TMG300N10HMP N-Channel Enhancement Mosfet

General Description
- Low RDS(ON)
- RoHS and Halogen-Free Compliant

Applications
- Load switch
- PWM

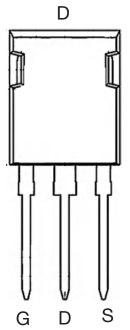
General Features

V_{DS} =100V I_D = 300A

$R_{DS(ON)}$= 2.0 mΩ(typ.) @ V_{GS}= 10V

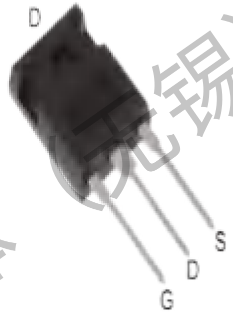
100% UIS Tested
100% R_g Tested

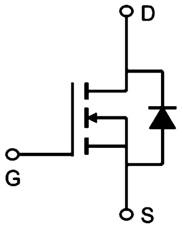
Green Product



Marking: G300N10

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℃	300	A
	Continuous Drain Current-T_C=100℃	163	
I_{DM}	Pulsed Drain Current	1028	
EAS	Single Pulse Avalanche Energy	583	mJ
AS	Avalanche Current	54	A
P_D	Power Dissipation	379	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	0.33	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient	59	

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[2]	V_{GS}=10V , I_D=20A	---	2.0	2.6	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	3	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℃	---	---	100	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	76	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.3	---	Ω
Q_g	Total Gate Charge	V_{DS}=50V , V_{GS}=10V , I_D=20A	---	150	---	nC
Q_{gs}	Gate-Source Charge		---	32.5	---	
Q_{gd}	Gate-Drain Charge		---	49	---	
$T_{d(on)}$	Turn-On Delay Time	VGS=10V, VDD=50V, RG=3Ω, ID=20A	---	27	---	ns
T_r	Rise Time		---	78.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	110	---	
T_f	Fall Time		---	86	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , f=1MHz	---	9030	---	pF
C_{oss}	Output Capacitance		---	1505	---	
C_{rss}	Reverse Transfer Capacitance		---	40	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	300	A
I_{SM}	Pulsed Source Current[2,4]		---	---	1000	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V
t_{rr}	Reverse Recovery Time	IF = 20A, di/dt =100A/μs	---	90	---	nS
Q_{rr}	Reverse Recovery Charge		---	175	---	nC

Typical Characteristics

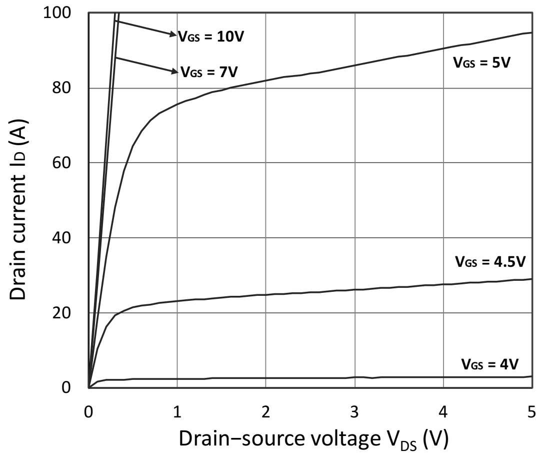


Figure 1. Output Characteristics

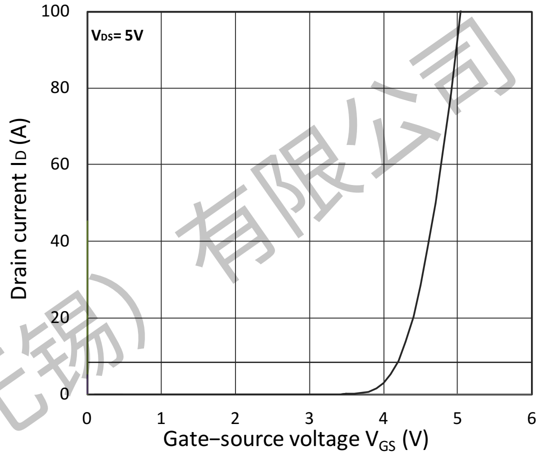


Figure 2. Transfer Characteristics

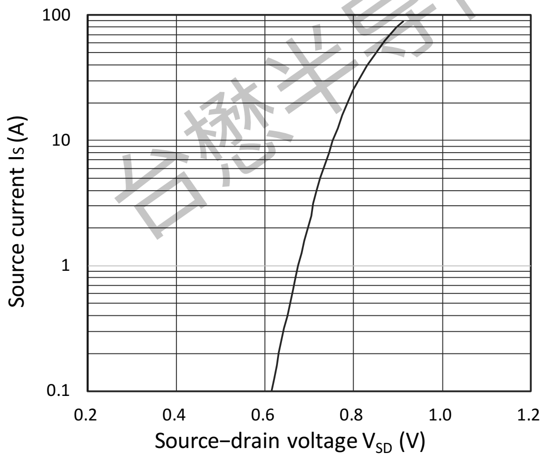


Figure 3. Forward Characteristics of Reverse

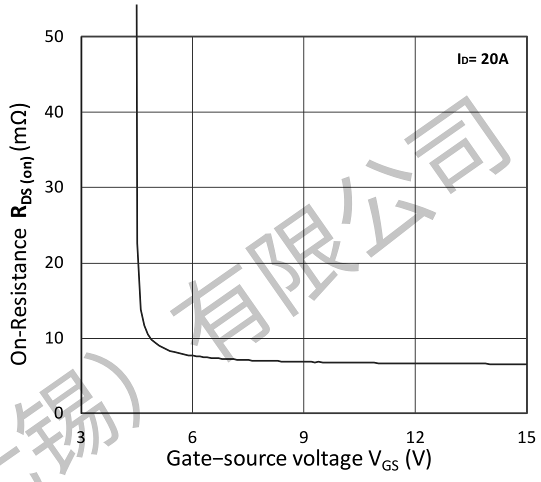


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

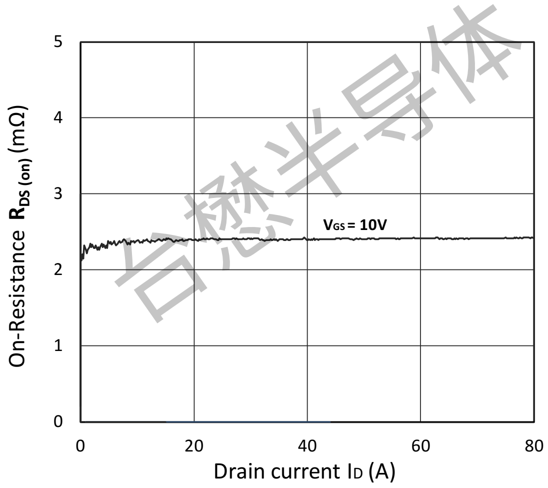


Figure 5. $R_{DS(ON)}$ vs. I_D

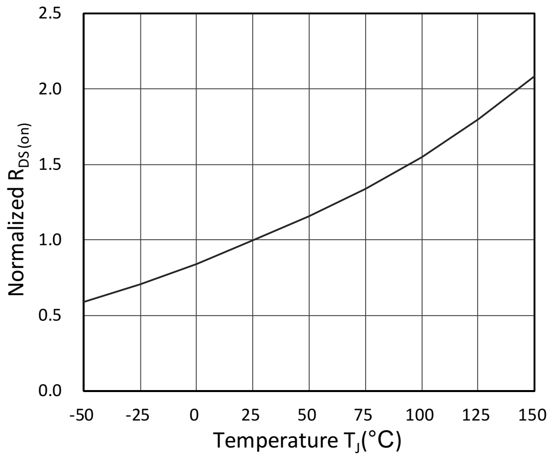


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

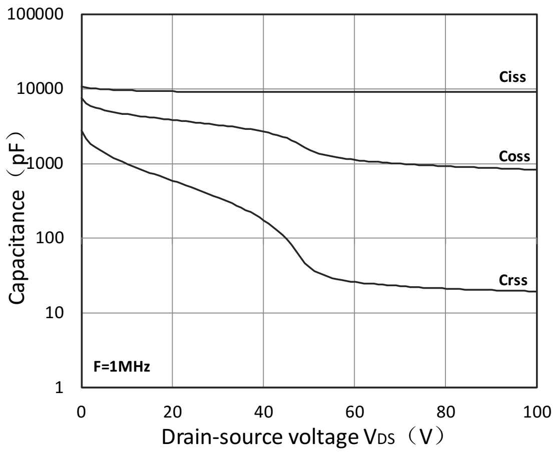


Figure 7. Capacitance Characteristics

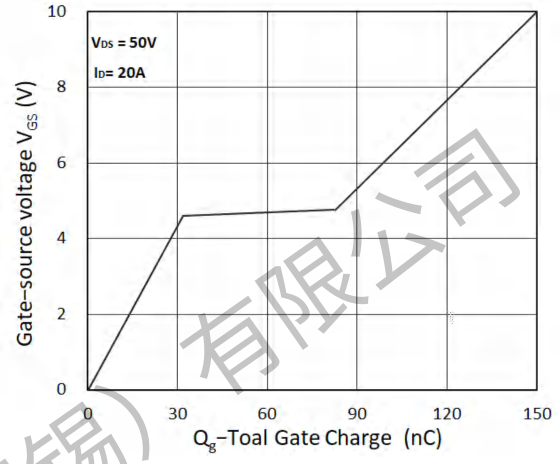


Figure 8. Gate Charge Characteristics

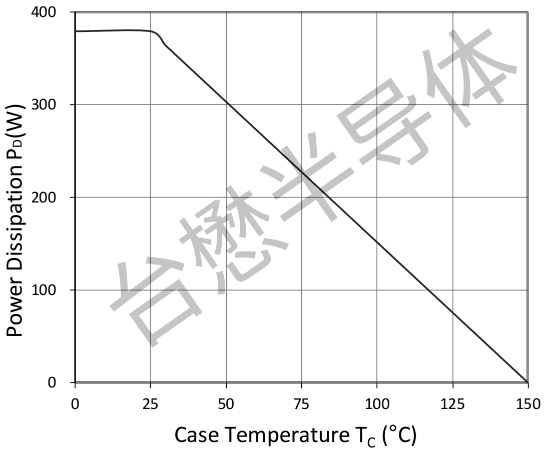


Figure 9. Power Dissipation

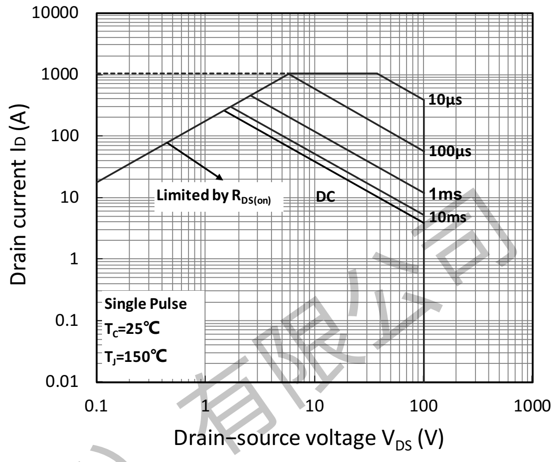


Figure10. Safe Operating Area

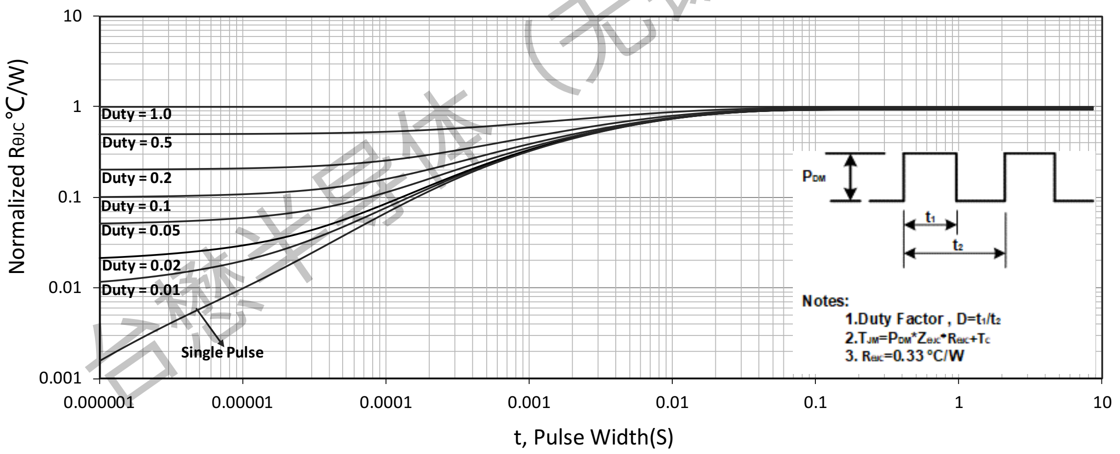
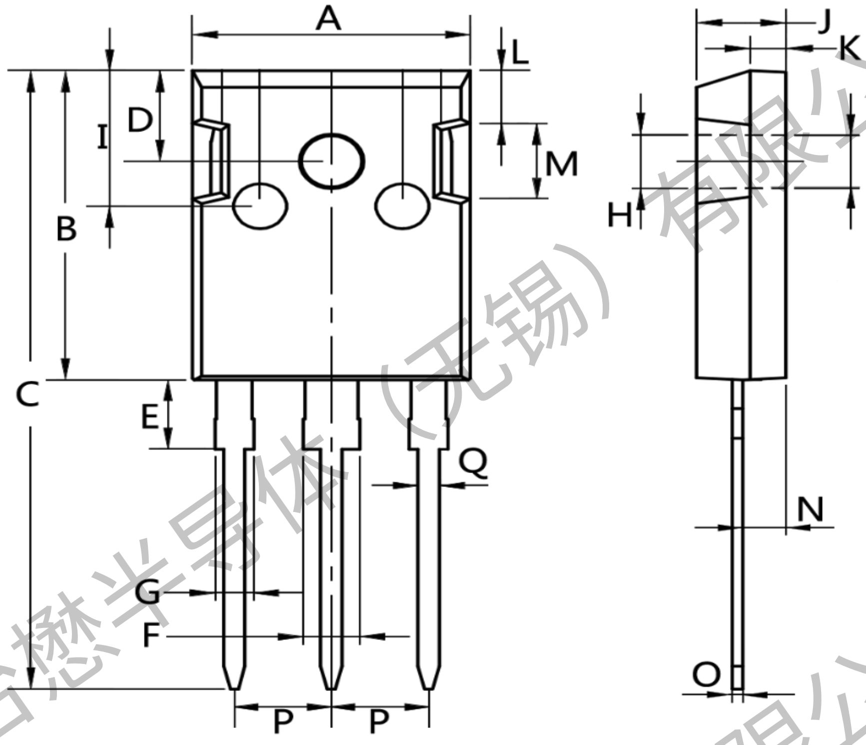
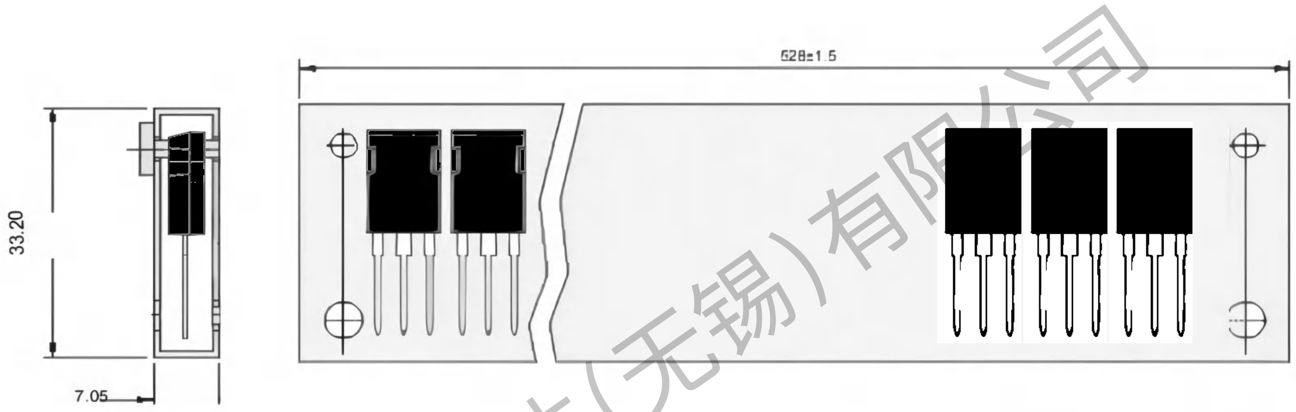


Figure 11. Normalized Maximum Transient Thermal Impedance

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	