TMG80N10P

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

General Features

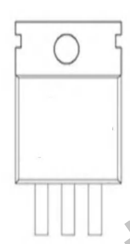
V_{DS} = 100V I_D =80A

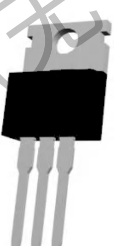
$R_{DS(ON)}$ =7.6mΩ(typ.)@ V_{GS}=10V

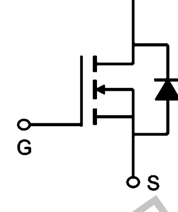
100% UIS Tested

100% R_g Tested

P:TO-220AB







Marking: G80N10

Absolute Maximum Ratings (T_C = 25°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, T_C=25℃	80	A
	Continuous Drain Current, T_C=100℃	52	
$I_{D, pulse}$	Pulsed drain current, T_C=25℃	296	
P_D	Power dissipation, T_C=25℃	100	W
E_{AS}	Single pulsed avalanche energy	110	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Data

Symbol	Parameter	Max	Units
$R_{θJC}$	Thermal Resistance,Junction to Case	1.67	℃/W
$R_{θJA}$	Thermal Resistance,Junction to Ambient	62	

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

Static Characteristics

Symbol	Parameter	Test Conditions	Value Min.	Value Typ.	Value Max.	Units
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	100	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=100V, V_{GS}=0V	--	--	1	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+20V, V_{DS}=0V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-20V, V_{DS}=0V	--	--	-100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.3	2.0	3.0	V
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=10V, I_D=20A	--	7.6	8.5	mΩ

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Value Min.	Value Typ.	Value Max.	Units
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 50V, f = 1.0MHz	--	1568	--	pF
C_{oss}	Output Capacitance		--	451	--	
C_{rss}	Reverse Transfer Capacitance		--	12.9	--	
R_g	Gate resistance	V_{GS}=0V, V_{DS} Open	--	0.48	--	Ω

Resistive Switching Characteristics

Symbol	Parameter	Test Conditions	Value Min.	Value Typ.	Value Max.	Units
$t_{d(ON)}$	Turn-on Delay Time	I_D =10A, V_{DS} = 50V, V_{GS} = 10V, R_G = 4Ω	--	16	--	ns
tr	Rise Time		--	10	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	40	--	
t_f	Fall Time		--	6	--	
Q_g	Total Gate Charge	V_{GS} =10V, V_{DS} = 50V, I_D =10A	--	31.3	--	nC
Q_{gs}	Gate Source Charge		--	3.49	--	
Q_{gd}	Gate Drain Charge		--	7.63	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Value Min.	Value Typ.	Value Max.	Value
I_S	Diode Forward Current	T_C =25 °C	--	--	80	A
V_{SD}	Diode Forward Voltage	I_S=10A, V_{GS}=0V	--	--	1.2	V
t_{rr}	Reverse Recovery time	I_S=10A, V_{DD}=50V, dI/dt=100A/μs	--	103	--	ns
Q_{rr}	Reverse Recovery Charge		--	187	--	nC

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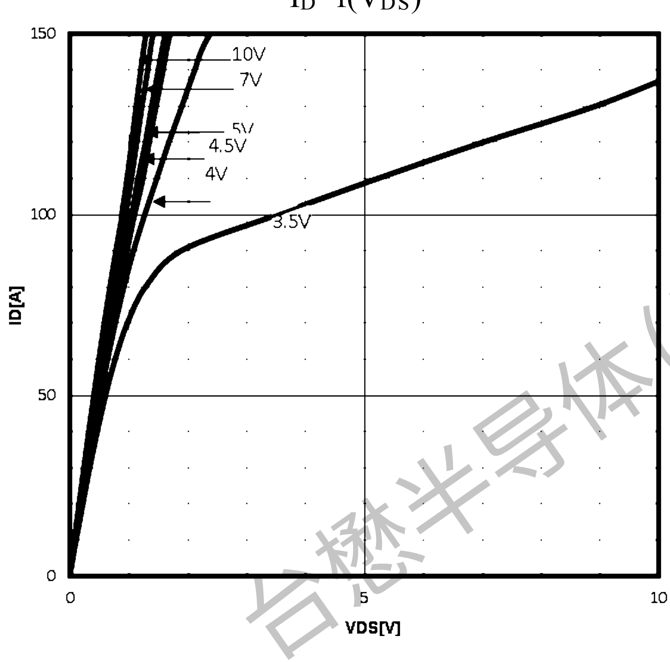
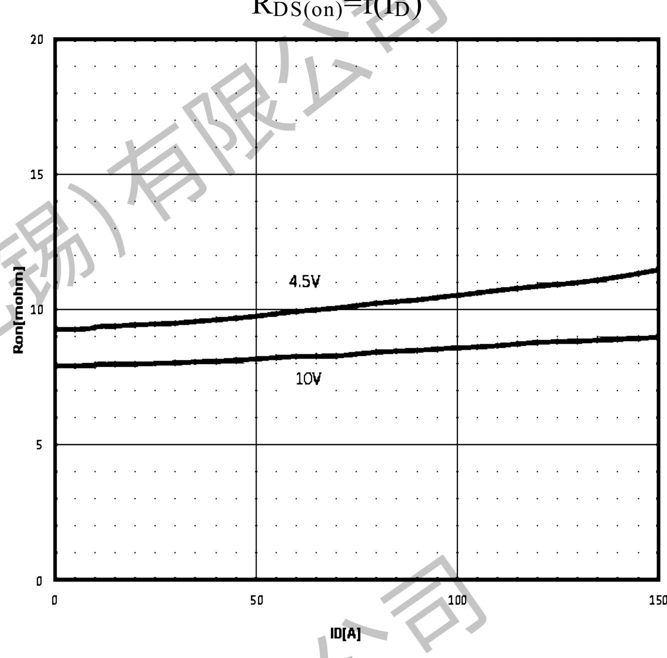
Characteristics Curve：

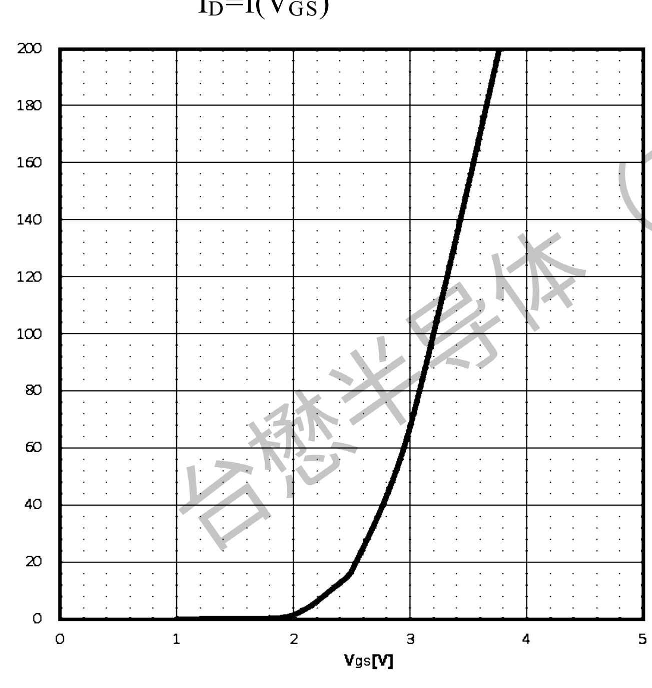
Typ. output characteristics
$I_D=f(V_{DS})$



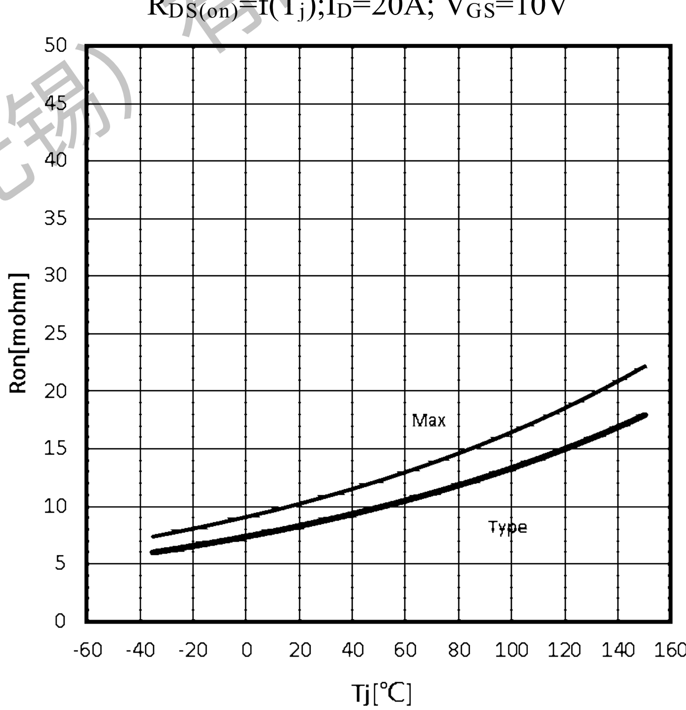
Typ. drain-source on resistance
$R_{DS(on)}=f(I_D)$



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



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



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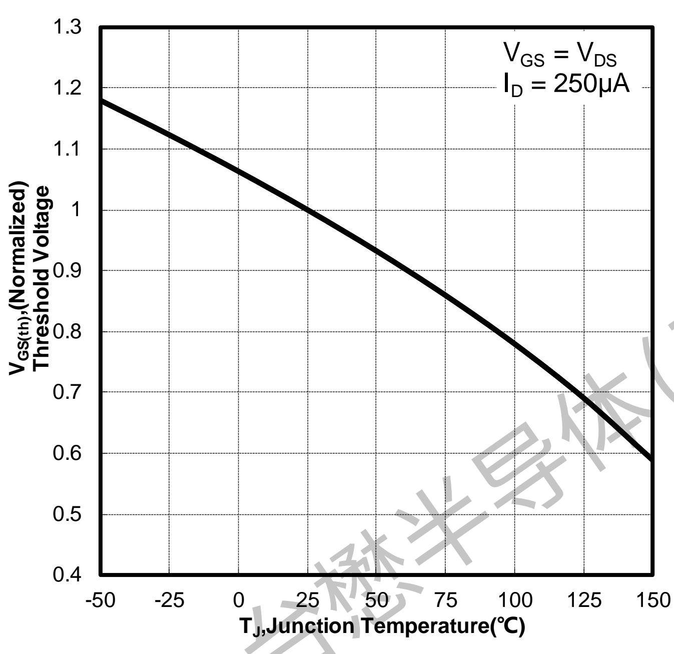
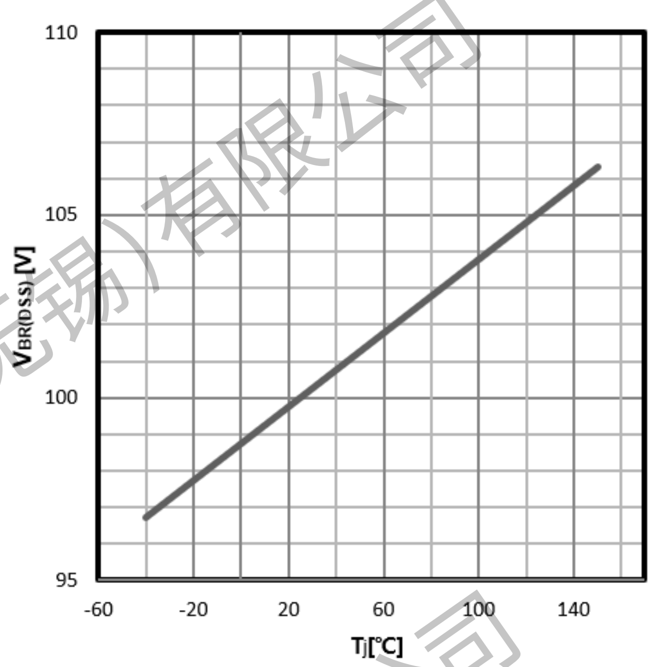
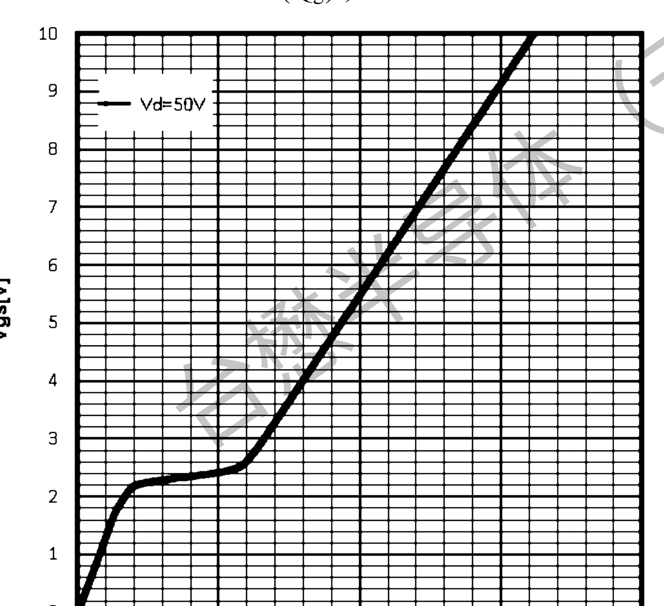
Gate Threshold Voltage
$V_{TH}=f(T_j)$; $I_D=250uA$



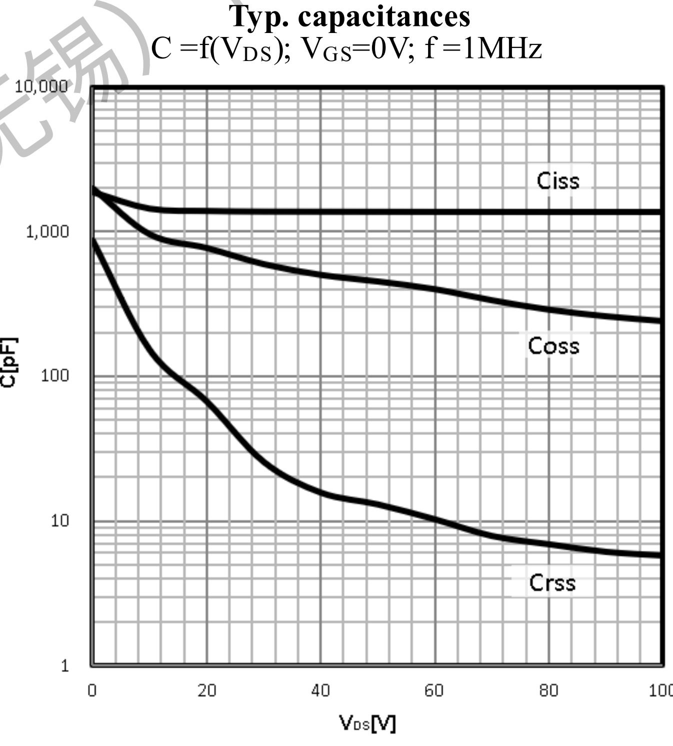
Drain-source breakdown voltage
$V_{BR(DSS)}=f(T_j)$; $I_D=250uA$



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



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



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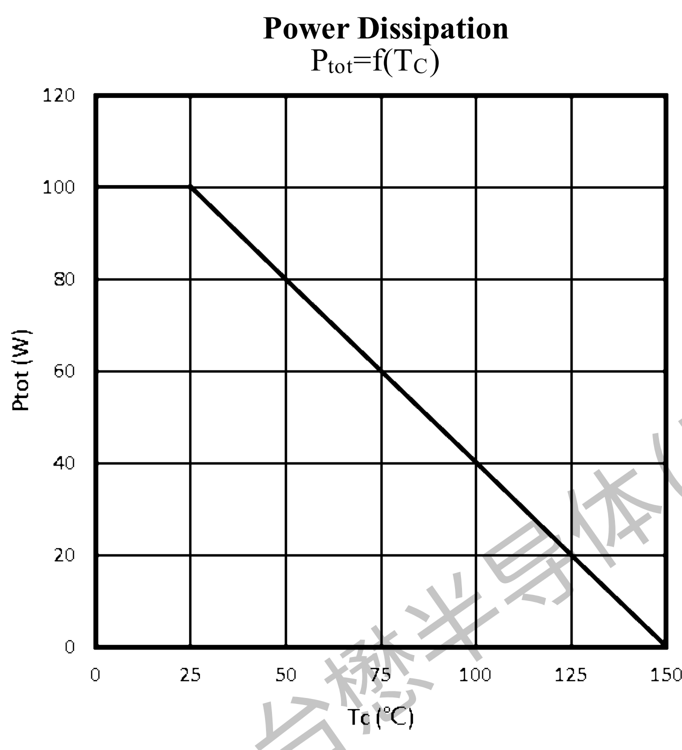
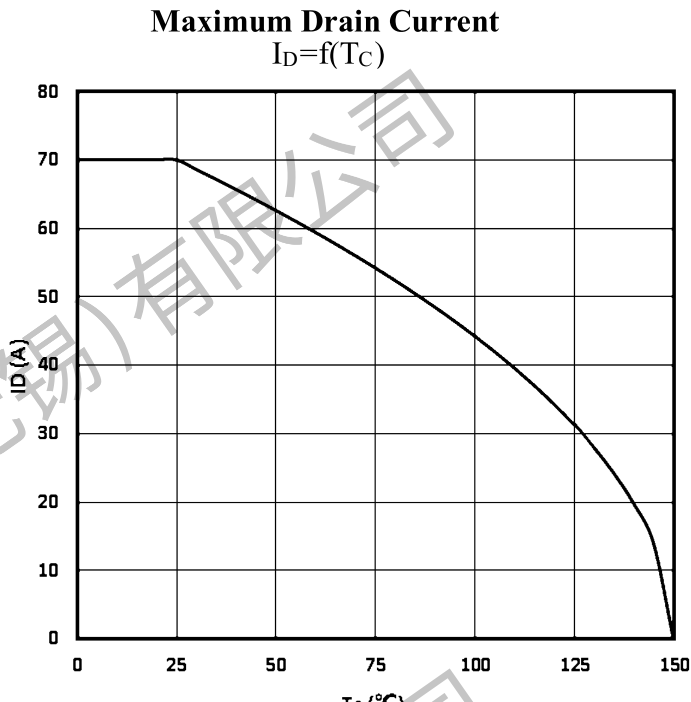
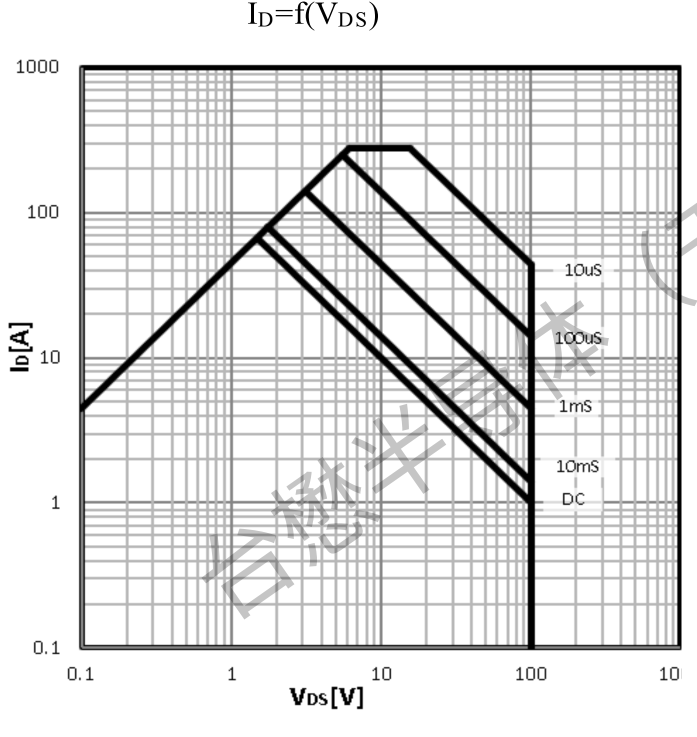
Power Dissipation
$P_{tot}=f(T_C)$



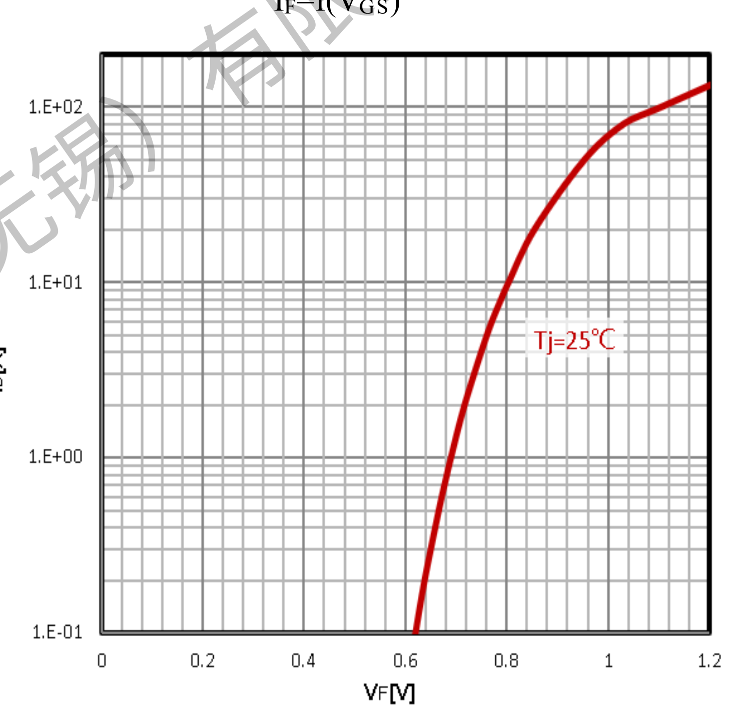
Maximum Drain Current
$I_D=f(T_C)$



Safe operating area
$I_D=f(V_{DS})$



Body Diode Forward Voltage Variation
$I_F=f(V_{GS})$



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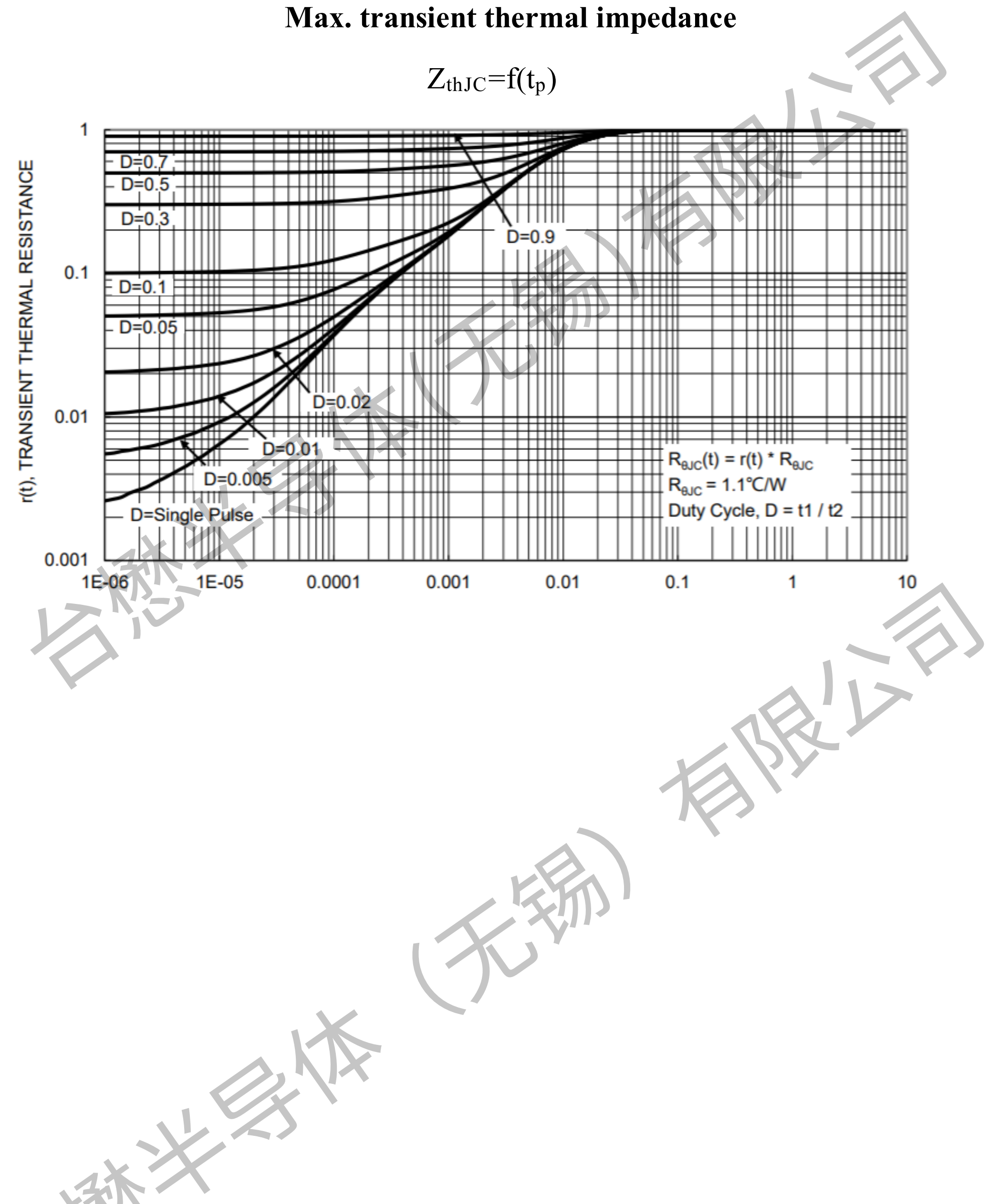

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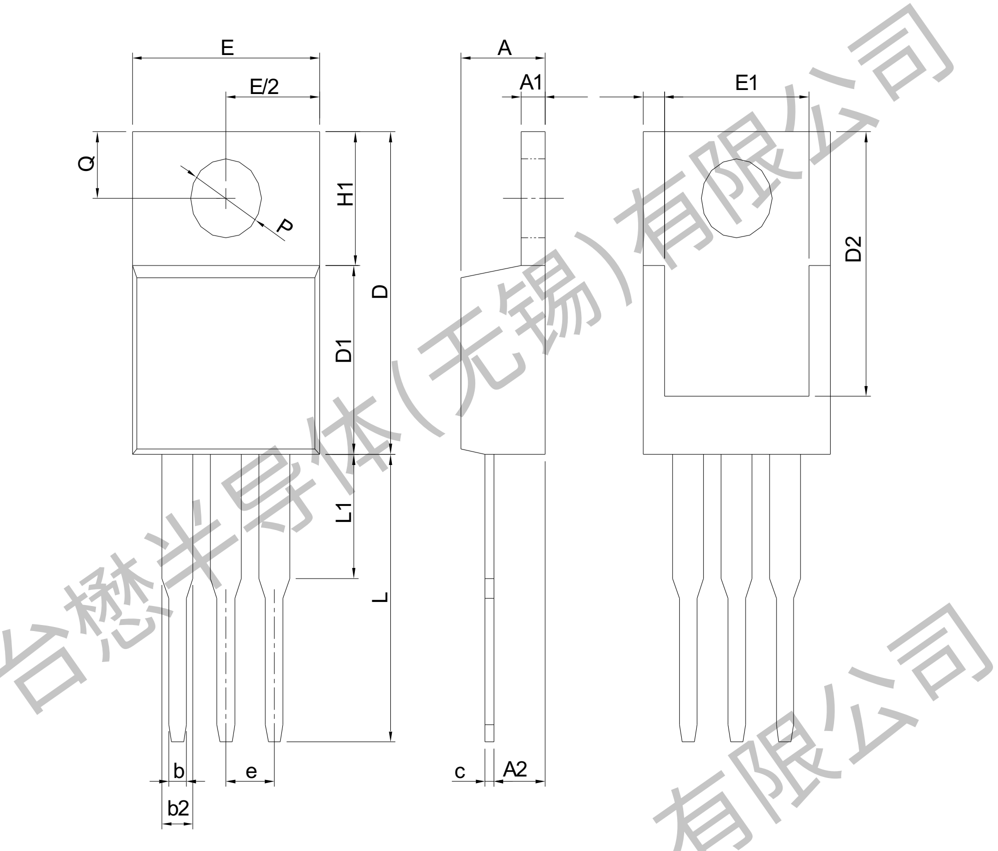
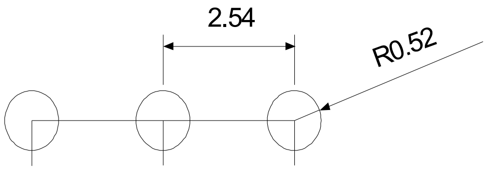
Package Mechanical Data: TO-220AB



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

Note: Follow JEDEC TO-220 AB.

RECOMMENDED LAND PATTERN



UNIT: mm

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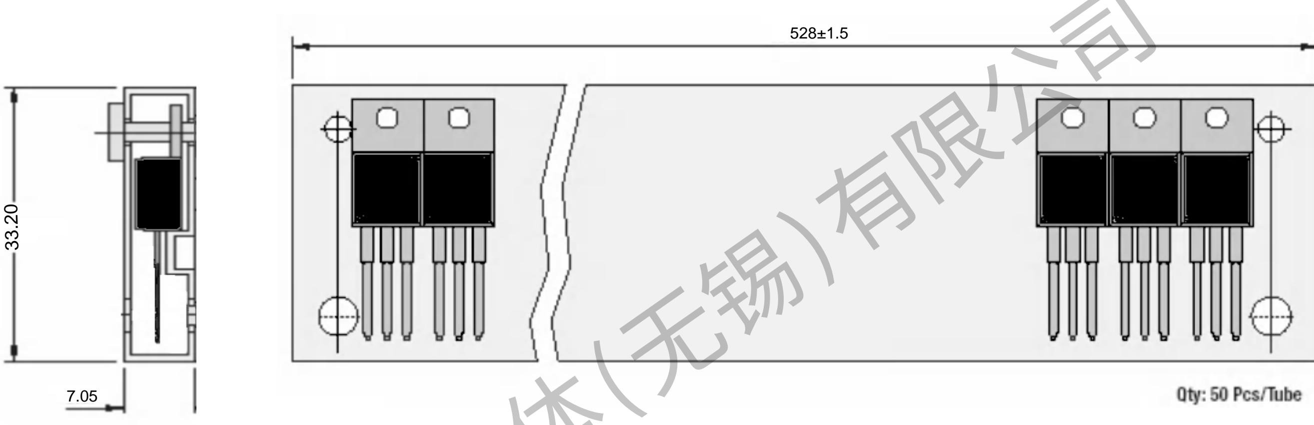

All Dimensions are in mm

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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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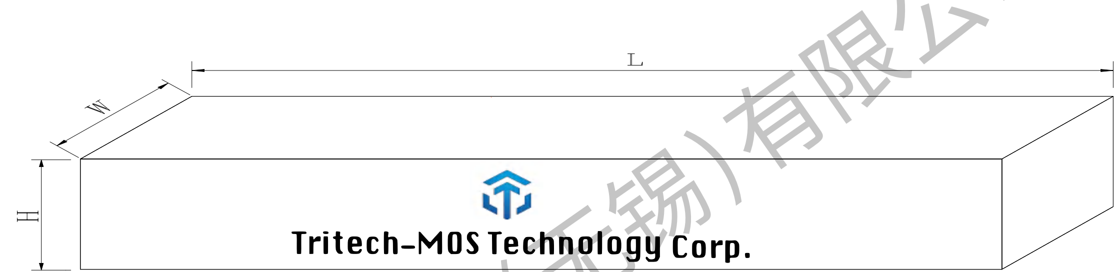
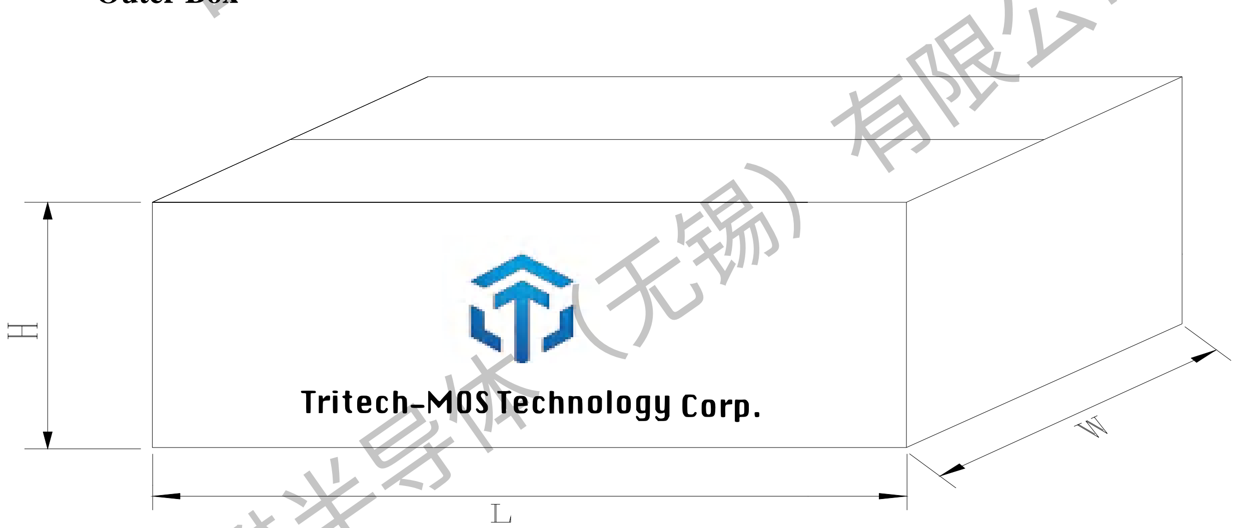
Inner Box



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
2023.07.10	23.07	Original	