TMG160P10HMP

P-Channel Enhancement Mosfet

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

Applications
- Load switch
- PWM

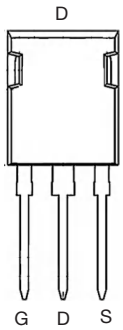
General Features

V_{DS} =-100V I_D =-160A

$R_{DS(ON)}$= 6 mΩ(typ.) @ V_{GS}= -10V

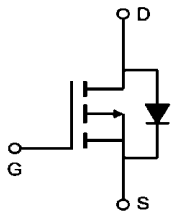
100% UIS Tested
100% R_g Tested

Green Product



Marking: G160P10H

MP:TO-247-3L



Absolute Maximum Ratings: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current- T_C=25℃	-160	A
	Continuous Drain Current-T_C=100℃	-94	
I_{DM}	Pulsed Drain Current	-600	
EAS	Single Pulse Avalanche Energy	1232	mJ
P_D	Power Dissipation	305	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	℃

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta Jc}$	Thermal Resistance,Junction to Case	0.4	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient	62	

Electrical Characteristics（T_j= 25℃ unless otherwise specified）：

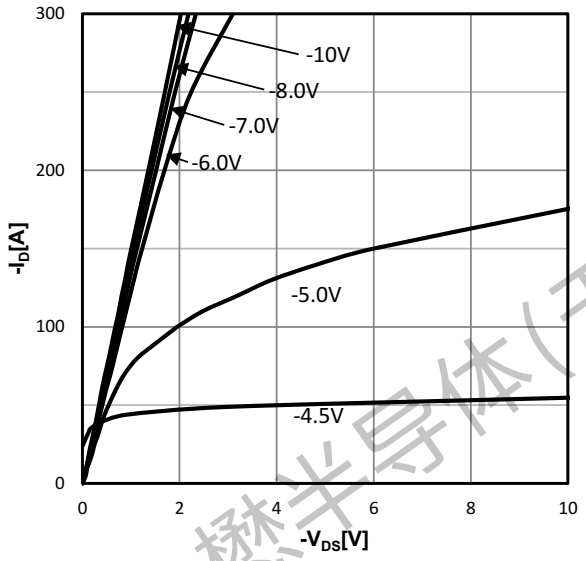
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-100	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	---	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-22A	---	6	8	mΩ
		V_{GS}=-4.5V , I_D=-22A	---	---	---	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=-250uA	-3	-3.5	-4	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	---	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-100V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=-100V, V_{GS}=0V , T_J=100℃	---	---	---	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-5A	---	---	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.7	---	Ω
Q_g	Total Gate Charge	V_{DS}=-50V , V_{GS}=-10V , I_D=-5A	---	170	---	nC
Q_{gs}	Gate-Source Charge		---	45	---	
Q_{gd}	Gate-Drain Charge		---	31	---	
$T_{d(on)}$	Turn-On Delay Time	V_{GS}=-10V, V_{DS}=-50V, I_D=-22A, R_G=1Ω	---	15	---	ns
T_r	Rise Time		---	35	---	
$T_{d(off)}$	Turn-Off Delay Time		---	100	---	
T_f	Fall Time		---	35	---	
C_{iss}	Input Capacitance	V_{DS}=-50V , V_{GS}=0V , f=1MHz	---	11687	---	pF
C_{oss}	Output Capacitance		---	998	---	
C_{rss}	Reverse Transfer Capacitance		---	139	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	-160	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-22A , T_J=25℃	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	IF=-22A , di/dt=100A/μs , T_J=25℃	---	86	---	nS
Q_{rr}	Reverse Recovery Charge		---	271	---	nC

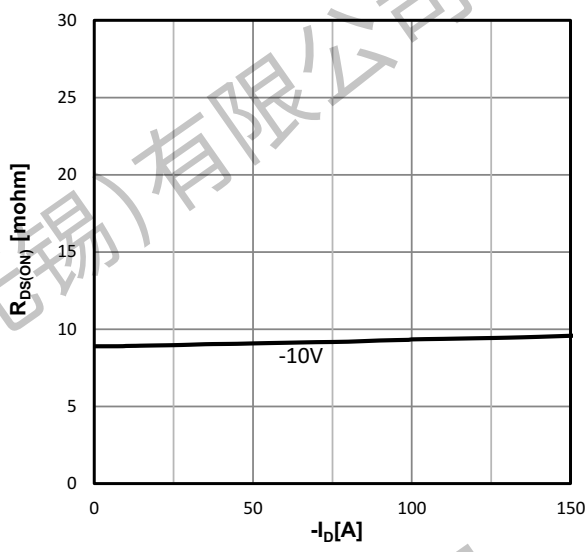
Characteristics Curve:

Figure 1: Typ. output characteristics



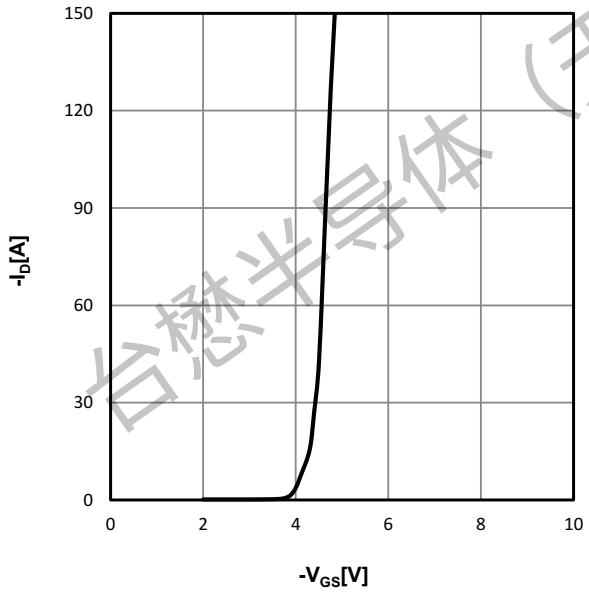
$I_D=f(V_{DS})$, T_j=25 °C; parameter: V_{GS}

Figure 2: Typ. drain-source on resistance



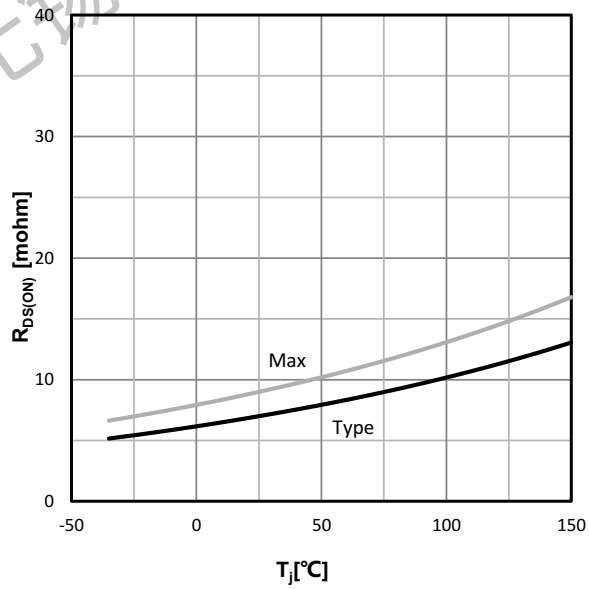
$R_{DS(on)}=f(I_D)$, T_j=25 °C; parameter: V_{GS}

Figure 3: Typ. transfer characteristics



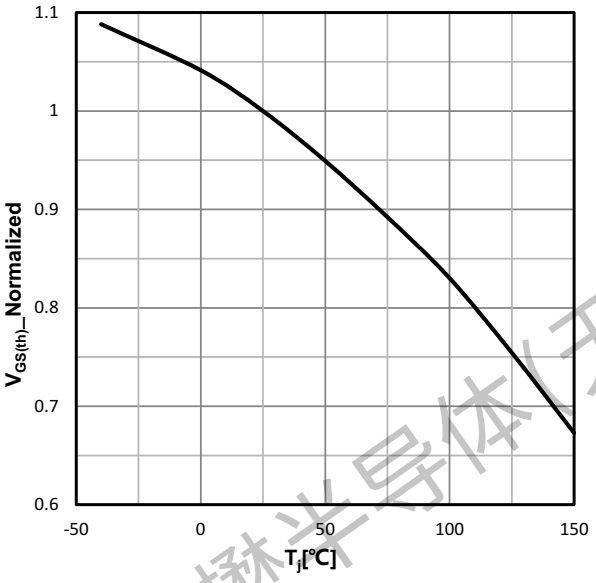
$I_D=f(V_{GS})$, $|V_{DS}|>2|I_D|R_{DS}(on)max$;

Figure 4: drain-source on resistance



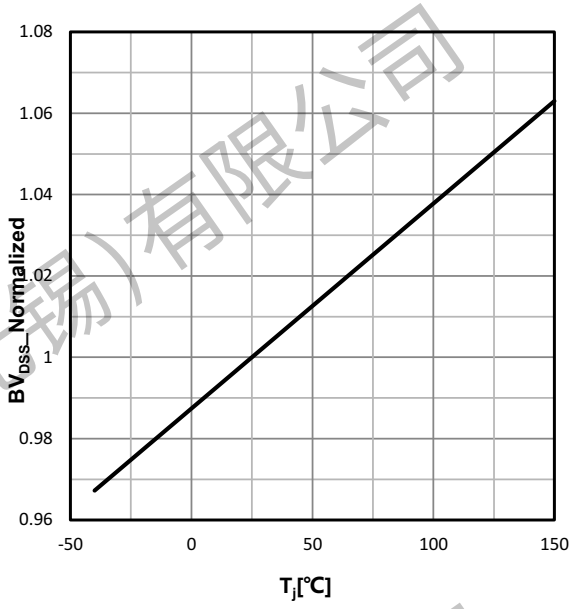
$R_{DS(on)}=f(T_j)$, I_D=-20A, V_{GS}=-10V;

Figure 5: Typ. gate threshold voltage



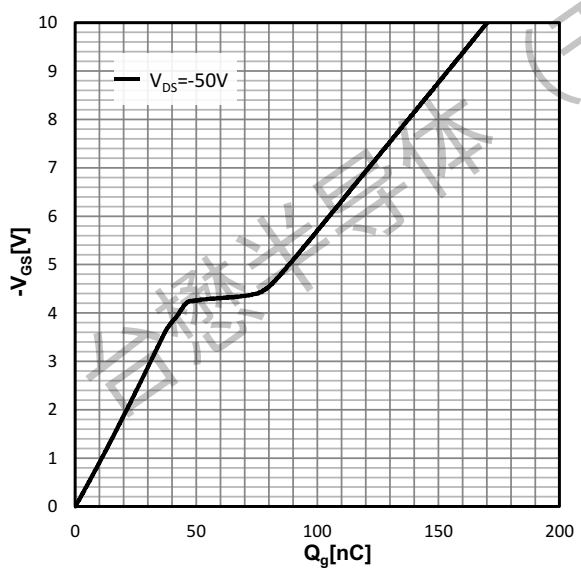
$V_{GS}=f(T_j)$, $V_{GS}=V_{DS}$, I_D=-250μA;

Figure 6: Drain-source breakdown voltage



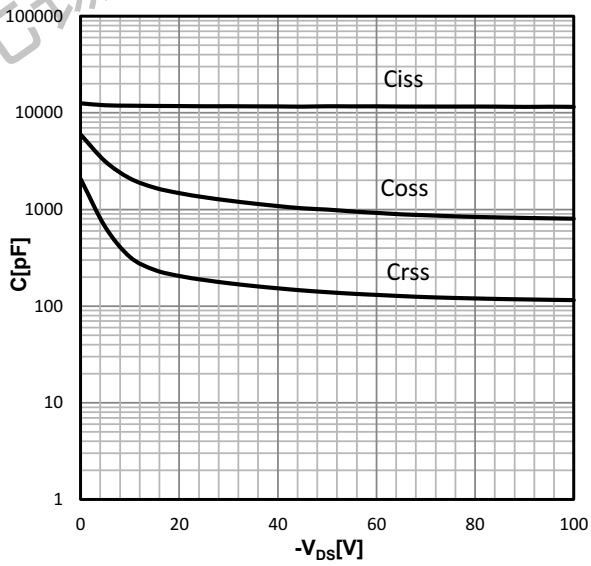
$V_{BR(DSS)}=f(T_j)$; I_D=-250μA;

Figure 7: Typ. gate charge



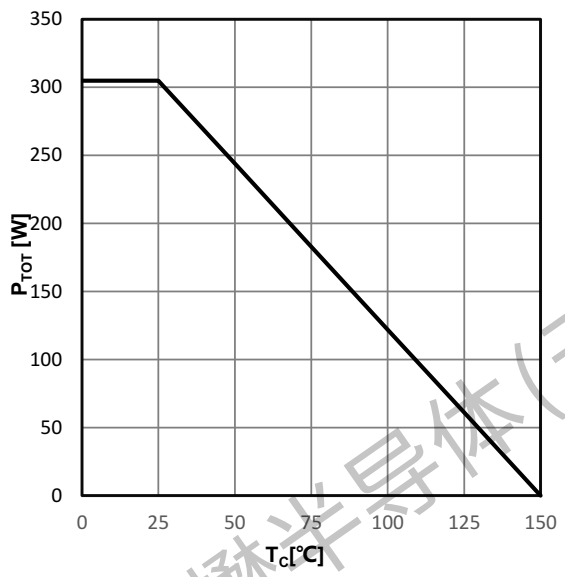
$V_{GS}=f(Q_g)$, I_D=-20A, T_j=25 °C; parameter: V_{DS}

Figure 8: Typ. Capacitances



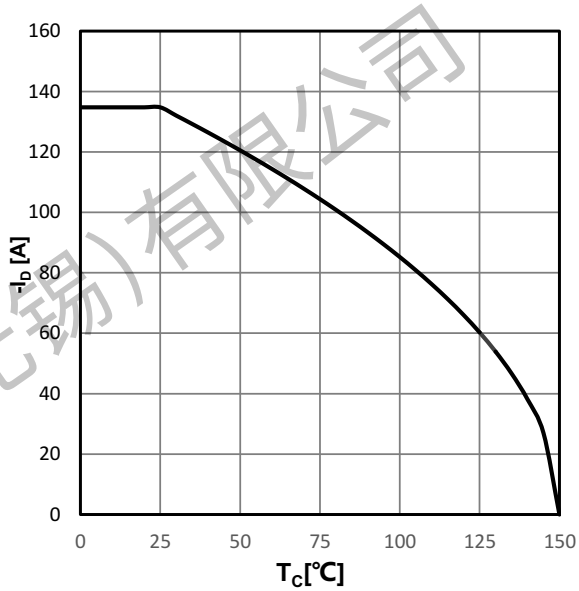
C=f(V_{DS}); V_{GS}=0V; f=1.0 MHz;

Figure 9: Power dissipation



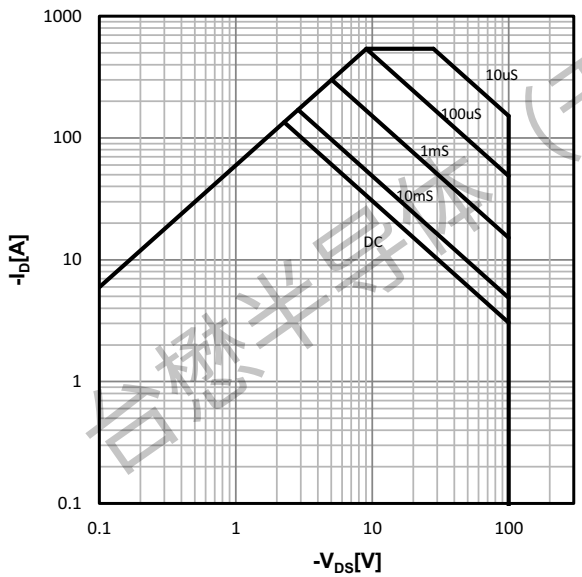
$P_{tot}=f(T_C)$;

Figure 10:Drain current



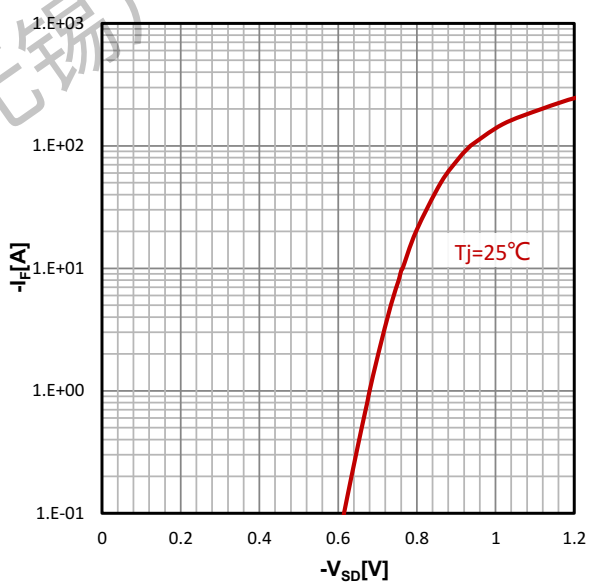
$I_D=f(T_C)$;

Figure 11: Safe operating area



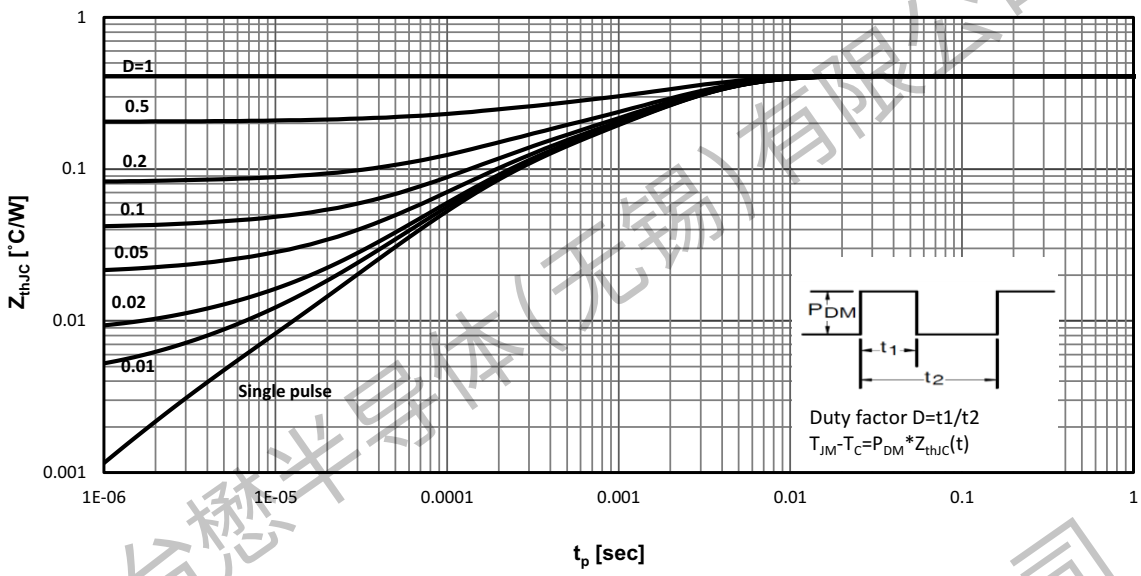
$I_D=f(V_{DS})$; T_C=25 °C; D=0; parameter: tp

Figure 12: Typ. forward characteristics



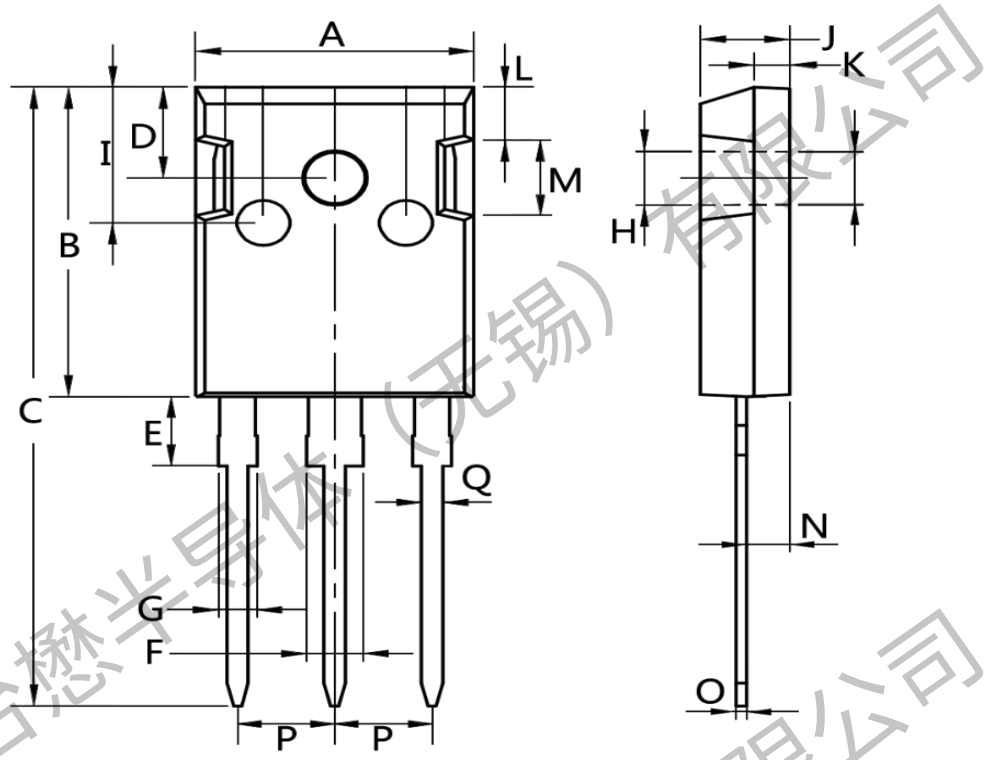
$I_F=f(V_{SD})$;

Figure 13: Max. Transient Thermal Impedance

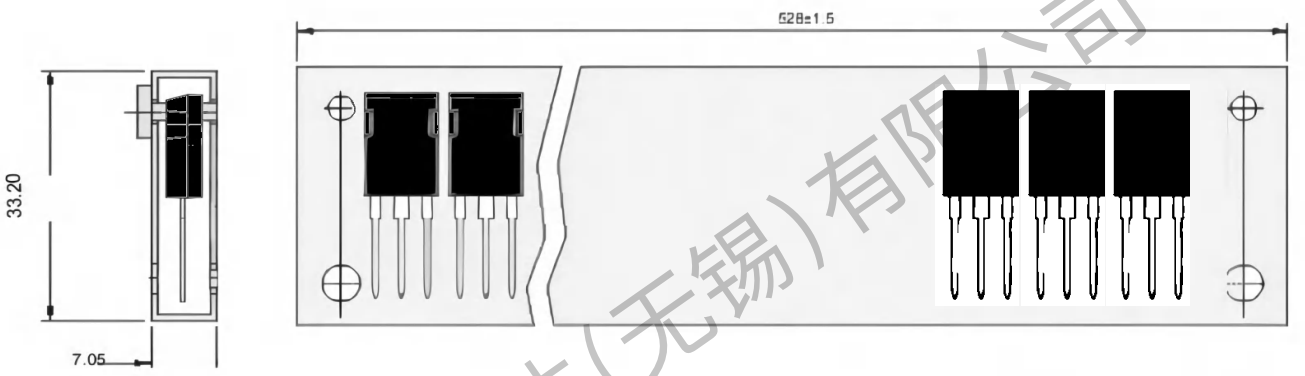


$Z_{thJC}=f(t_p)$; parameter: D

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

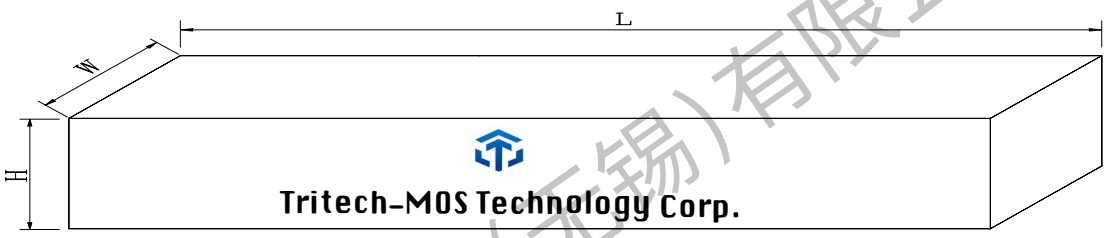


All Dimensions are in mm

1.TO-247-3L Packaging

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

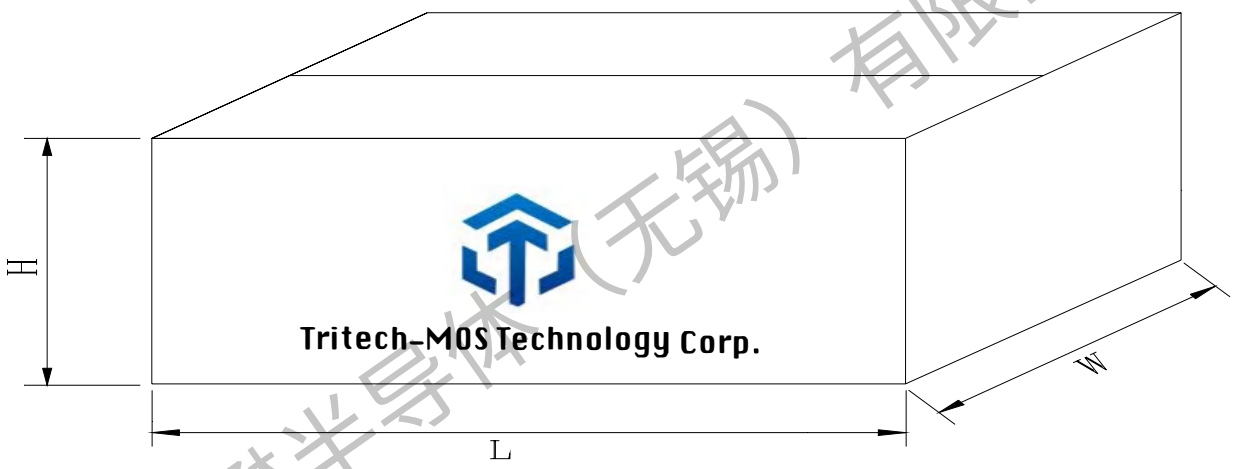
Inner Box



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
2023.08.01	23.08	Original	