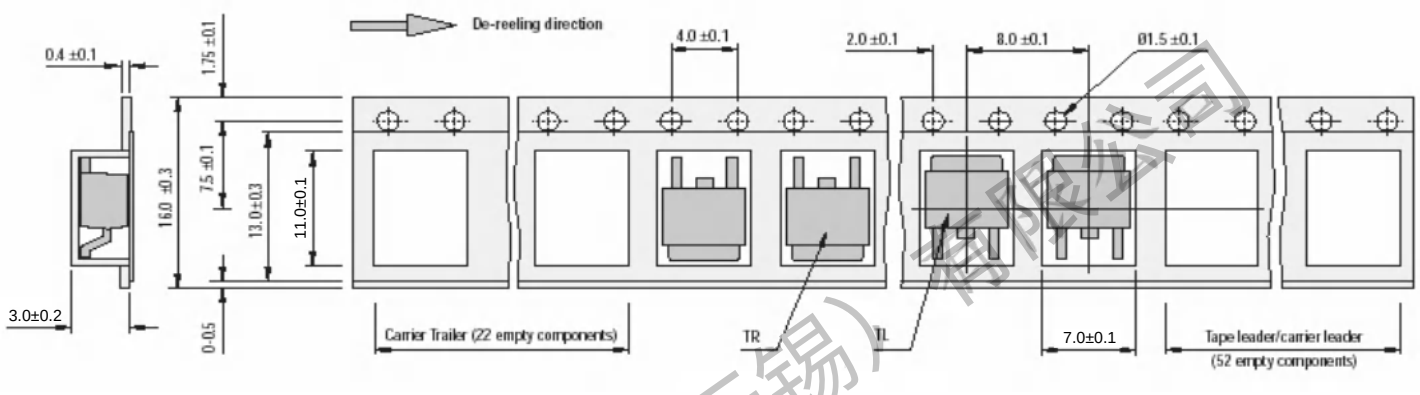
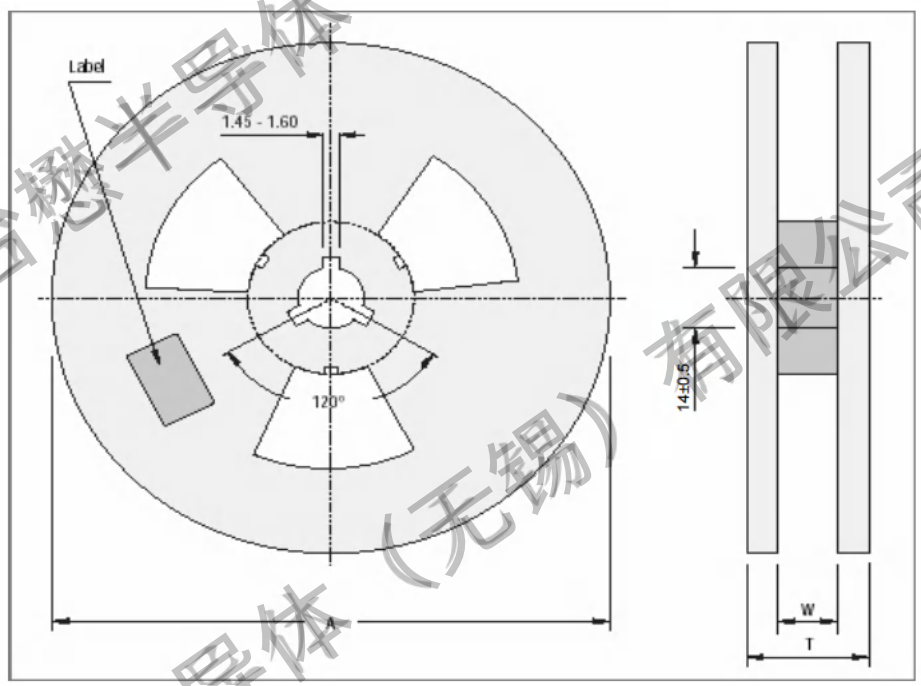
TO-252-3L Embossed Carrier Tape



TO-252-3L Reel



All Dimensions are in mm

Reel Specifications				
Package	Tape Width	Reel Dia. A - Max	Inside Thickness W	Reel Thickness T - max
TO-252-3L	16	330	18.0 ±1.5	20

Packaging Information

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13 inch	5,000 pcs	355×370×50	25,000 pcs	380×275×380	

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Revision history:

Date	Rev	Description	Page
2023.05.10	23.05	Original	