

TM20P10P

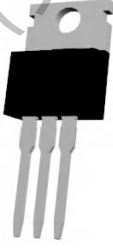
P-Channel Enhancement Mosfet

General Description • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant Applications • Load switch • PWM	General Features $V_{DS} = -100\text{ V}$ $I_D = -20\text{ A}$ $R_{DS(ON)} = 85\text{ m}\Omega(\text{typ.}) @ V_{GS} = -10\text{ V}$ 100% UIS Tested 100% R_g Tested 
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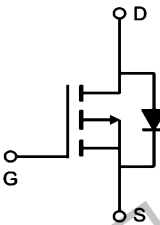


Marking: 20P10

P:TO-220AB



G D S



Absolute Maximum Ratings ($T_c=25^\circ\text{C}$ 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	-20	A
	Continuous Drain Current- $T_c=100^\circ\text{C}$	-12	
I_{DM}	Pulsed Drain Current	-72	
P_D	Power Dissipation	70	W
E_{AS}	Single pulse avalanche energy	--	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.67	$^\circ\text{C/W}$

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Electrical Characteristics: ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =100V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 20	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-1	-2	-3	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =-10V, I _D =16A	---	85	100	m Ω
		V _{GS} =-4.5V, I _D =A	---	---	---	
G _{FS}	Forward Transconductance	V _{DS} =-50V, I _D =-10A	5	---	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	1300	---	pF
C _{oss}	Output Capacitance		---	400	---	
C _{rss}	Reverse Transfer Capacitance		---	240	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =50V, I _D =16A, R _{GEN} =9.1 Ω .V _{GS} =10V	---	16	---	ns
t _r	Rise Time		---	73	---	ns
t _{d(off)}	Turn-Off Delay Time		---	34	---	ns
t _f	Fall Time		---	57	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =80V, I _D =16A	---	61	---	nC
Q _{gs}	Gate-Source Charge		---	14	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	29	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =10A	---	---	-1.2	V
I _s	Diode Forward Current (Note 2)	VD=VG=0V	---	---	-20	A

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Typical Characteristics

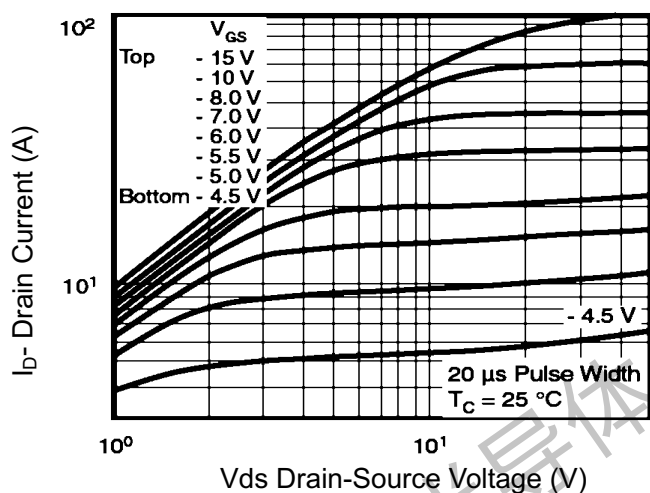


Figure 1 Output Characteristics

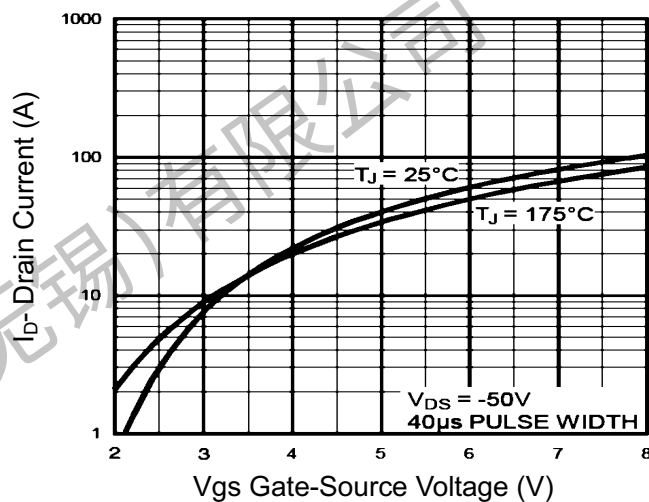


Figure 2 Transfer Characteristics

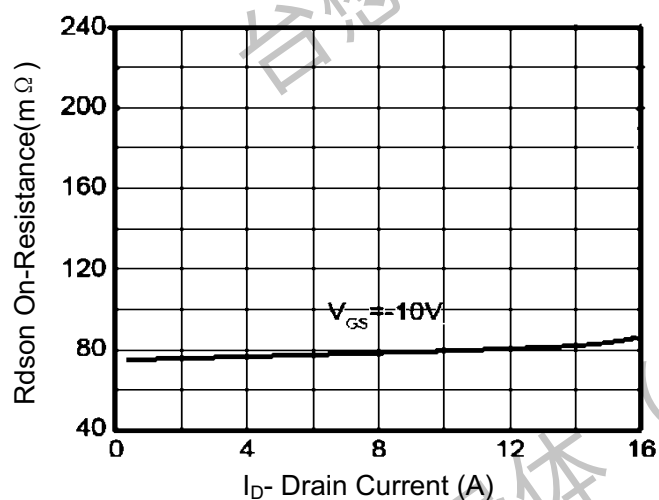


Figure 3 $R_{DS(on)}$ vs. Drain Current

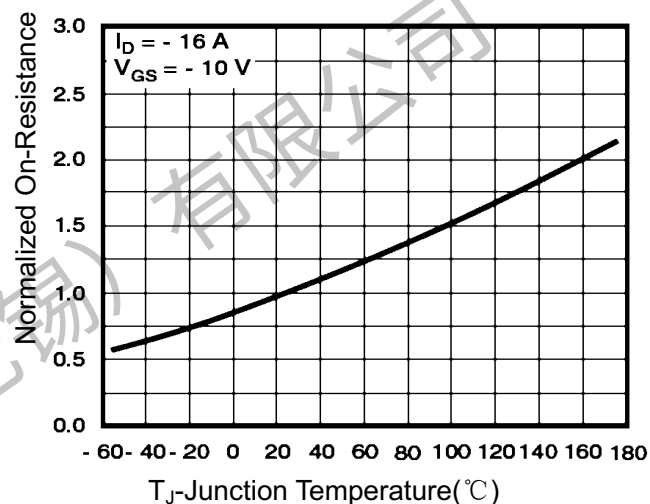
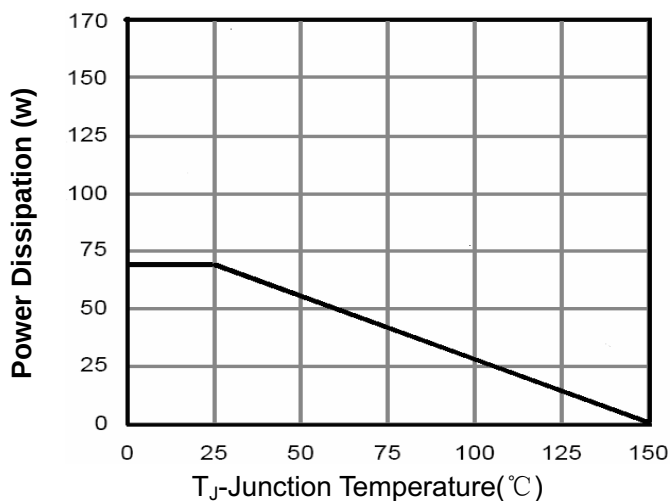
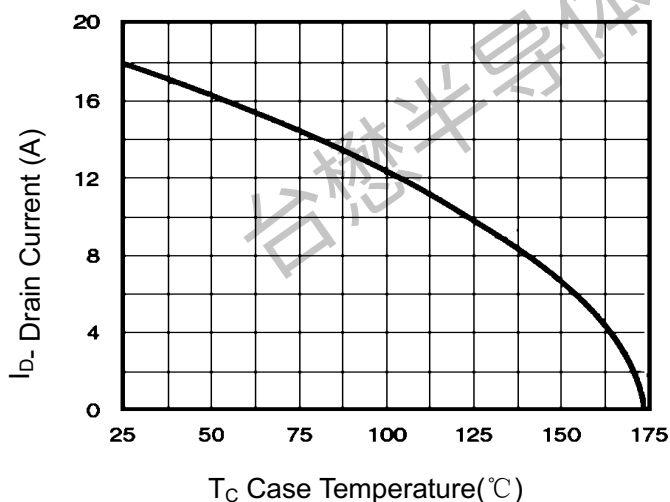
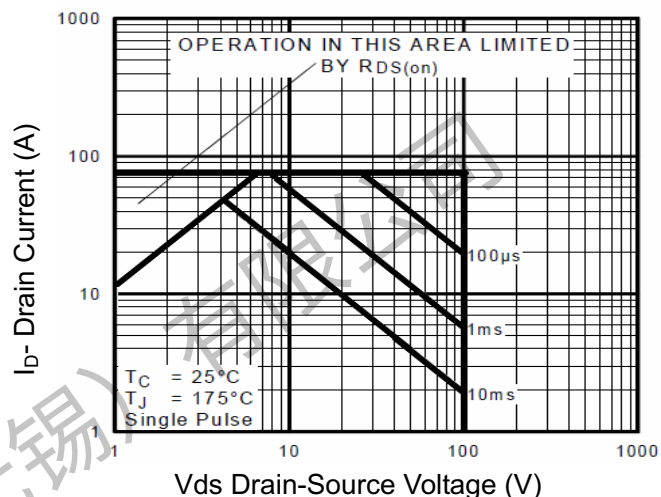
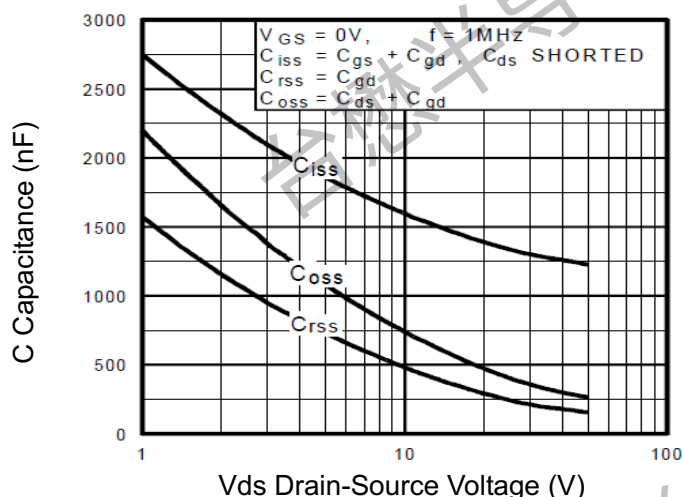
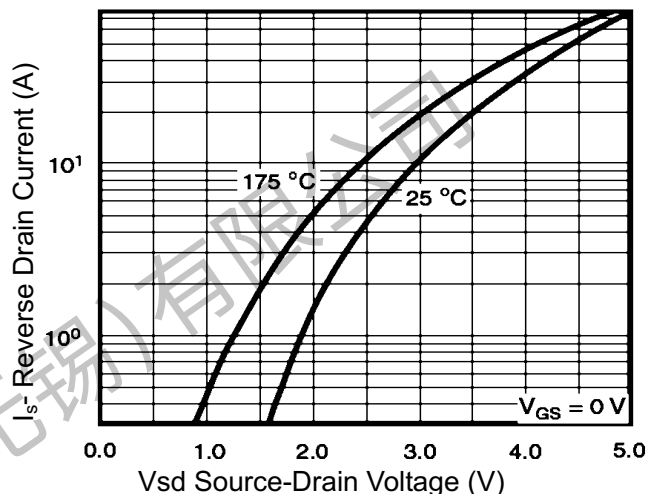
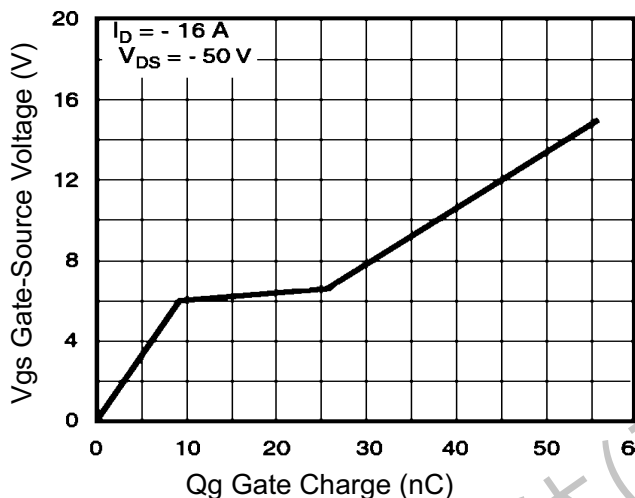


Figure 4 $R_{DS(on)}$ vs. Junction Temperature

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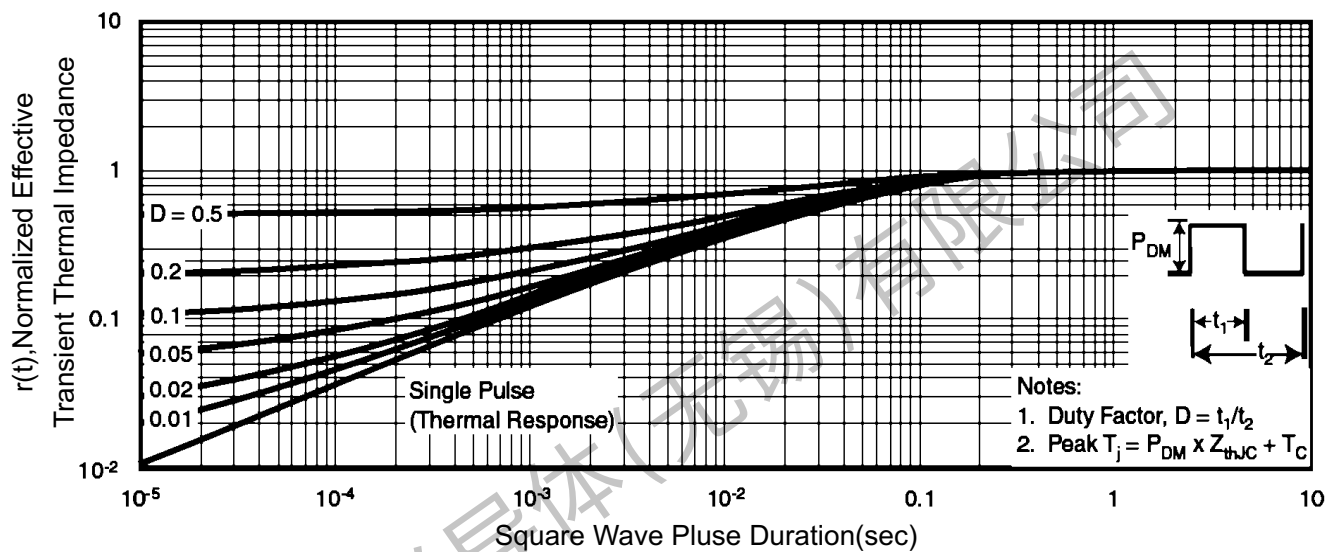
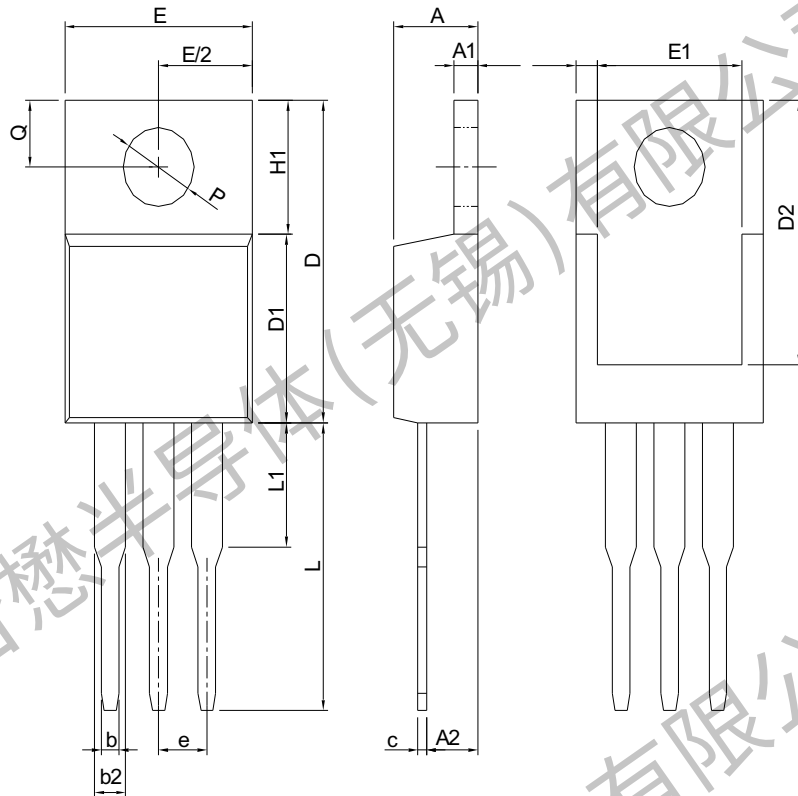


Figure 11 Normalized Maximum Transient Thermal Impedance

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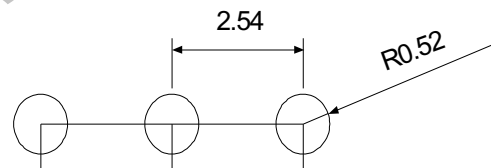
P-Channel Enhancement Mosfet

Package Mechanical Data: TO-220AB



SYMBOL	TO-220			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	3.56	4.83	0.140	0.190
A1	0.51	1.40	0.020	0.055
A2	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b2	1.14	1.78	0.045	0.070
c	0.36	0.61	0.014	0.024
D	14.22	16.51	0.560	0.650
D1	8.38	9.02	0.330	0.355
D2	12.19	13.65	0.480	0.537
E	9.65	10.67	0.380	0.420
E1	6.86	8.89	0.270	0.350
e	2.54 BSC		0.100 BSC	
H1	5.84	6.86	0.230	0.270
L	12.70	14.73	0.500	0.580
L1	-	6.35	-	0.250
P	3.53	4.09	0.139	0.161
Q	2.54	3.43	0.100	0.135

RECOMMENDED LAND PATTERN

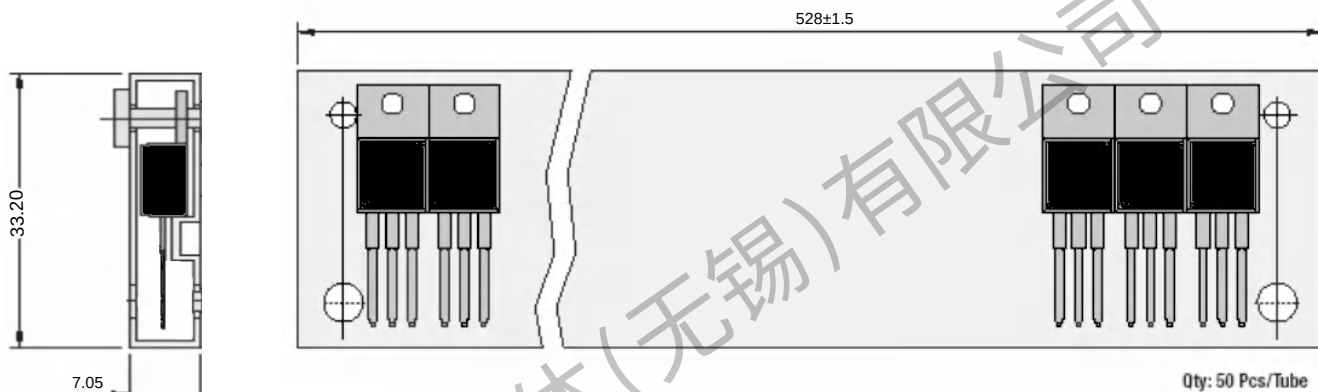


UNIT: mm

Note: Follow JEDEC TO-220 AB.

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All Dimensions are in mm

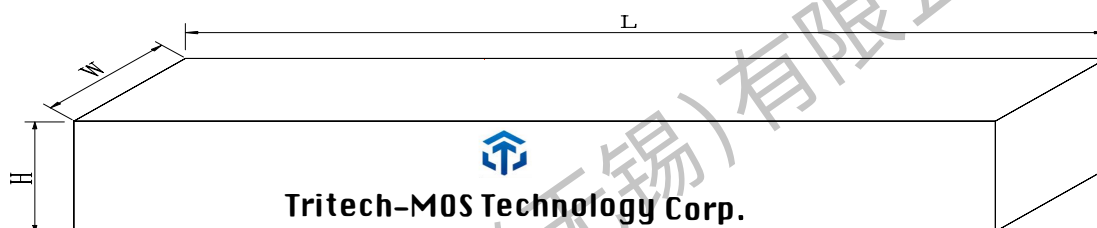
1.TO-220AB Packaging

Package	Packing Form	Quantity		
		Tube	Inner Box [kpcs]	Outbox [kpcs]
TO-220AB	Tube Tape	50	5	1

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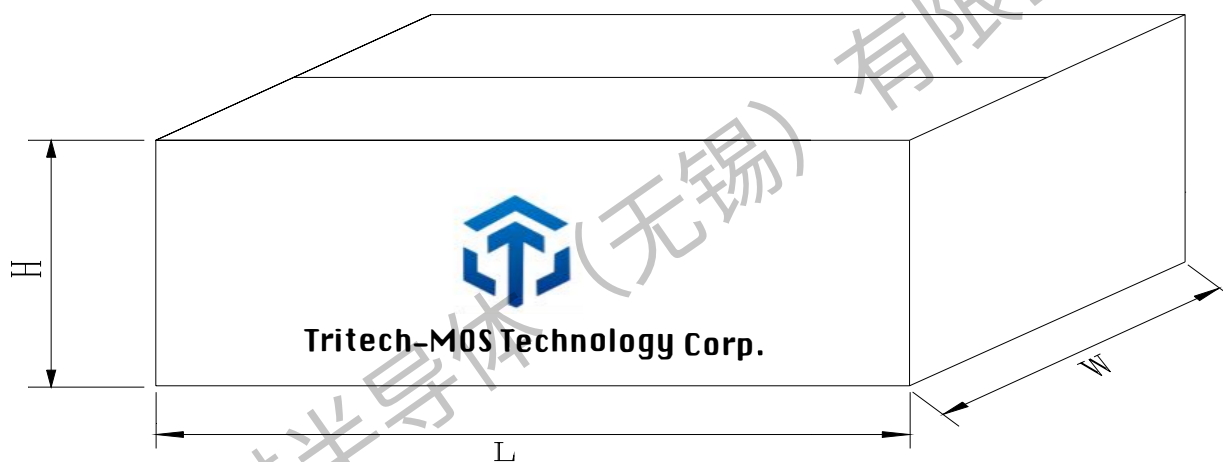
Inner Box



Dimension : 580 (L)×154(W) ×49(H) mm

Quantity : 50 ×20Ea = 1Kpcs

Outer Box



Dimension : 595(L)×285(W) ×185(H) mm

Quantity : 1K×5Ea = 5Kpcs

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Revision history:

Date	Rev	Description	Page
2023.09.13	23.09	Original	