
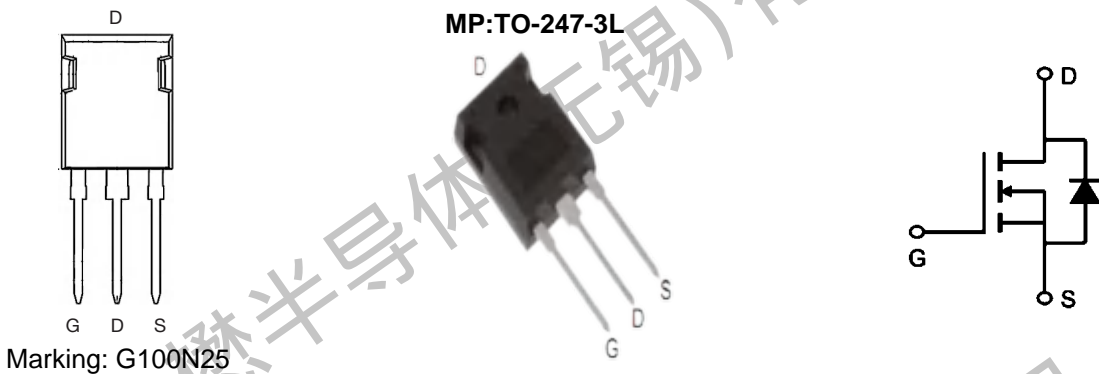


**TMG100N25MP**

**N-Channel Enhancement Mosfet**

<p><b>General Description</b></p> <ul style="list-style-type: none"> <li>• Low <math>R_{DS(ON)}</math></li> <li>• RoHS and Halogen-Free Compliant</li> </ul> <p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Load switch</li> <li>• PWM</li> </ul>	<p><b>General Features</b></p> <p><math>V_{DS}=250V</math> <math>I_D=100A</math>  <math>R_{DS(ON)}=18\text{ m}\Omega(\text{typ.}) @ V_{GS}=10V</math></p> <p>100% UIS Tested          100% <math>R_g</math> Tested</p> 
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**Absolute Maximum Ratings:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	250	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current- $T_C=25^\circ\text{C}$	100	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	70	
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	280	
$E_{AS}$	Single Pulse Avalanche Energy	2000	mJ
$P_D$	Power Dissipation	250	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ\text{C}$

**Thermal Characteristics:**

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.5	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	

# TMG100N25MP

## N-Channel Enhancement Mosfet

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	250	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=250V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	3	3.5	4	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>3</sup>	$V_{GS}=10V, I_D=35A$	---	18	20	m $\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=125V, V_{GS}=0V, f=1\text{MHz}$	---	10071	---	pF
$C_{oss}$	Output Capacitance		---	260	--	
$C_{rss}$	Reverse Transfer Capacitance		---	8.5	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=125V, I_D=40A,$ $R_{ENG}=4.7\ \Omega, V_{GS}=10V$	---	57	---	ns
$t_r$	Rise Time		---	25.4	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	77	---	ns
$t_f$	Fall Time		---	16.3	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=125V,$ $I_D=40A$	---	142	---	nc
$Q_{gs}$	Gate-Source Charge		---	54	---	nc
$Q_{gd}$	Gate-Drain "Miller" Charge		---	26	---	nc
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=50A$	---	---	1.2	V
$I_S$	Continuous Drain Current	$V_D=V_G=0V$	---	---	100	A
$I_{SM}$	Pulsed Drain Current		---	---	280	A
$T_{rr}$	Reverse Recovery Time	$I_F=40A,$	---	267	---	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt=100A/\mu\text{s}$	---	765	---	nc

### Notes:

- 1:  $T_J=+25^\circ\text{C}$  to  $+150^\circ\text{C}$  .
- 2: Repetitive rating; pulse width limited by maximum junction temperature.
- 3: Pulse width $\leq 380\mu\text{s}$ ; duty cycle $\leq 2\%$ .



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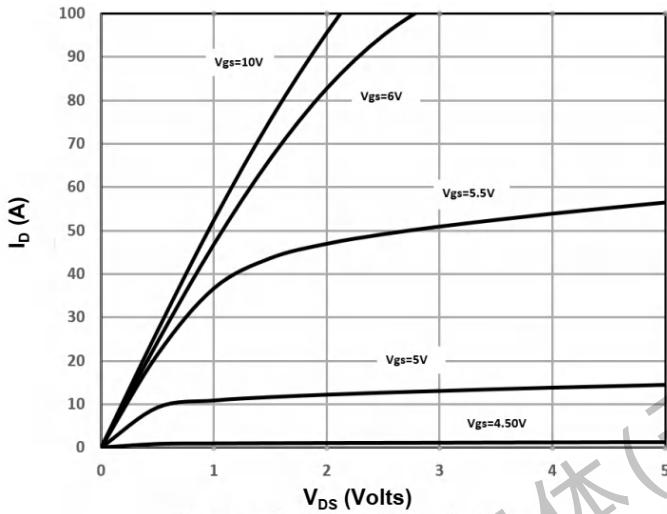


Figure 1: On-Region Characteristics

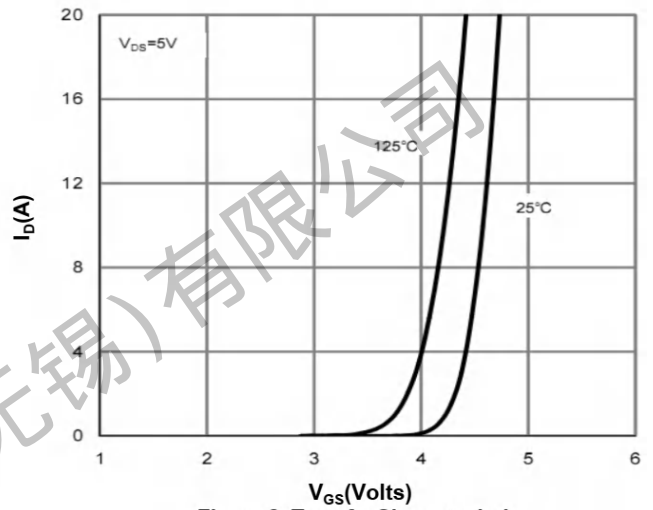


Figure 2: Transfer Characteristics

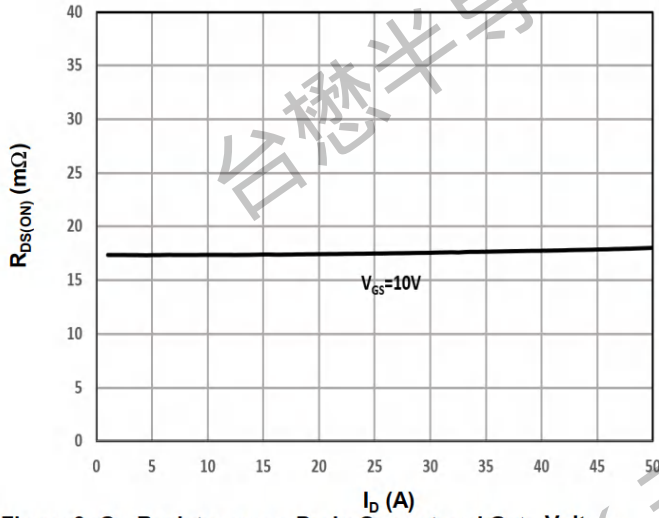


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

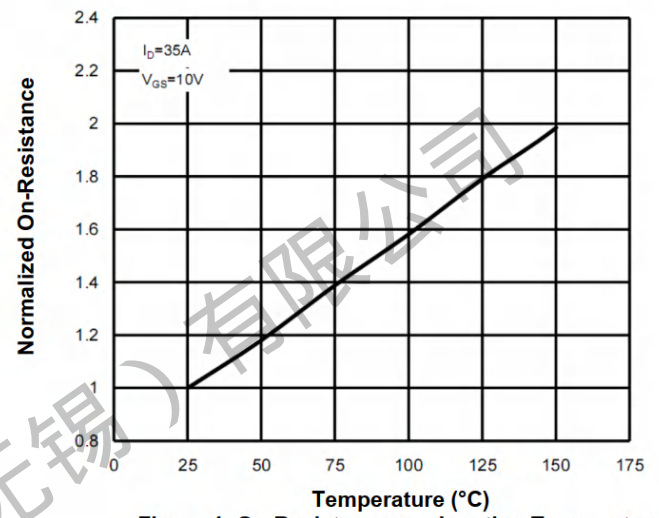


Figure 4: On-Resistance vs. Junction Temperature

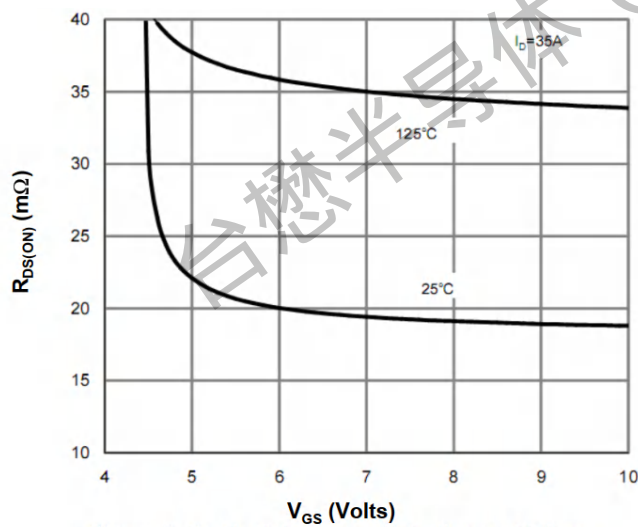


Figure 5: On-Resistance vs. Gate-Source Voltage

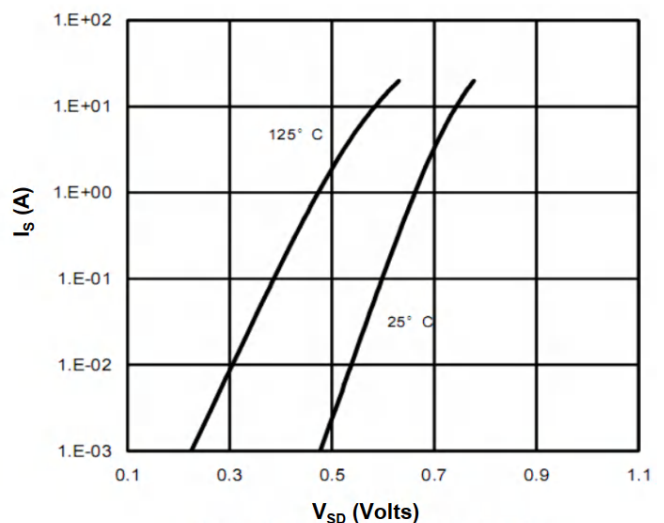


Figure 6: Body-Diode Characteristics



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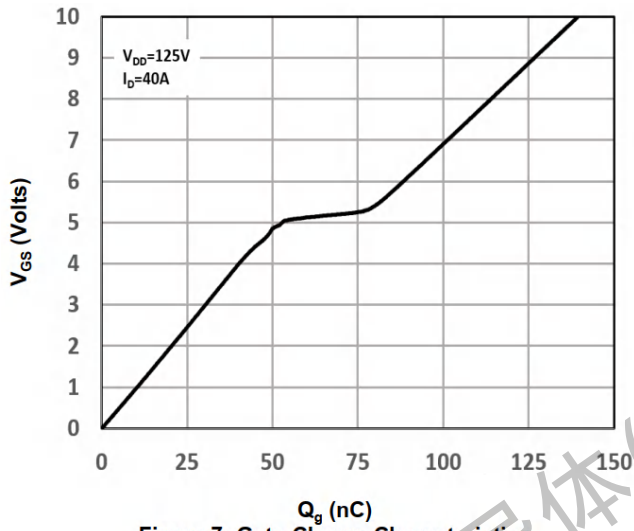


Figure 7: Gate-Charge Characteristics

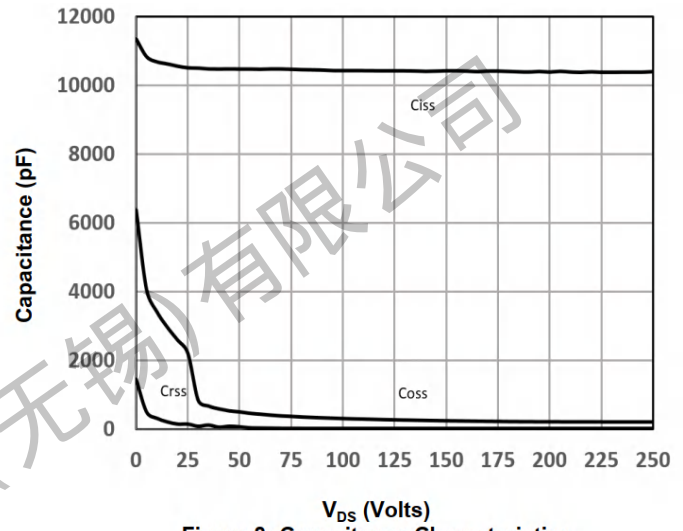


Figure 8: Capacitance Characteristics

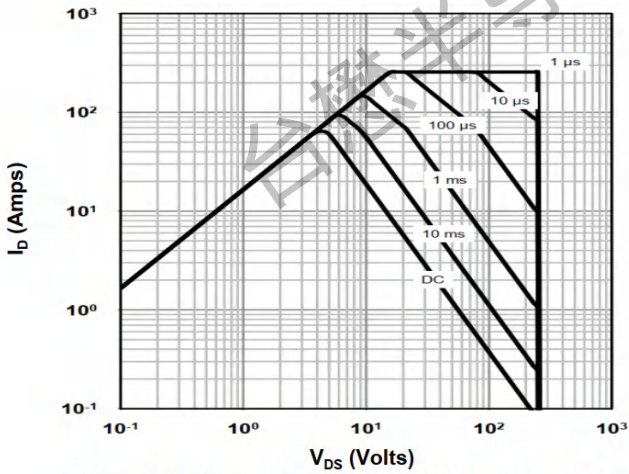
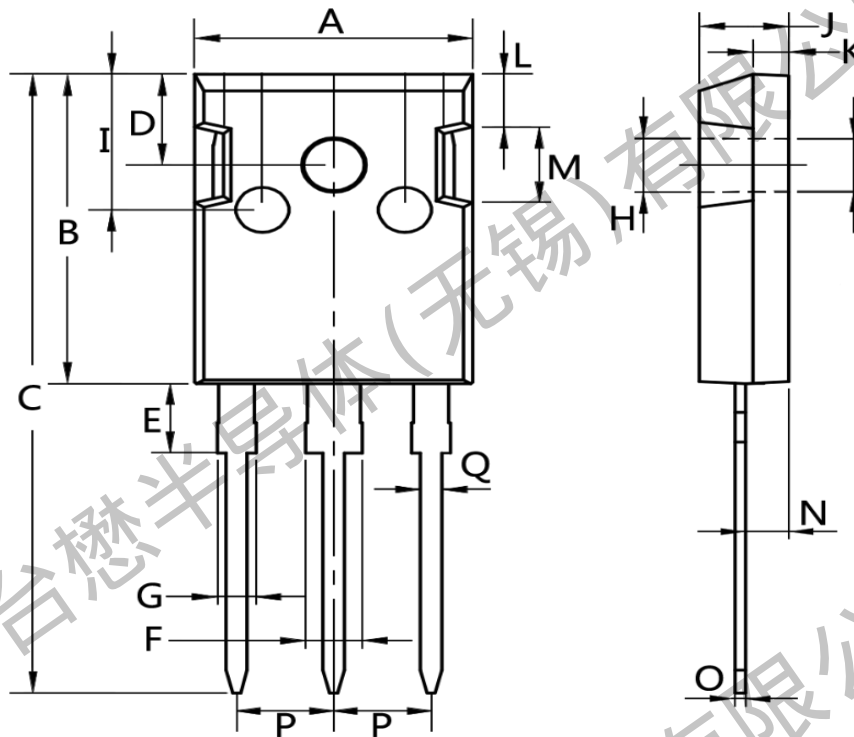


Figure 9: Maximum Forward Biased Safe Operating Area

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Package Mechanical Data :TO-247-3L

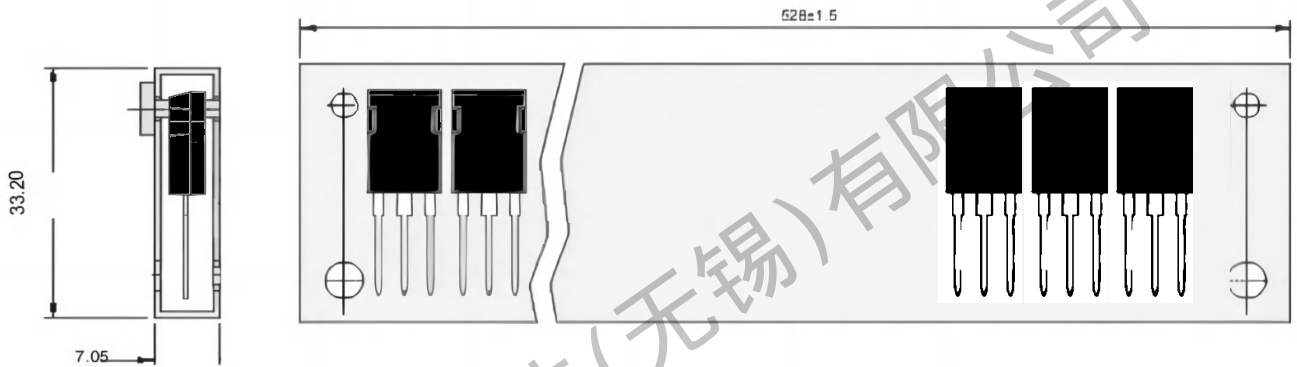


Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Typ 5.08	
Q	1.2	1.3



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All Dimensions are in mm

**1.TO-247-3L Packaging**

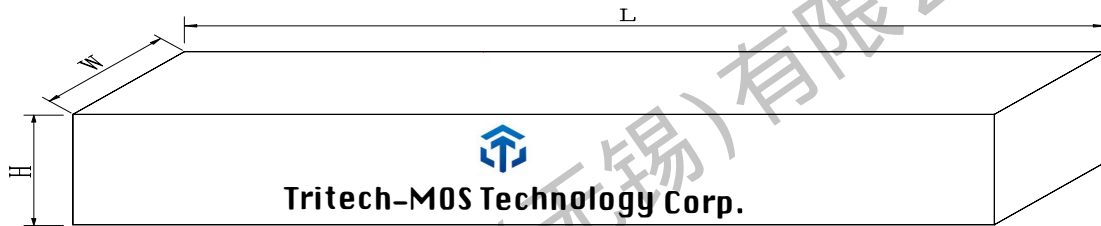
Package	Packing Form	Quantity		
		Tube	Inner Box [kpcs]	Outbox [kpcs]
TO-247-3L	Tube Tape	30	5	1



## TMG100N25MP

## N-Channel Enhancement Mosfet

### 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
2023.07.27	23.07	Original	