
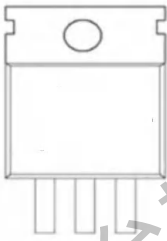
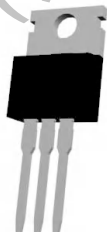
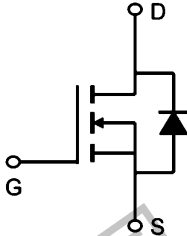


**TMG80N06P**

**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} = 60V</math> <math>I_D = 80A</math>  <math>R_{DS(ON)} = 7.5m\Omega</math> (typ.) @ <math>V_{GS} = 10V</math></p> <p>100% UIS Tested          100% <math>R_g</math> Tested</p> 
--	--

P: TO-220AB

G D S

Marking: G80N06

**Absolute Maximum Ratings:** ( $T_C = 25^\circ C$  unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current- $T_C = 25^\circ C$ <sup>1</sup>	80	A
	Continuous Drain Current- $T_C = 100^\circ C$	52	
	Pulsed Drain Current <sup>2</sup>	296	
$E_{AS}$	Single Pulse Avalanche Energy <sup>4</sup>	91	mJ
$P_D$	Power Dissipation, $T_C = 25^\circ C$	81	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

**Thermal Characteristics:**

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.54	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient <sup>5</sup>	62	

**TMG80N06P**

**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	$V_{GS}=0V, I_D=250\ \mu\text{A}$	60	---	---	V	
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V$	---	---	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	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	2	3	V	
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=20A$	---	7.5	10	m $\Omega$	
		$V_{GS}=4.5V, I_D=10A$	---	10	13		
<b>Dynamic Characteristics</b>							
$C_{iss}$	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	1204	---	pF	
$C_{oss}$	Output Capacitance		---	194.1	---		
$C_{rss}$	Reverse Transfer Capacitance		---	9.9	---		
<b>Switching Characteristics</b>							
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=50V, I_D=25A,$ $V_{GS}=10V, R_{GEN}=3\Omega$	---	23.9	---	ns	
$t_r$	Rise Time		---	4.6	---	ns	
$t_{d(off)}$	Turn-Off Delay Time		---	37.8	---	ns	
$t_f$	Fall Time		---	6.4	---	ns	
$Q_g$	Total Gate Charge		$V_{GS}=10V, V_{DS}=50V,$ $I_D=25A$	---	17.9	---	nC
$Q_{gs}$	Gate-Source Charge			---	3.8	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge	---		4.2	---	nC	
<b>Drain-Source Diode Characteristics</b>							
$V_{SD}$	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	---	---	1.3	V	
$I_S$	Continuous Source Current	$V_{GS}<V_{th}$	---	---	80	A	
$trr$	Reverse Recovery Time	$I_S=25\text{A},$ $di/dt=100\text{A}/\mu\text{s}$	---	36.3	---	Ns	
$qrr$	Reverse Recovery Charge		---	1.4	---	nc	

**Notes:**

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4)  $V_{DD}=30\text{V}, R_G=50\ \Omega, L=0.3\text{mH}$ , starting  $T_J=25^\circ\text{C}$ .
- 5) The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_a=25^\circ\text{C}$ .



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N-Channel Enhancement Mosfet

Typical Characteristics

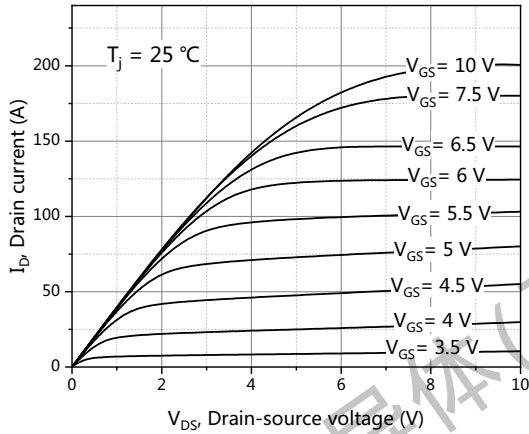


Figure 1, Typ. output characteristics

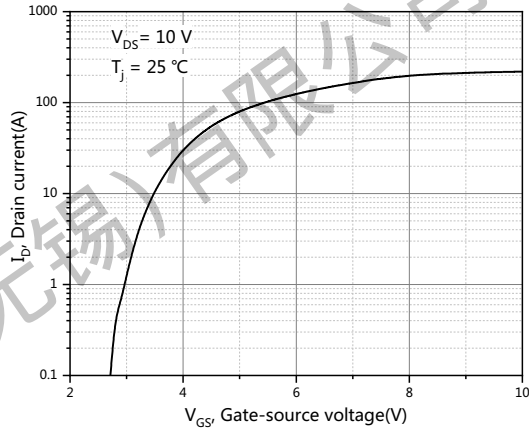


Figure 2, Typ. transfer characteristics

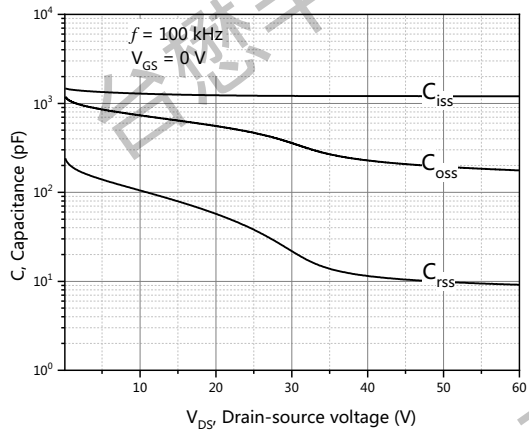


Figure 3, Typ. capacitances

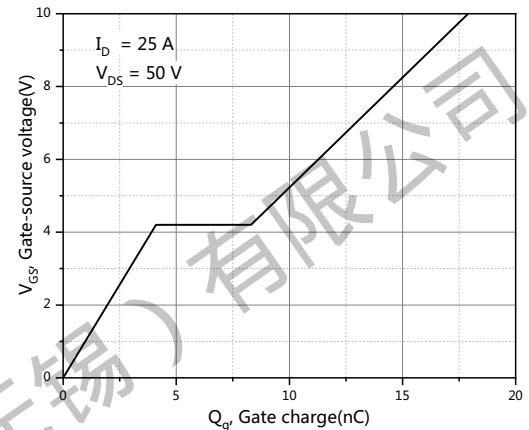


Figure 4, Typ. gate charge

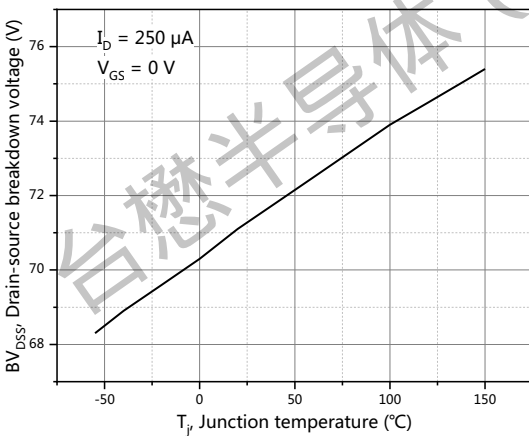


Figure 5, Drain-source breakdown voltage

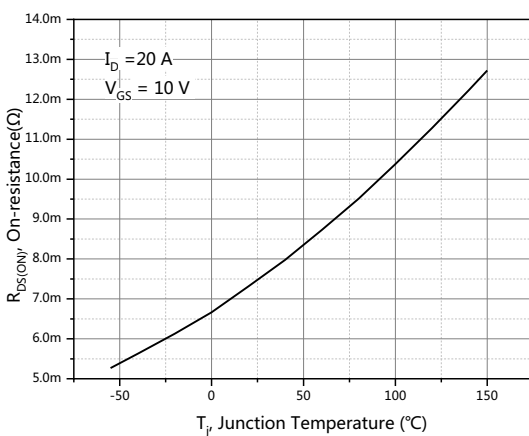


Figure 6, Drain-source on-state resistance



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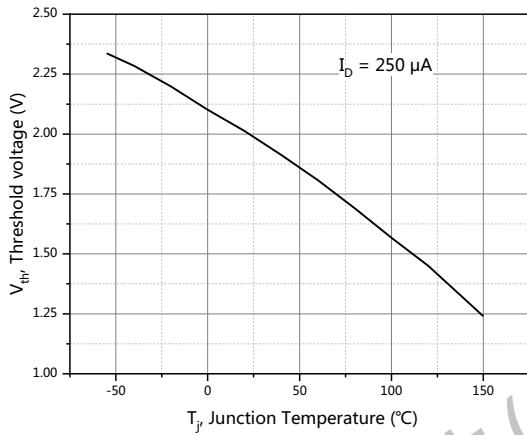


Figure 7, Threshold voltage

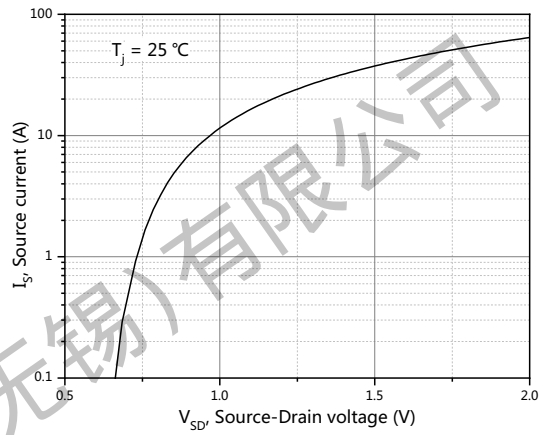


Figure 8, Forward characteristic of body diode

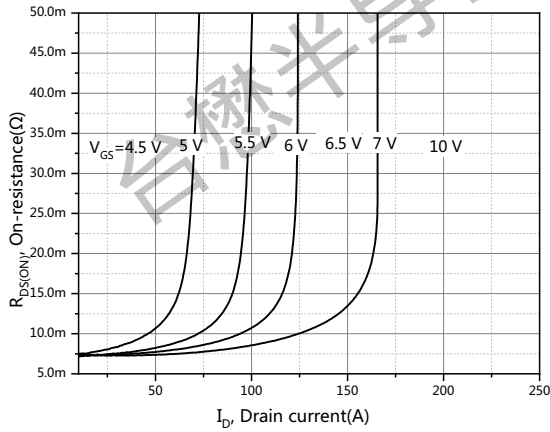


Figure 9, Drain-source on-state resistance

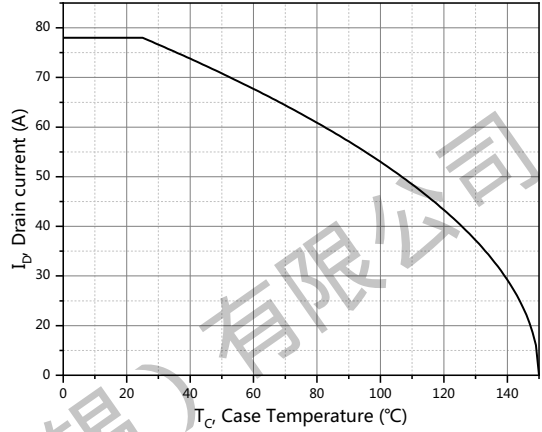


Figure 10, Drain current

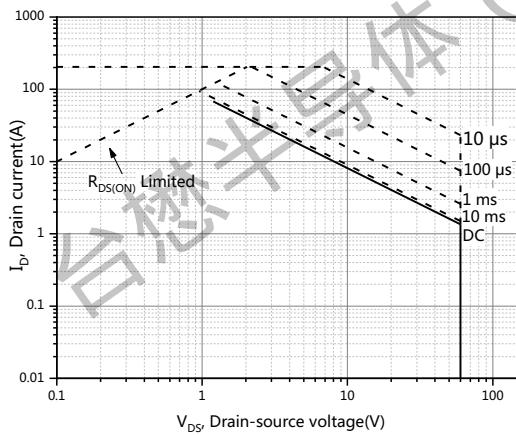


Figure 11, Safe operation area  $T_C=25\text{ }^\circ\text{C}$

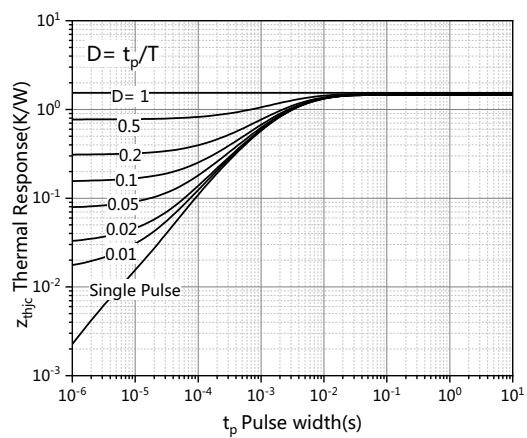
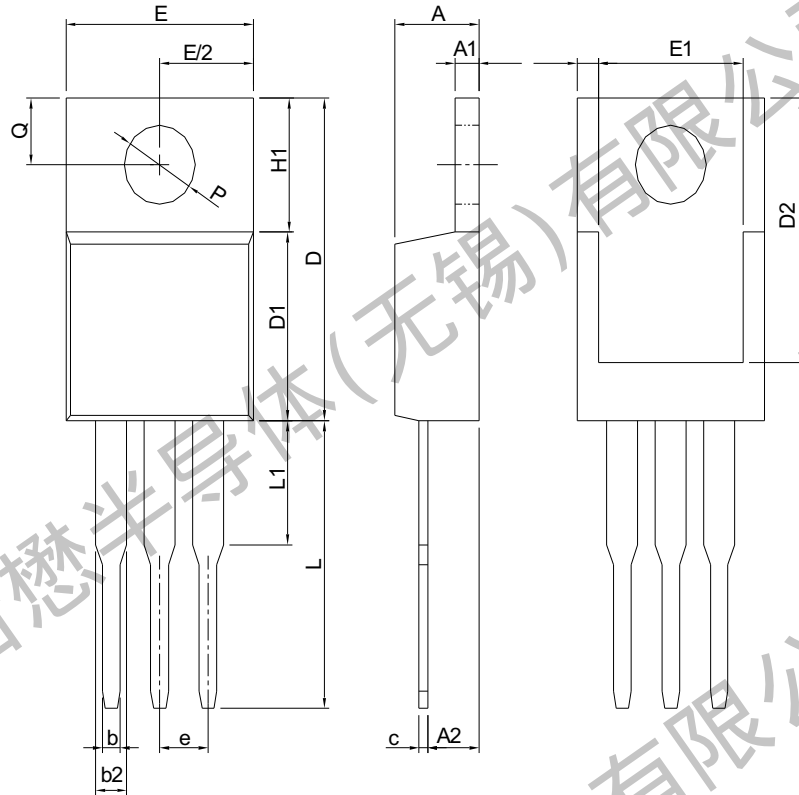


Figure 12, Max. transient thermal impedance

TMG80N06P

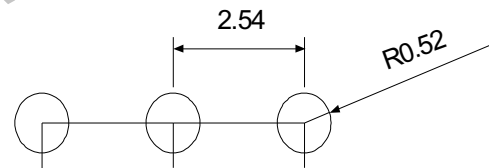
N-Channel Enhancement Mosfet

Package Mechanical Data: TO-220AB



DIMENSIONS	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



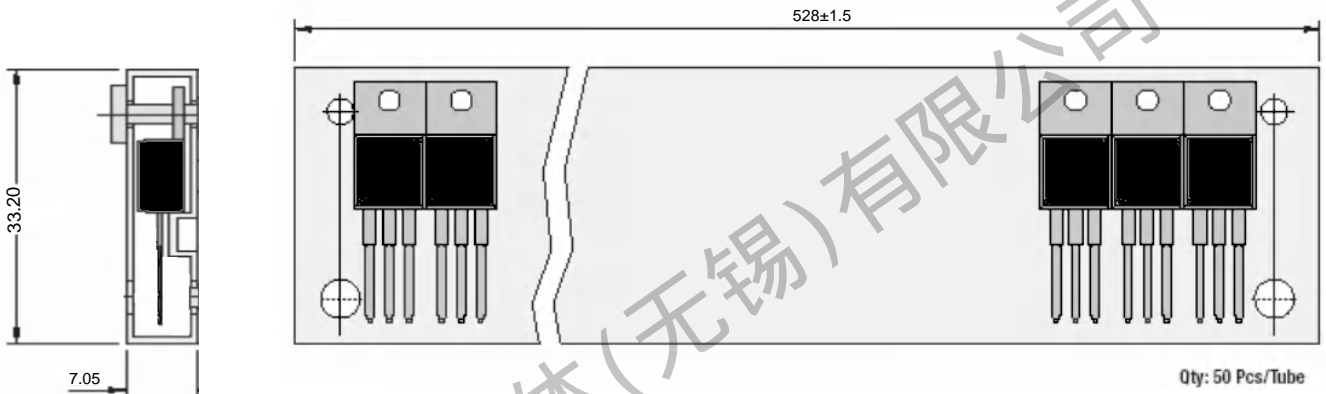
UNIT: mm

Note: Follow JEDEC TO-220 AB.



**TMG80N06P**

**N-Channel Enhancement Mosfet**



All Dimensions are in mm

**1.TO-220AB Packaging**

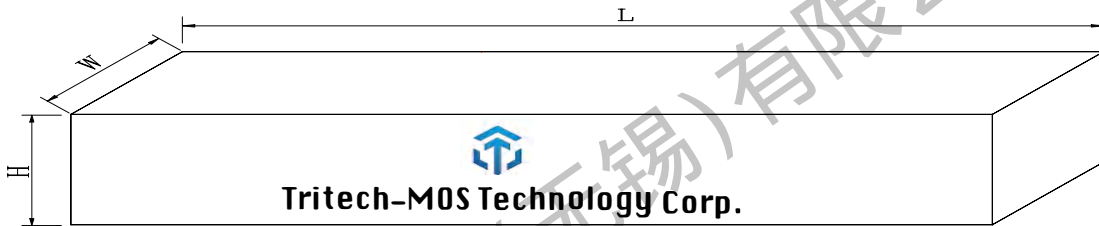
Package	Packing Form	Quantity		
		Tube	Inner Box [kpcs]	Outbox [kpcs]
TO-220AB	Tube Tape	50	5	1



# TMG80N06P

## N-Channel Enhancement Mosfet

### 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
2023.06.06	23.06	Original	