TMG100N10LP N-Channel Enhancement Mosfet

General Description

- Low R DS(ON)
- RoHS and Halogen-Free Compliant

Applications

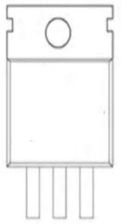
- Load switch
- PWM

General Features

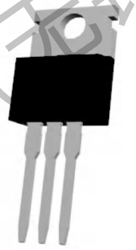
V_{DS} =100V I_D = 100A
$R_{DS(ON)}$= 5.6 mΩ(typ.) @ V_{GS}= 10V

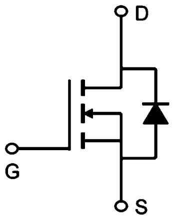
100% UIS Tested
100% R_g Tested

P:TO-220AB



Marking: G100N10





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 Curren[2]	100	A
	Continuous Drain Current-T_C=100℃[2]	60	
I_{DM}	Pulsed Drain Current[3]	400	
P_D	Power Dissipation	139	W
E_{AS}	Single pulse avalanche energy[1]	156	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

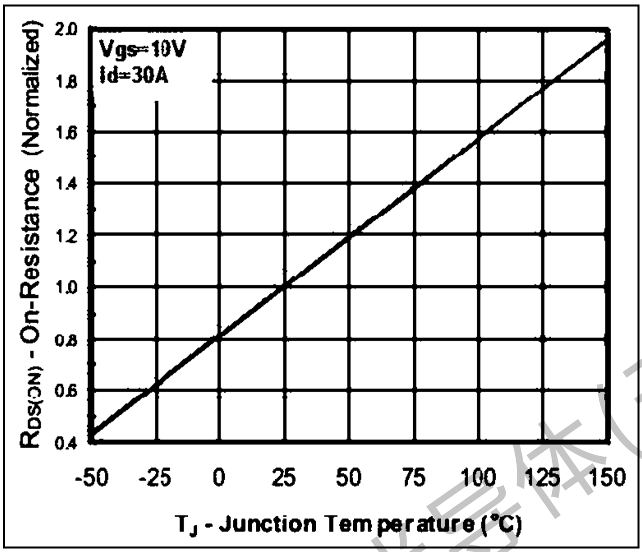
Symbol	Parameter	Max	Units
$R_{θJC}$	Thermal Resistance,Junction to Case	15	℃/W
$R_{θJA}$	Thermal Resistance,Junction to Ambient	62	℃/W

Electrical Characteristics： (T_C=25℃ unless otherwise noted)

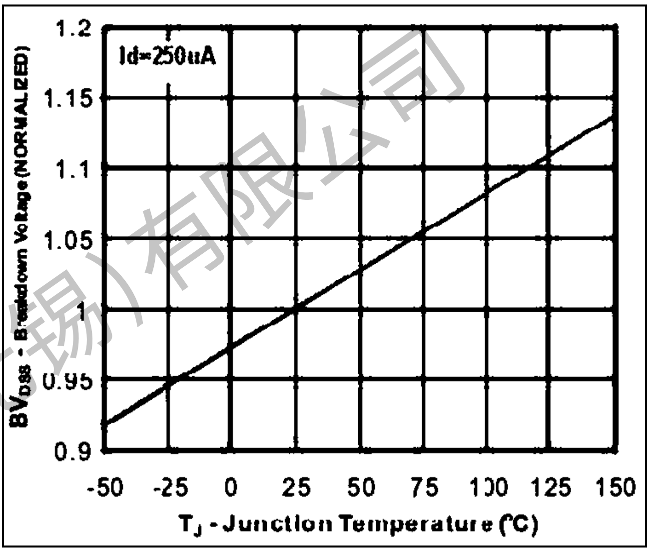
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=100V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.0	1.5	2.0	V
$R_{DS(ON)}$	Drain-Source On Resistance[3]	V_{GS}=10V,I_D=30A	---	5.6	7.5	mΩ
		V_{GS}=4.5V,I_D=20A	---	7.8	9.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	2520	---	pF
C_{oss}	Output Capacitance		---	1254	---	
C_{rss}	Reverse Transfer Capacitance		---	47	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=50V, I_D=20A, R_{ENG}=3Ω,V_{GS}=10V	---	11.4	---	ns
t_r	Rise Time		---	15.75	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	31.35	---	ns
t_f	Fall Time		---	21	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=50V, I_D=20A	---	42	---	nc
Q_{gs}	Gate-Source Charge		---	8.5	---	nc
Q_{gd}	Gate-Drain "Miller" Charge		---	7.35	---	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=30A	---	---	1.2	V
I_S	Continuous Drain Curren	V_D= V_G =0	---	---	100	A
I_{SM}	Pulsed Drain Current		---	---	400	A
Trr	Reverse Recovery Time	I_F=20A,T_J=25℃	---	55	---	ns
Qrr	Reverse Recovery Charge	dI/dt=100A/us	---	70	---	nc

Notes:

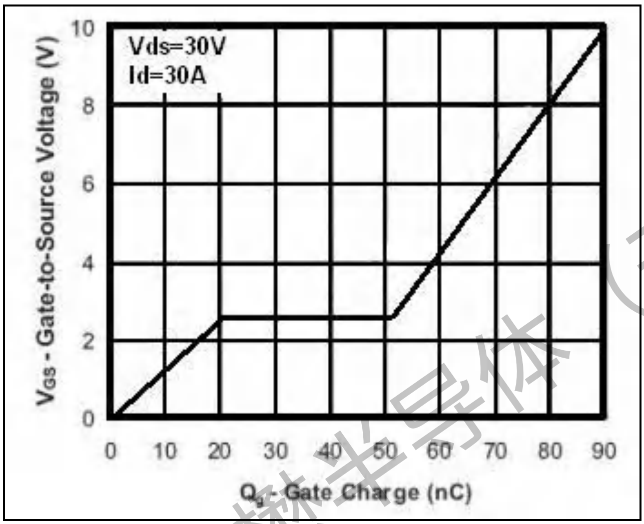
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25C, V_{DD}=50V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=25A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.



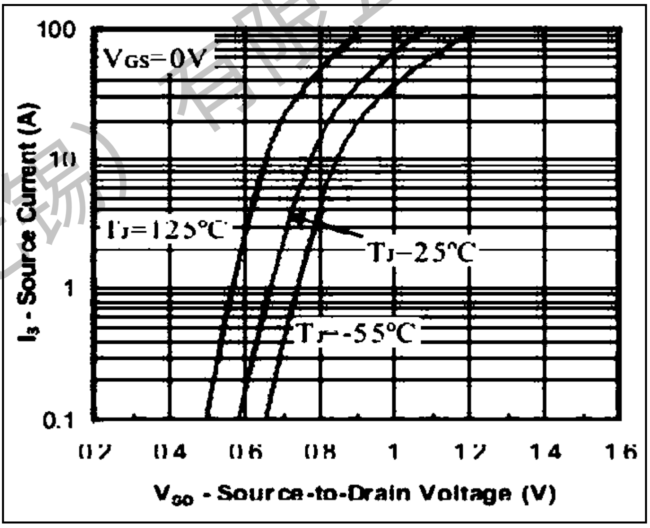
On Resistance vs. Junction Temperature



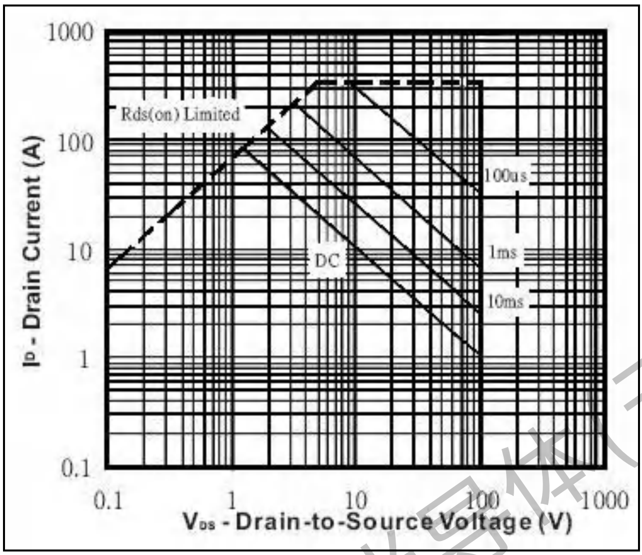
Breakdown Voltage vs. Junction Temperature



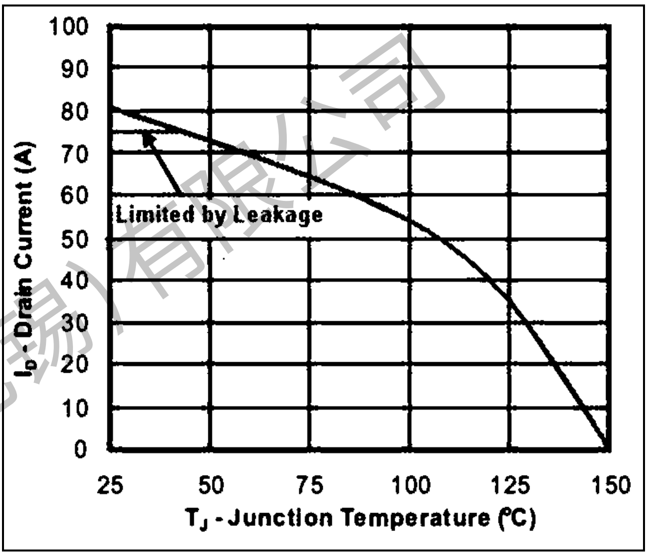
Gate Charge



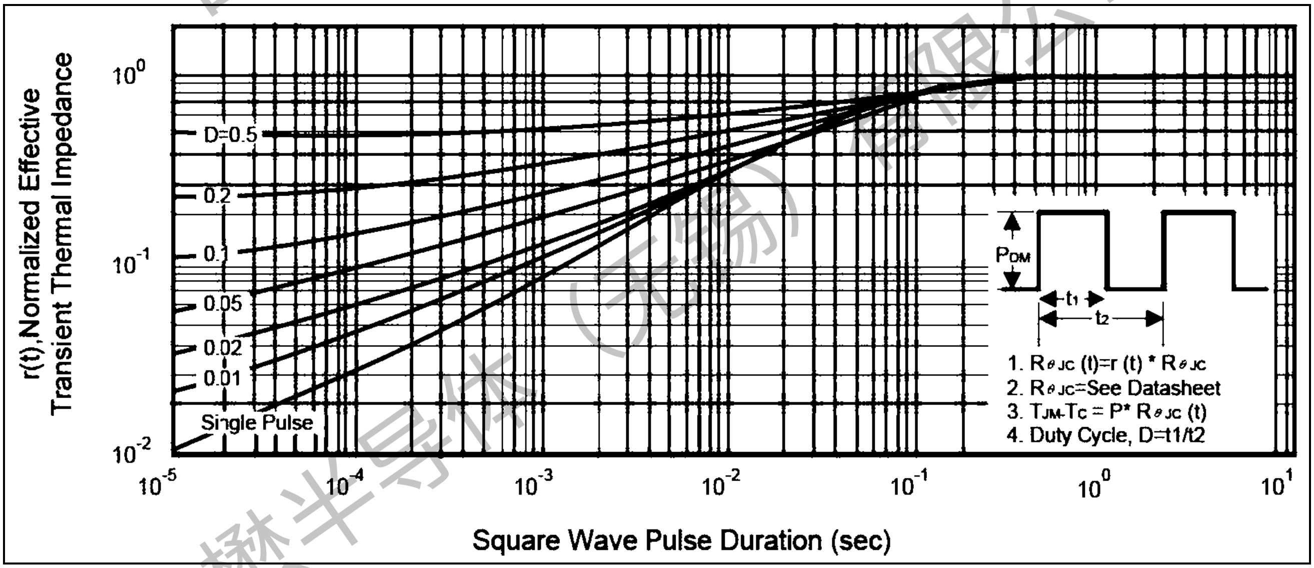
Source-Drain Diode Forward Voltage



Safe Operation Area

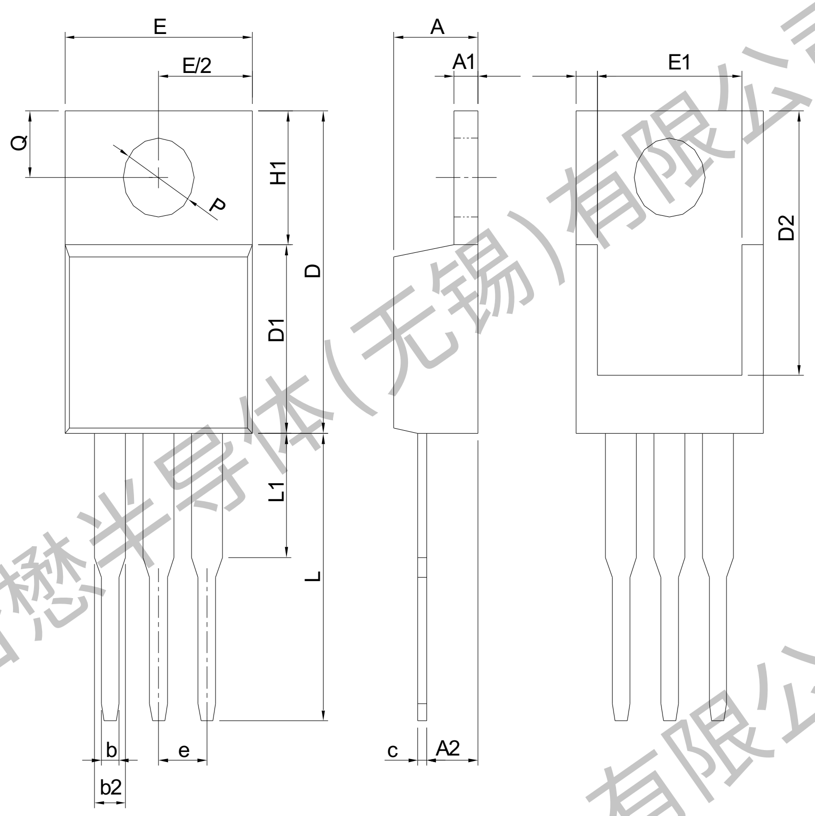


Max Drain Current vs. Junction



Transient Thermal Impedance Curve

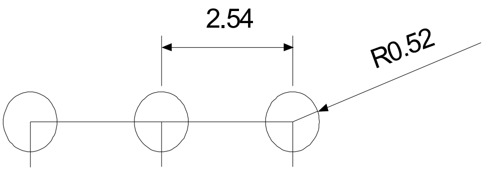
Package Mechanical Data: TO-220AB



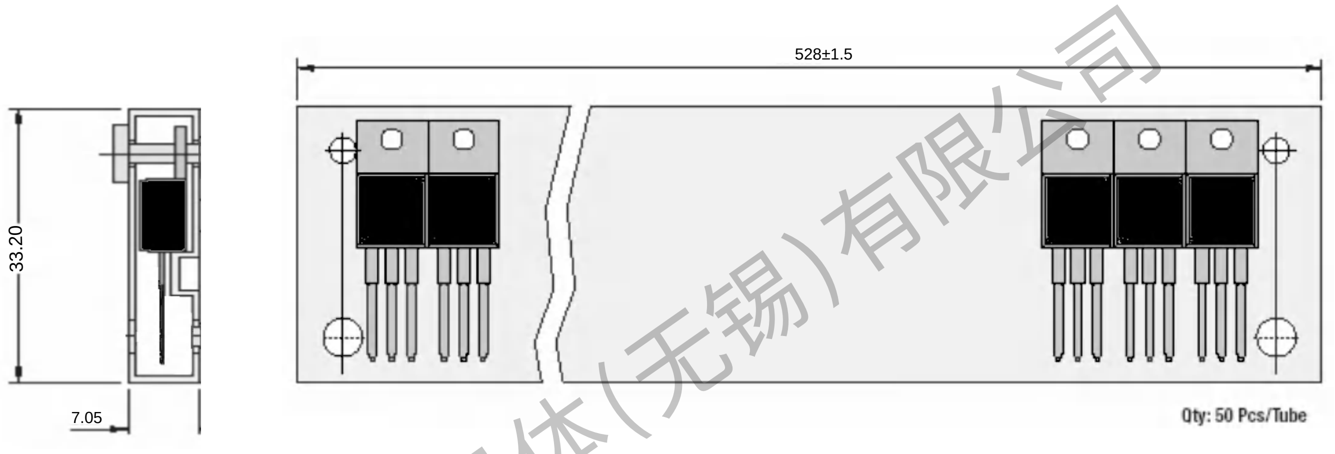
SYMBOL	TO-220			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	3.56	4.83	0.140	0.190
A1	0.51	1.40	0.020	0.055
A2	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b2	1.14	1.78	0.045	0.070
c	0.36	0.61	0.014	0.024
D	14.22	16.51	0.560	0.650
D1	8.38	9.02	0.330	0.355
D2	12.19	13.65	0.480	0.537
E	9.65	10.67	0.380	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



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

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
2023.09.02	23.09	Original	