
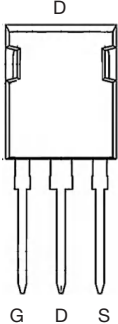


TMG130N20MP


N-Channel Enhancement Mosfet

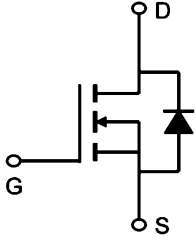
<p>General Description</p> <ul style="list-style-type: none"> • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM 	<p>General Features</p> <p>$V_{DS}=200V$ $I_D=130A$ $R_{DS(ON)}=8.8m\Omega$(typ.) @ $V_{GS}=10V$</p> <p>100% UIS Tested 100% R_g Tested</p> 
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Marking: G130N20

MP:TO-247-3L





Absolute Maximum Ratings: ($T_c=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_c=25^\circ C$	130	A
	Continuous Drain Current- $T_c=100^\circ C$	91	
I_{DM}	Pulsed Drain Current	460	
E_{AS}	Single Pulse Avalanche Energy	324	mJ
P_D	Power Dissipation	357	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.5	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	

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Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	200	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA	---	---	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =60A	---	8.8	10.6	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2	2.5	3	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	---	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =200V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =200V, V _{GS} =0V, T _J =100°C	---	---	100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =60A	---	103.5	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	3.5	---	Ω
Q _g	Total Gate Charge	V _{DS} =100V, V _{GS} =10V, I _D =60A	---	74	---	nC
Q _{gs}	Gate-Source Charge		---	30	---	
Q _{gd}	Gate-Drain Charge		---	16	---	
T _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DD} =100V, R _G =2.7Ω, I _D =60A	---	35	---	ns
T _r	Rise Time		---	111	---	
T _{d(off)}	Turn-Off Delay Time		---	84	---	
T _f	Fall Time		---	112	---	
C _{iss}	Input Capacitance	V _{DS} =100V, V _{GS} =0V, f=1MHz	---	5268	---	pF
C _{oss}	Output Capacitance		---	462	---	
C _{rss}	Reverse Transfer Capacitance		---	24	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _s	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	130	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _s =60A, T _J =25°C	---	---	1.3	V
t _{rr}	Reverse Recovery Time	IF=17A, di/dt=100A/μs,	---	150.8	---	nS
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	779.4	---	nC

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Typical Performance Characteristics

Fig 1: Output Characteristics

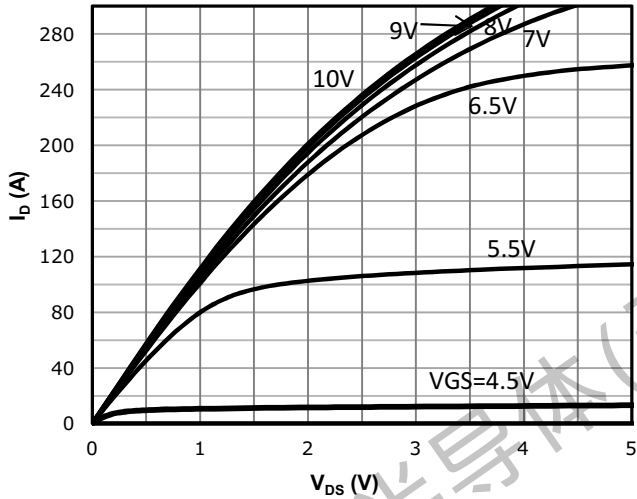


Fig 2: Transfer Characteristics

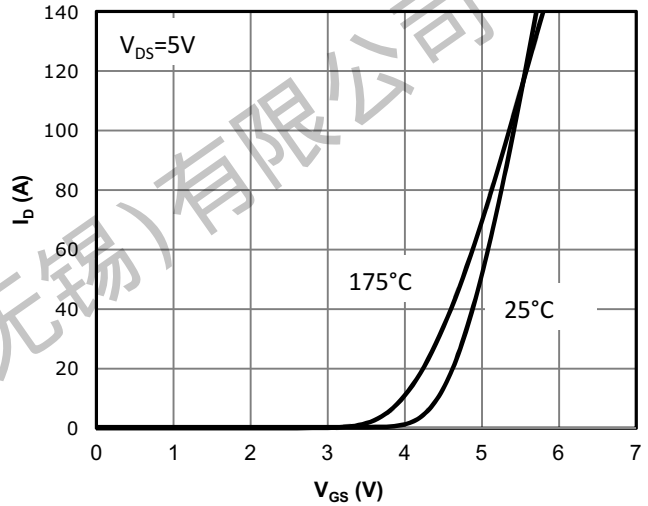


Fig 3: Rds(on) vs Drain Current and Gate Voltage

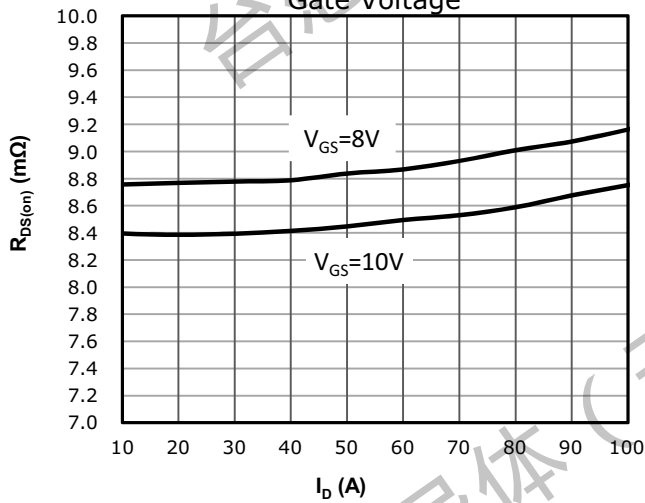


Fig 4: Rds(on) vs Gate Voltage

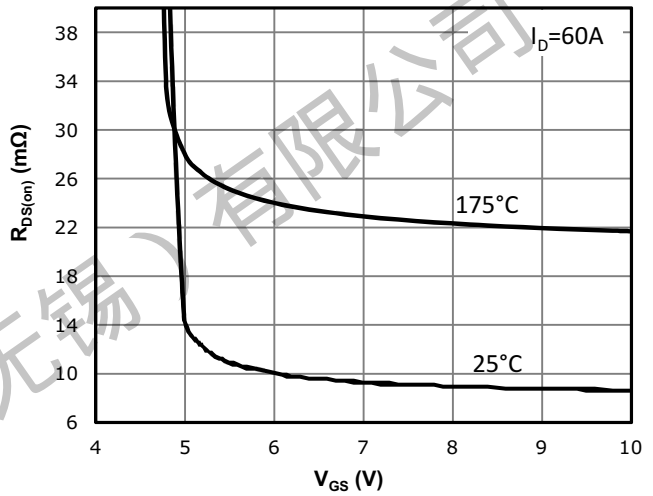


Fig 5: Rds(on) vs. Temperature

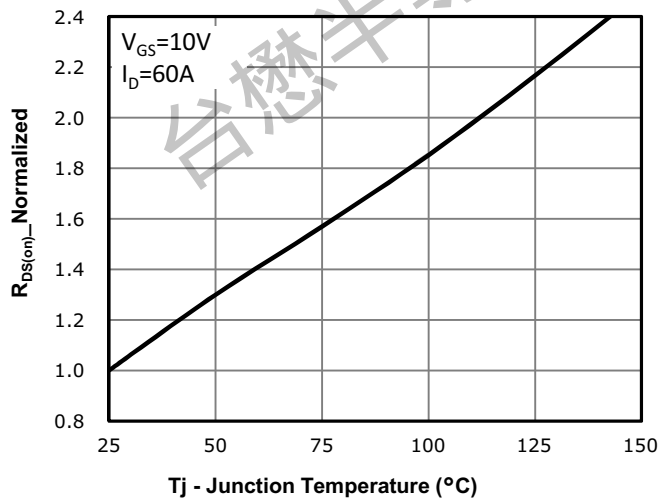
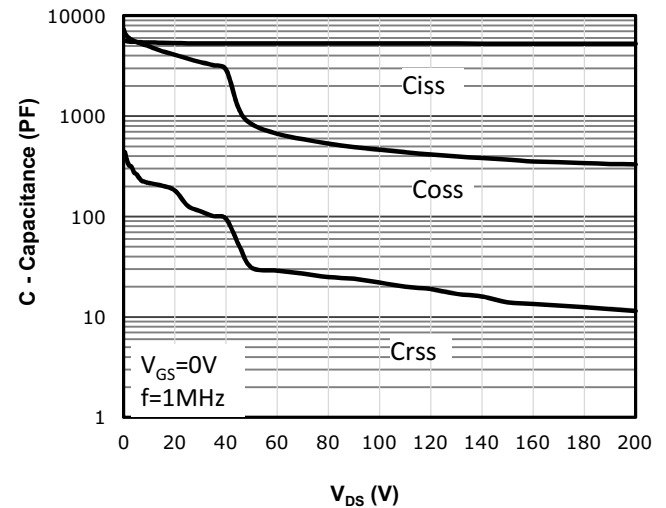


Fig 6: Capacitance Characteristics





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Fig 7: Vgs(th) vs. Temperature

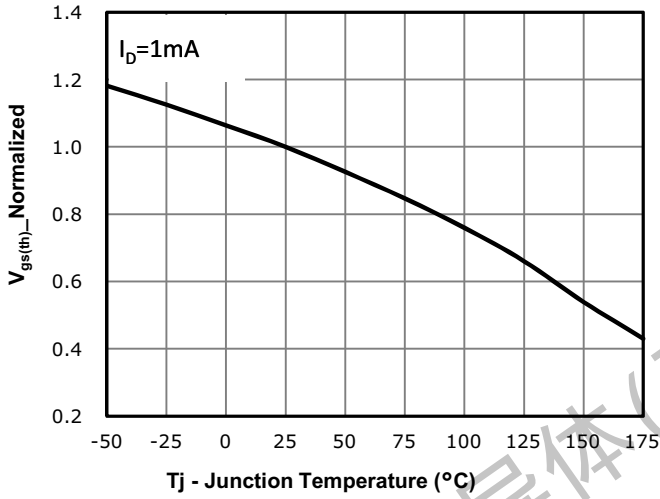


Fig 8: BVdss vs. Temperature

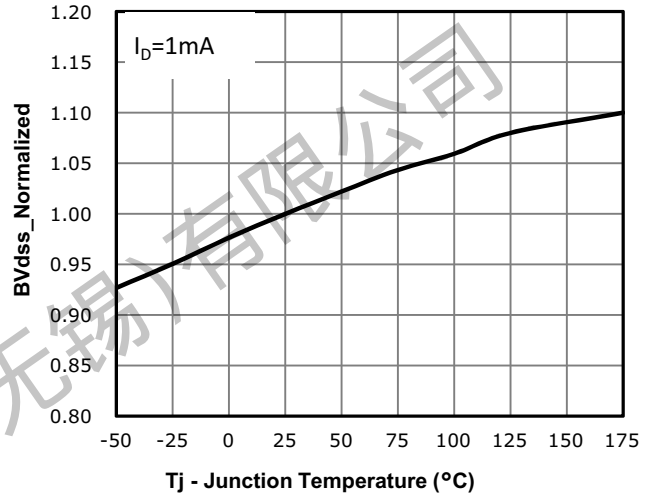


Fig 9: Gate Charge Characteristics

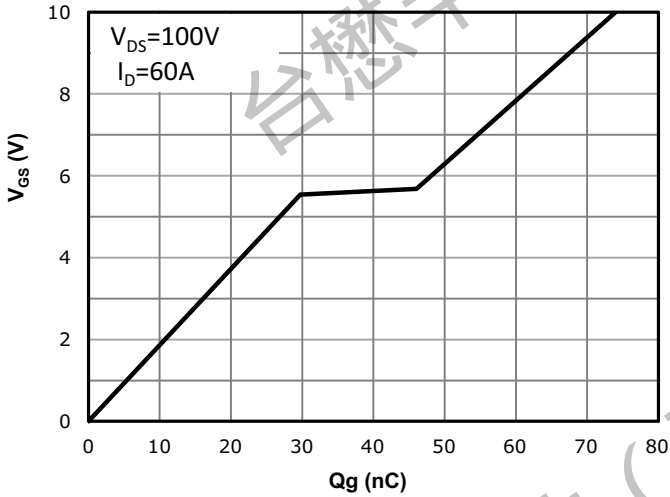


Fig 10: Body-diode Forward Characteristics

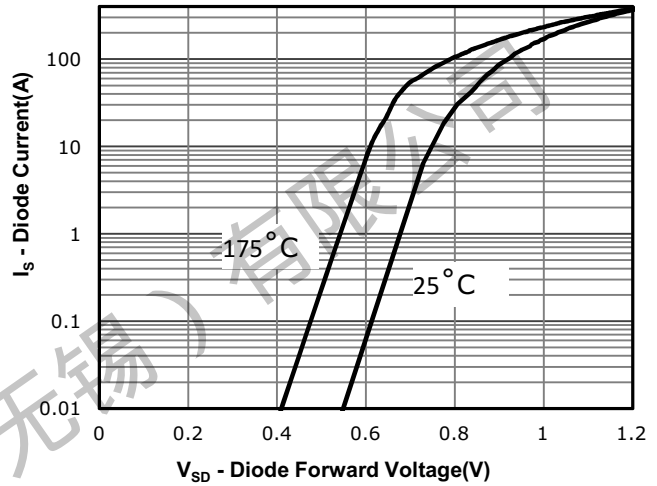


Fig 11: Power Dissipation

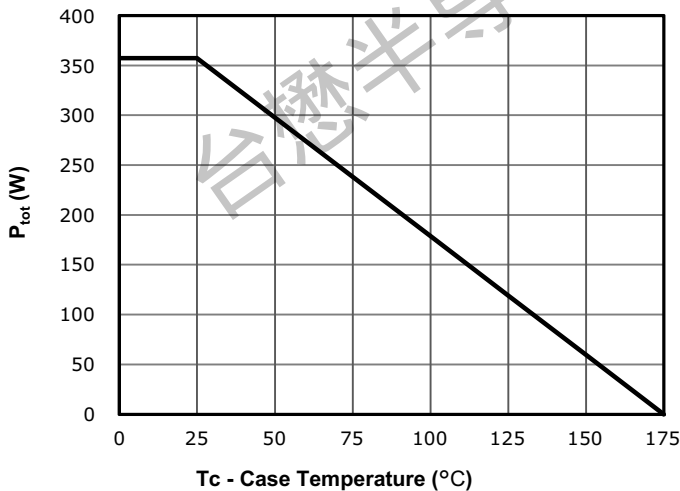
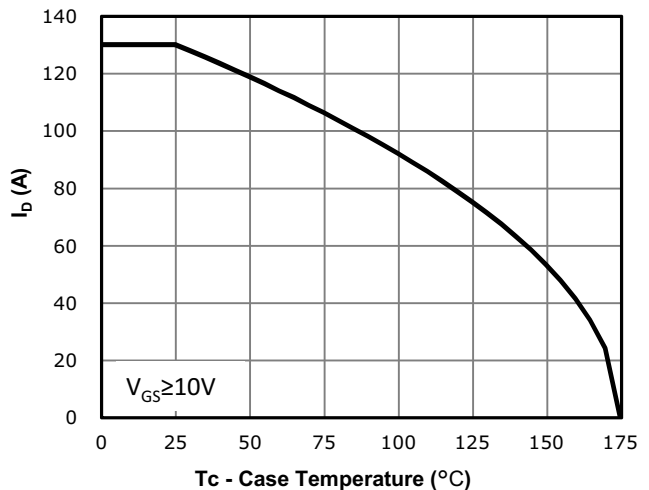


Fig 12: Drain Current Derating



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Fig 13: Safe Operating Area

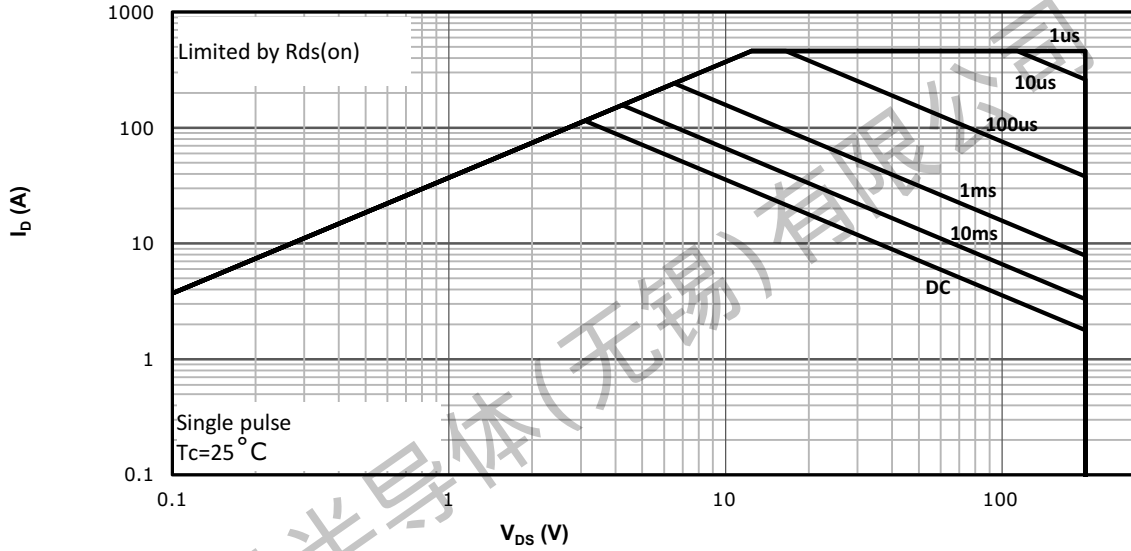
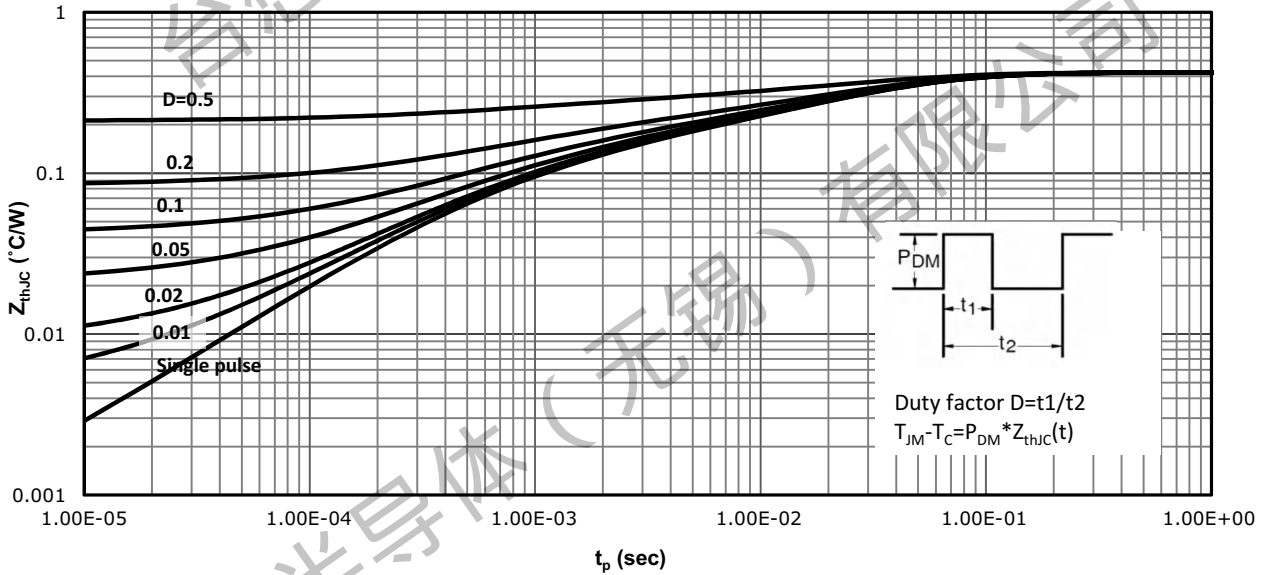


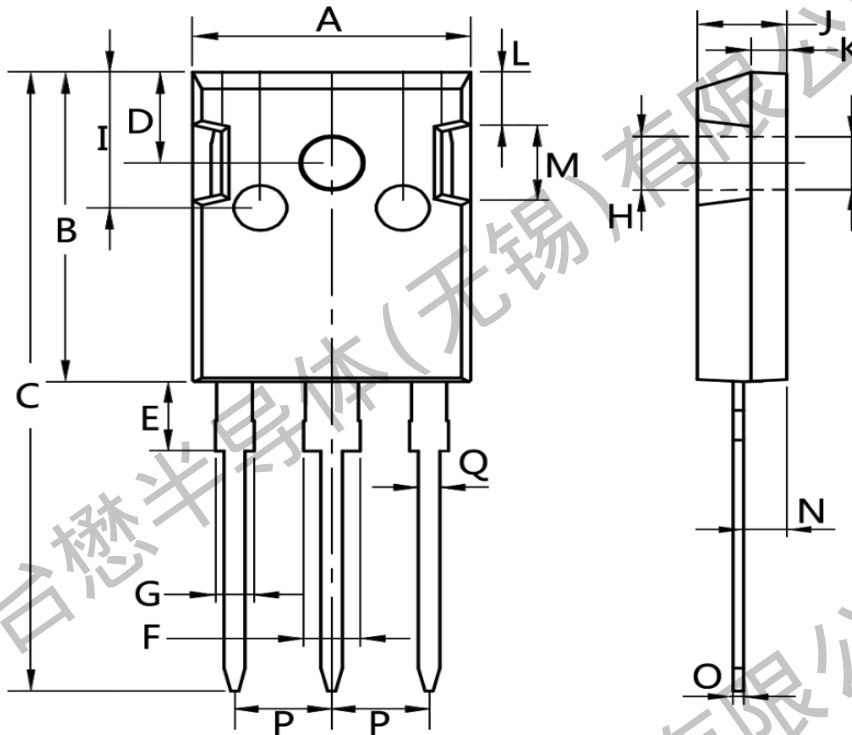
Fig 14: Max. Transient Thermal Impedance



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Package Mechanical Data :TO-247-3L

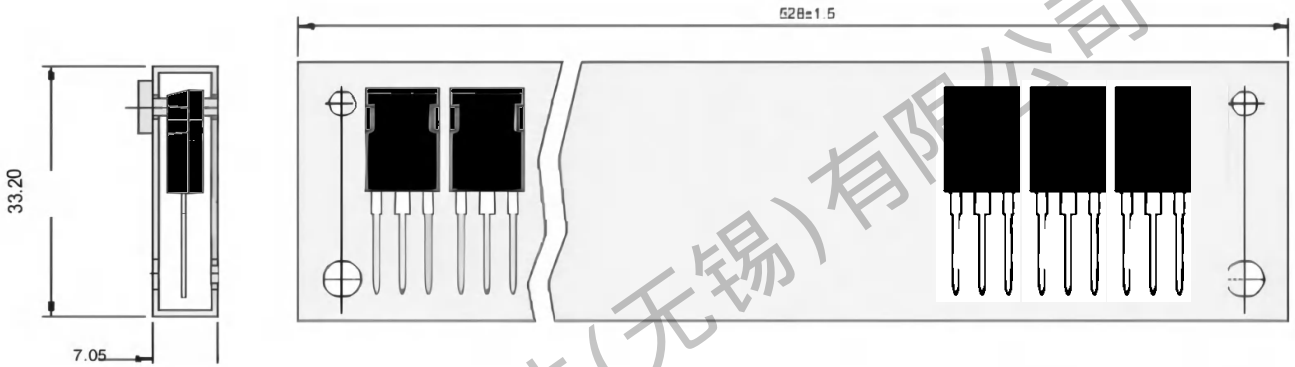


Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Typ 5.08	
Q	1.2	1.3



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All Dimensions are in mm

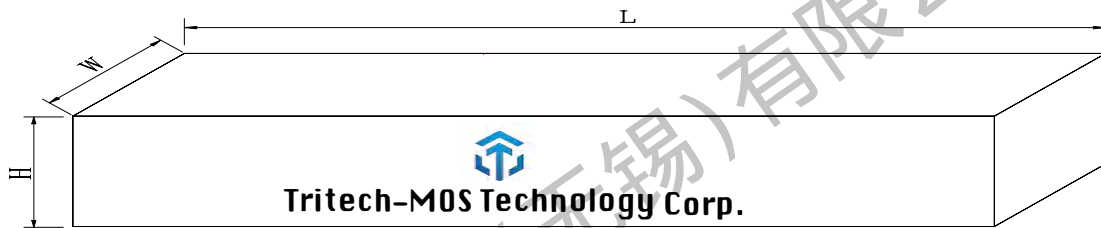
1.TO-247-3L Packaging

Package	Packing Form	Quantity		
		Tube	Inner Box [kpcs]	Outbox [kpcs]
TO-247-3L	Tube Tape	30	5	1

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Inner Box



Dimension : 580 (L)×154(W) ×49(H) mm

Quantity : 30 ×15Ea = 450pcs Or 30 ×20Ea = 600pcs

Outer Box



Dimension : 595(L)×285(W) ×185(H) mm

Quantity : 450×5Ea = 2250pcs Or 600 ×5Ea = 3000pcs

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Revision history:

Date	Rev	Description	Page
2023.08.17	23.08	Original	