TMG160P06HMP

P-Channel Enhancement Mosfet

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

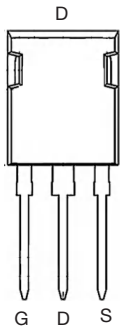
Applications
- Load switch
- PWM

General Features

V_{DS} =-60V I_D = -160A

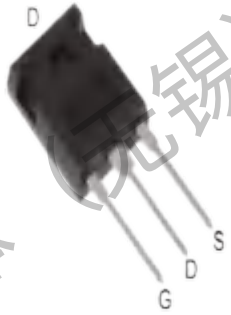
$R_{DS(ON)}$= 3.5mΩ(typ.) @ V_{GS}= -10V

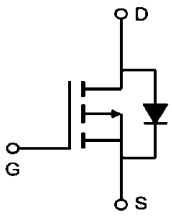
100% UIS Tested
100% R_g Tested



Marking: G160P06H

MP:TO-247-3L





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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current- T_C=25℃	-160	A
	Continuous Drain Current-T_C=100℃	-91.7	
I_{DM}	Pulsed Drain Current	-580	
EAS	Single Pulse Avalanche Energy	2058	mJ
P_D	Power Dissipation	183	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	0.68	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient	60	

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

Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V,I_D=-250μA	-60	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS} = -60V, V_{GS}= 0V	--	--	1	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS} =-20V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS} =+20V	--	--	-100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-2	-3	-4	V
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=-10V,I_D=-20A	--	3.5	4.2	mΩ

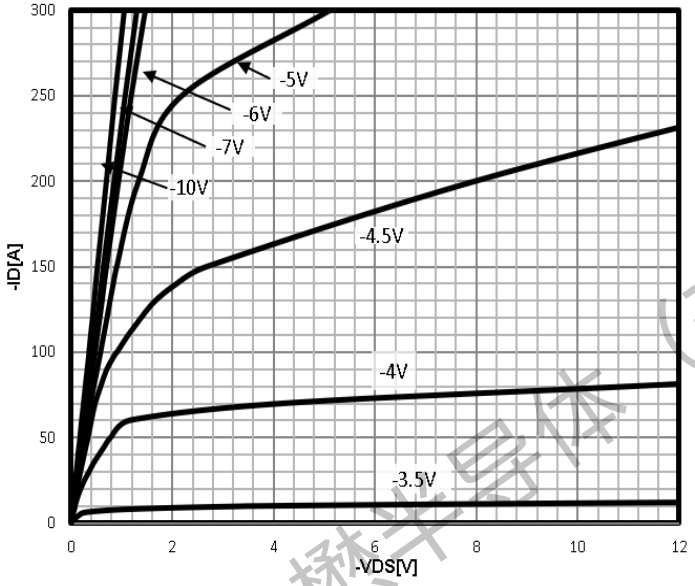
Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS}=0V V_{DS}=-30V f=1.0MHz	--	9123	--	pF
C_{oss}	Output Capacitance		--	1583	--	
C_{rss}	Reverse Transfer Capacitance		--	85.6	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D=-10A, V_{DS}= -30V V_{GS}= -10V R_G= 3Ω	--	70	--	ns
tr	Rise Time		--	45	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	165	--	
t_f	Fall Time		--	50	--	
Q_g	Total Gate Charge	V_{GS}=-10V V_{DS}=-30V I_D=-10A	--	135	--	nC
Q_{gs}	Gate Source Charge		--	28	--	
Q_{gd}	Gate Drain Charge		--	22.4	--	

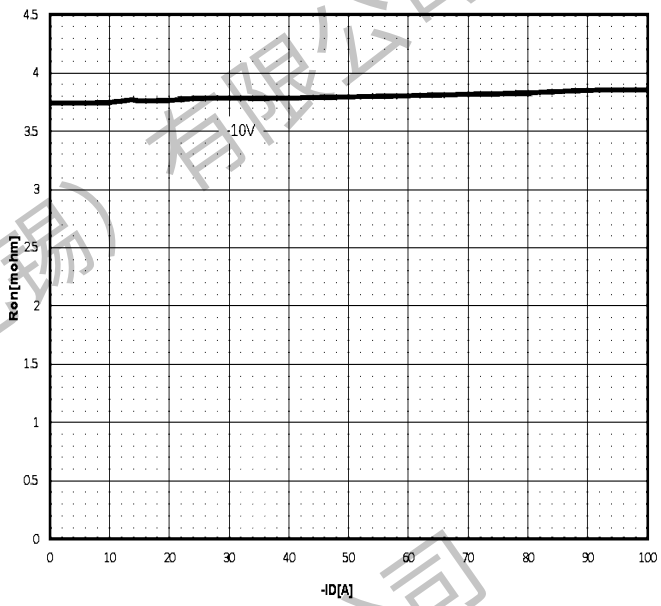
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	T_C=25 ℃	--	--	-160	A
V_{SD}	Diode Forward Voltage	I_S=-20A,V_{GS}=0V	--	--	-1.2	V
t_{rr}	Reverse Recovery time	I_S=-10A,V_{DD}=-30V dI/dt=100A/μs	--	45	--	ns
Q_{rr}	Reverse Recovery Charge		--	100	--	nC

Characteristics Curve:

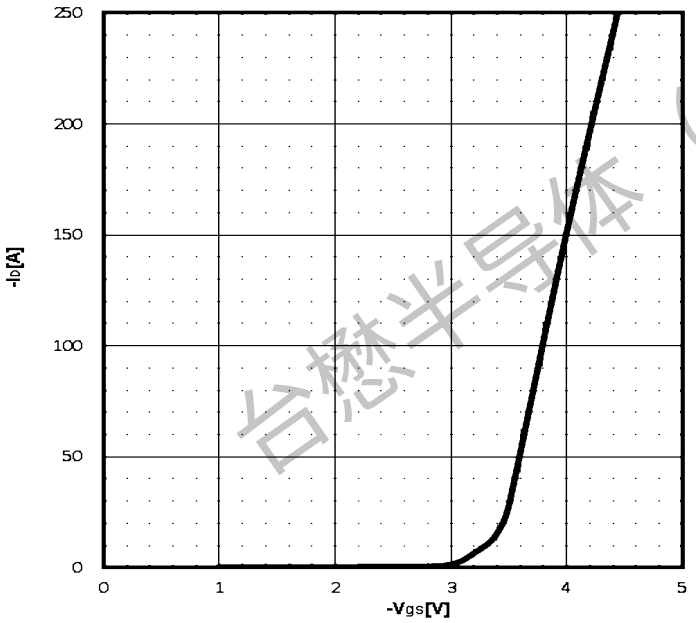
Typ. output characteristics
$I_D=f(V_{DS})$



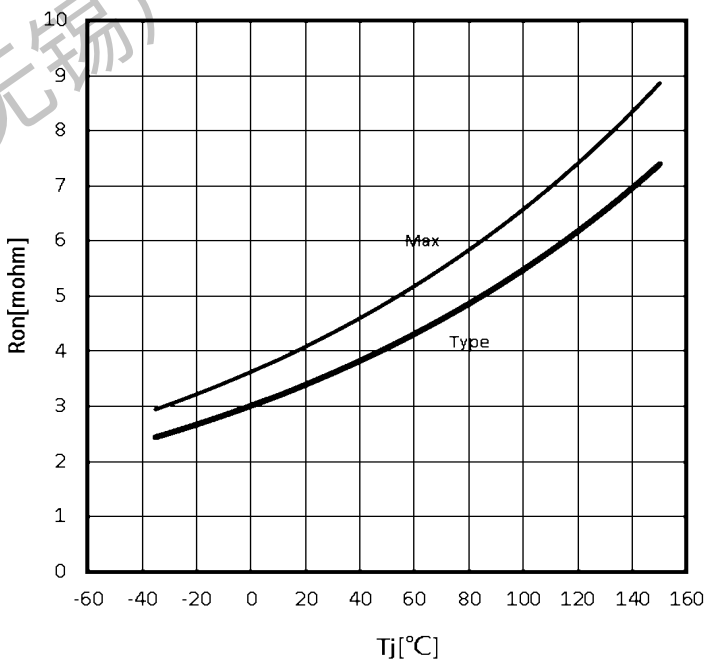
Typ. drain-source on resistance
$R_{DS(on)}=f(I_D)$



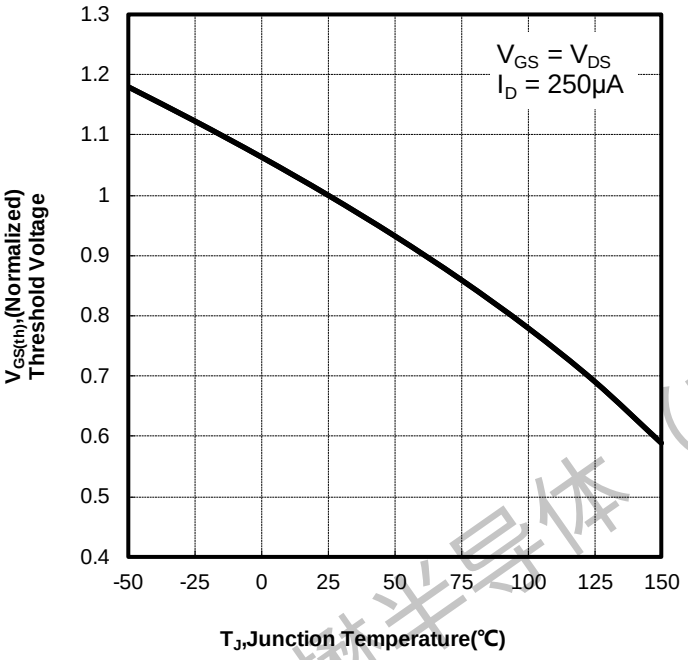
Typ. transfer characteristics
$I_D=f(V_{GS})$



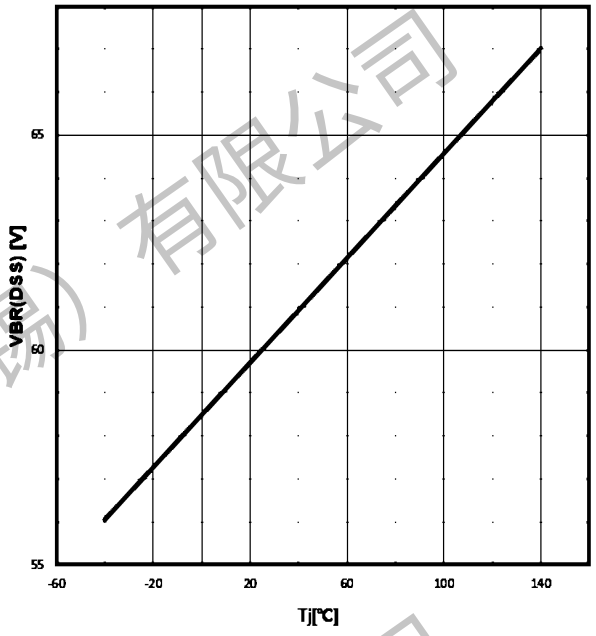
Drain-source on-state resistance
$R_{DS(on)}=f(T_j);I_D=-20A;\ V_{GS}=-10V$



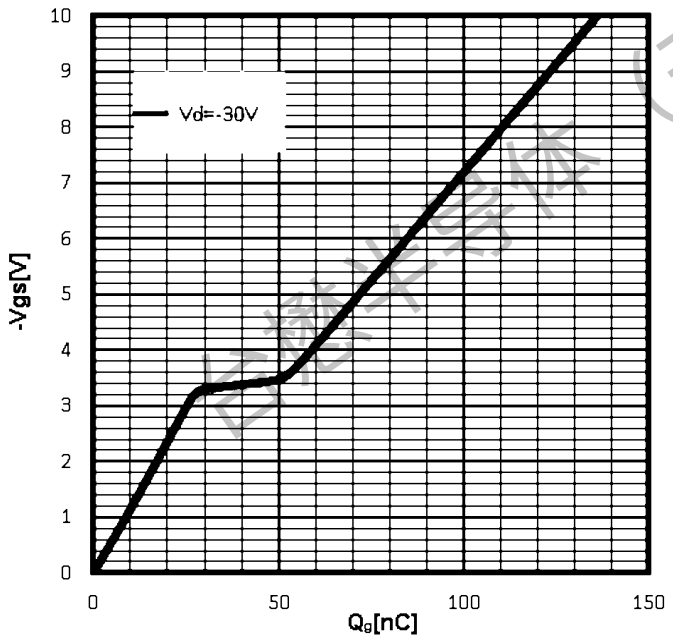
Gate Threshold Voltage
$-V_{TH}=f(T_j)$; I_D=-250uA



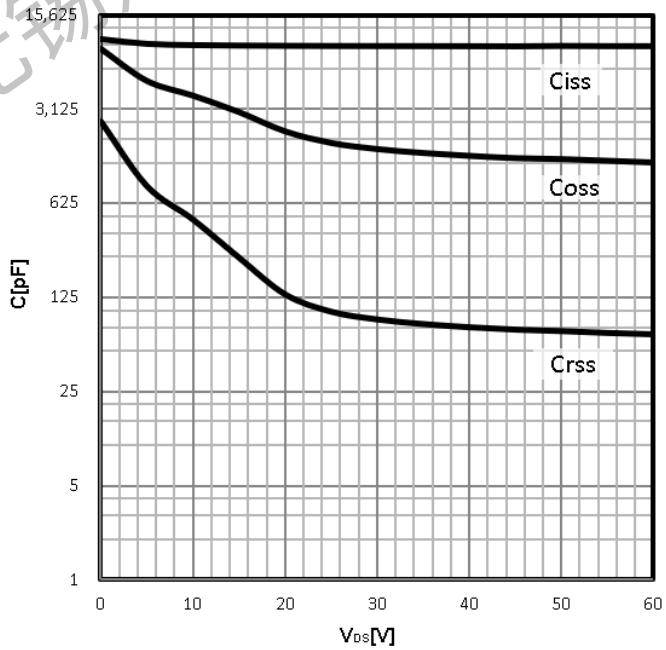
Drain-source breakdown voltage
$V_{BR(DSS)}=f(T_j)$; I_D=-250uA



Typ. gate charge
$V_{GS}=f(Q_{gate})$; I_D=-10A

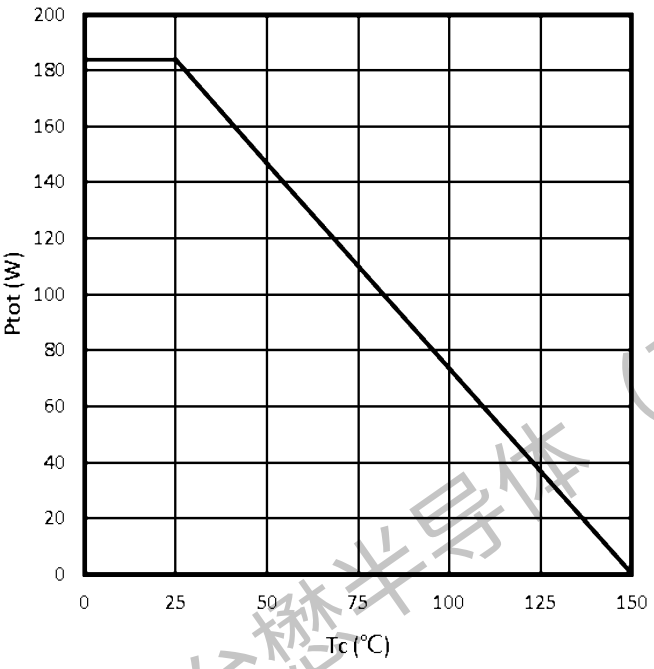


Typ. capacitances
$C=f(V_{DS})$; V_{GS}=0V; f =1MHz



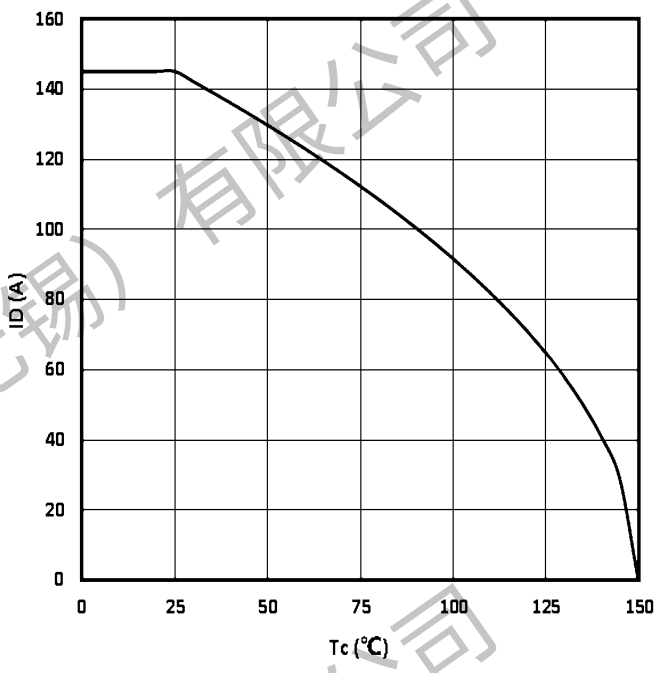
Power Dissipation

$P_{tot}=f(T_C)$



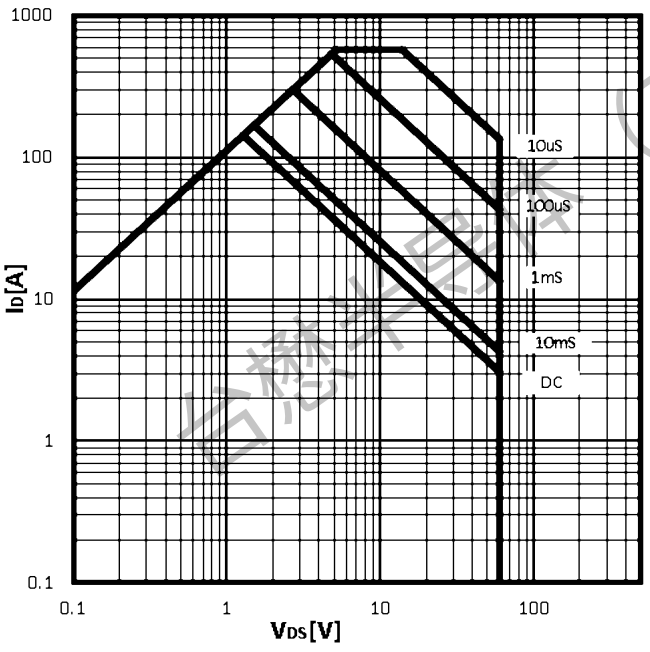
Maximum Drain Current

$-I_D=f(T_C)$



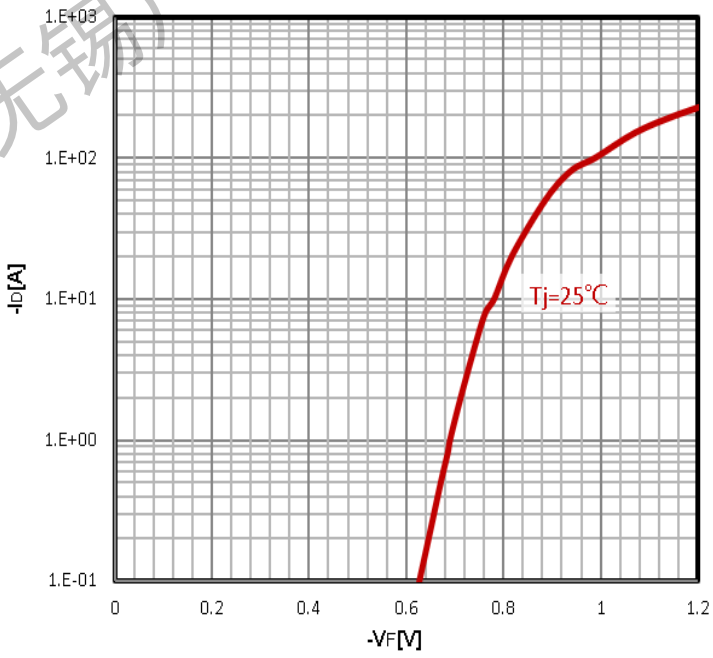
Safe operating area

$I_D=f(V_{DS})$



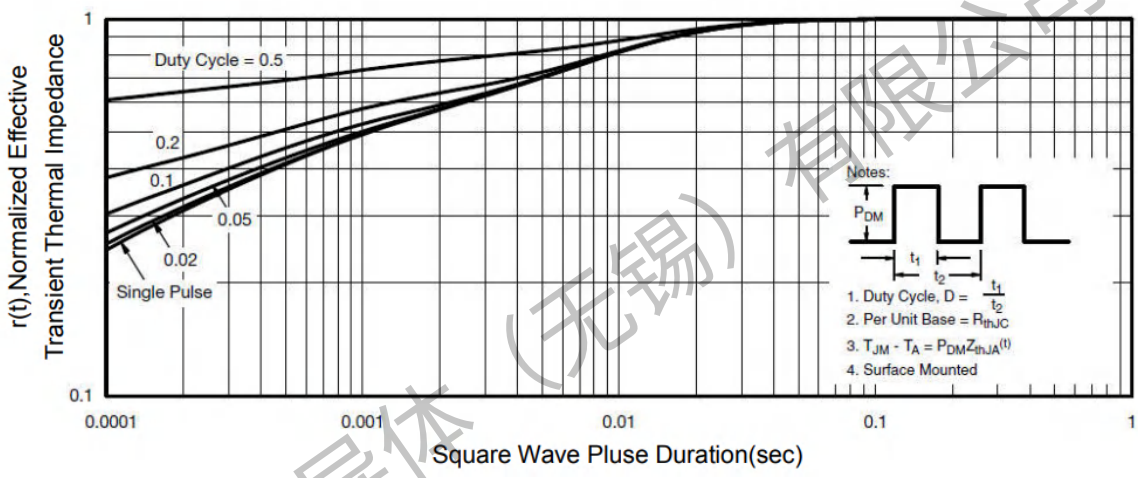
Body Diode Forward Voltage Variation

$-I_F=f(-V_{DS})$

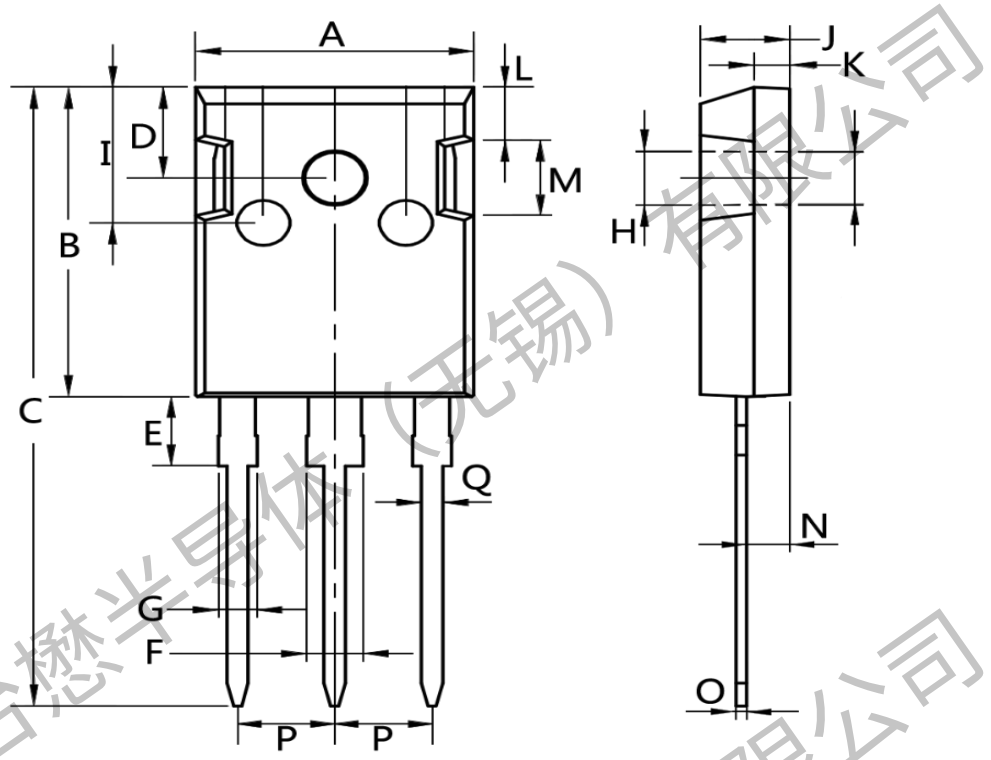


Max. transient thermal impedance

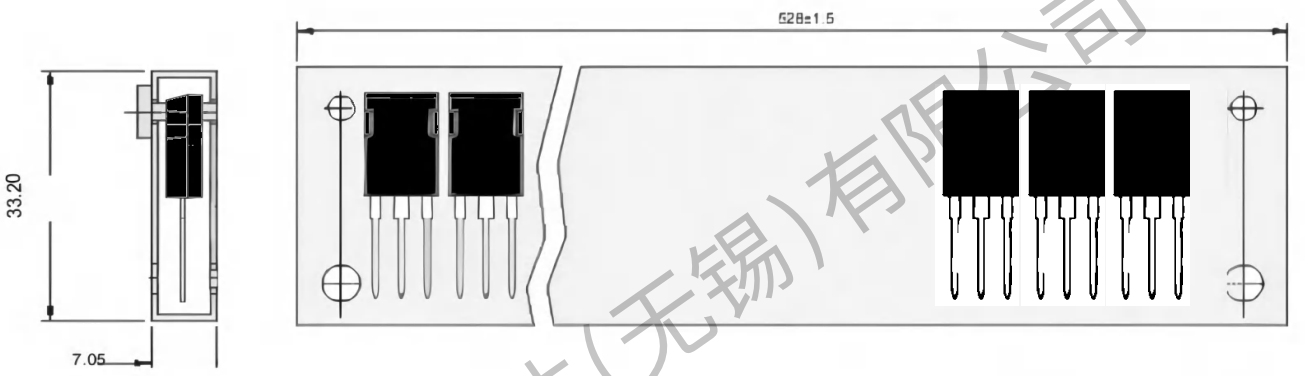
$Z_{thJC}=f(t_p)$



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

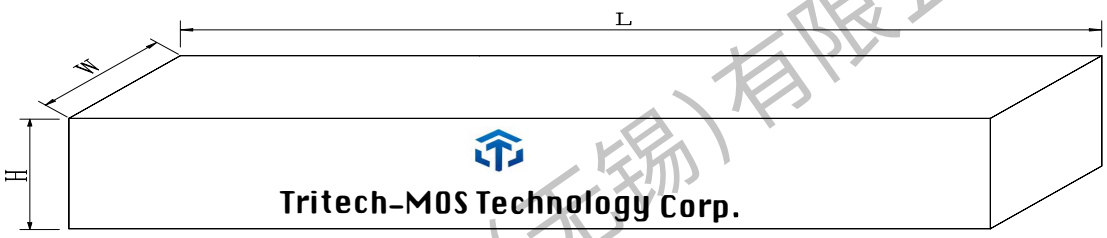


All Dimensions are in mm

1.TO-247-3L Packaging

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

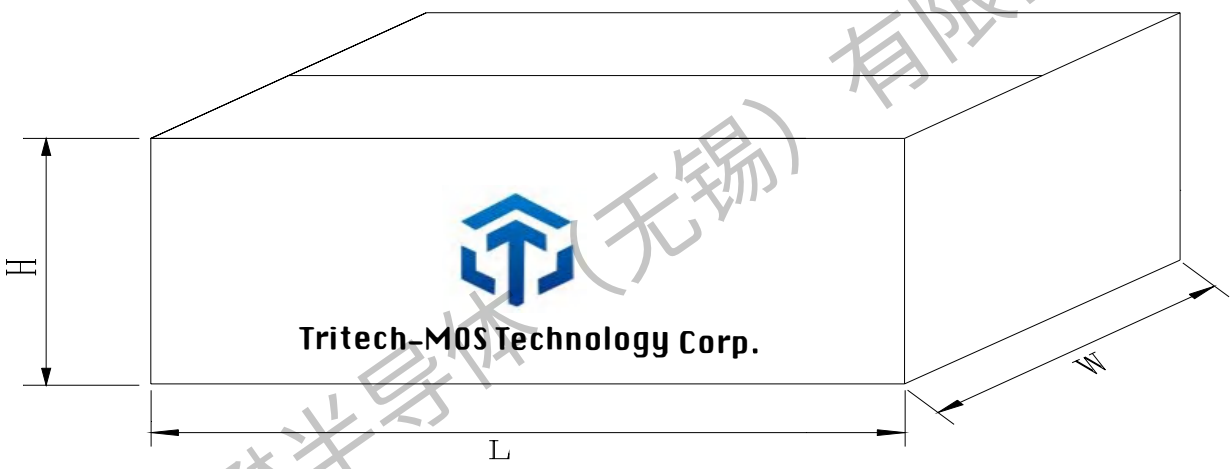
Inner Box



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	