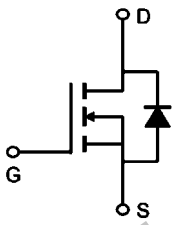


TMG130N085P

N-Channel Enhancement Mosfet

General Description • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant Applications • Load switch • PWM	General Features $V_{DS} = 85V$ $I_D = 130A$ $R_{DS(ON)} = 4.1m\Omega (typ.) @ V_{GS} = 10V$ 100% UIS Tested 100% R_g Tested		
 Marking: G130N085 P:TO-220AB  G D S 			
Absolute Maximum Ratings: ($T_c = 25^{\circ}C$ unless otherwise noted)			
Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	85	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current-	130	A
	Continuous Drain Current- $T_C = 100^{\circ}C$	91	
	Pulsed Drain Current	455	
E_{AS}	Single Pulse Avalanche Energy	338	mJ
P_D	Power Dissipation	208	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	1.67	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	

TMG130N085P

N-Channel Enhancement Mosfet

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μA	85	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =80V	---	---	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 =250 μA	2	3	4	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =10V, I _D =20A	---	4.1	5	mΩ
		V _{GS} =4.5V, I _D =A	---	---	---	
G _{FS}	Forward Transconductance	V _{DS} = 5 V, I _D =20A	---	31	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =40V, V _{GS} =0V, f=1MHz	---	3567	---	pF
C _{oss}	Output Capacitance		---	1264	---	
C _{rss}	Reverse Transfer Capacitance		---	46	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =40V, R _L =2 Ω R _{GEN} =3 Ω, V _{GS} =10V	---	17.6	---	ns
t _r	Rise Time		---	27	---	ns
t _{d(off)}	Turn-Off Delay Time		---	31	---	ns
t _f	Fall Time		---	10.8	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =40V, I _D =20A	---	56	---	nC
Q _{gs}	Gate-Source Charge		---	18.3	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	15	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S = 1 A	---	0.7	1.0	V
I _S	Diode Forward Current (Note 2)	---	---	---	130	A
T _{rr}	Reverse Recovery Time	T _J = 25°C, I _F = 20A di/dt = 100A/μs ^(Note3)	---	58	---	NS
Q _{rr}	Reverse Recovery Charge		---	95	---	NC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

TMG130N085P

N-Channel Enhancement Mosfet

Typical Characteristics

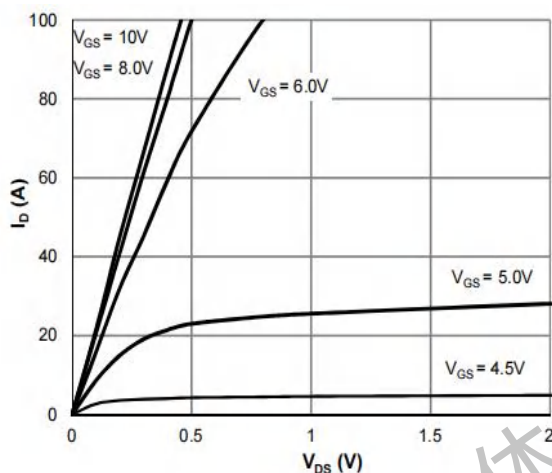


Figure 1: Saturation Characteristics

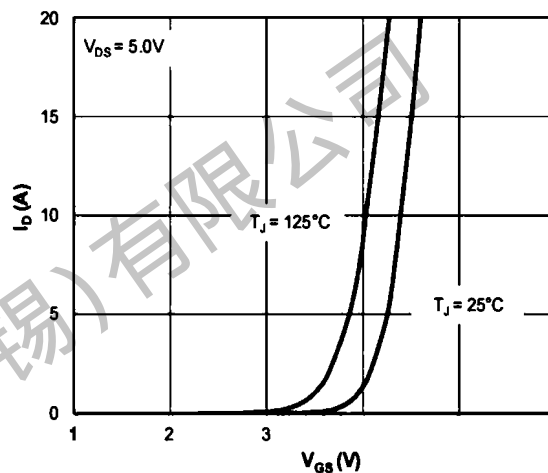


Figure 2: Transfer Characteristics

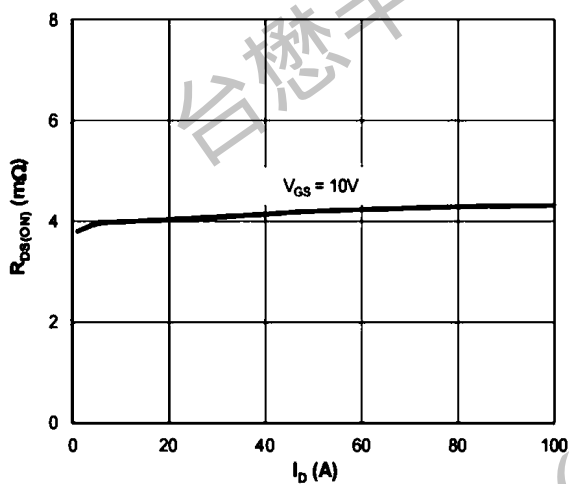


Figure 3: $R_{DS(ON)}$ vs. Drain Current

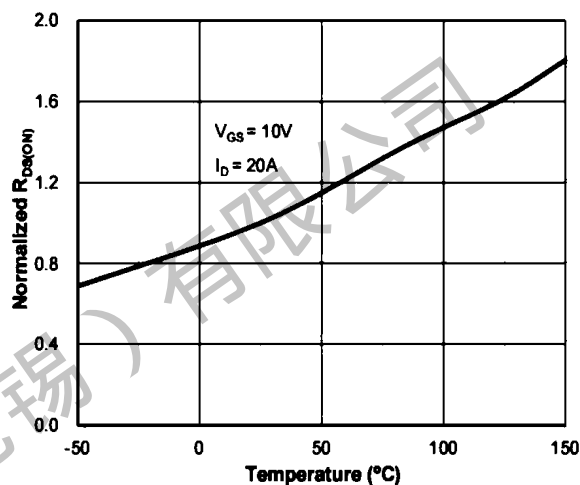


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

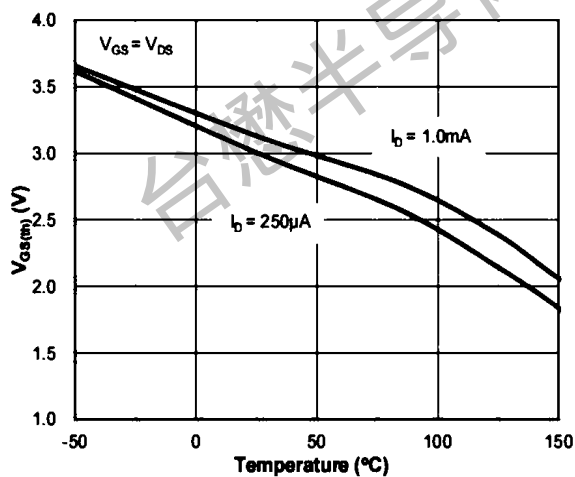


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

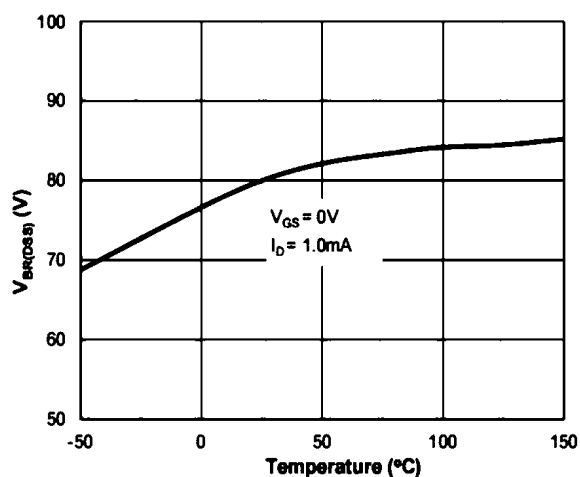


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

TMG130N085P

N-Channel Enhancement Mosfet

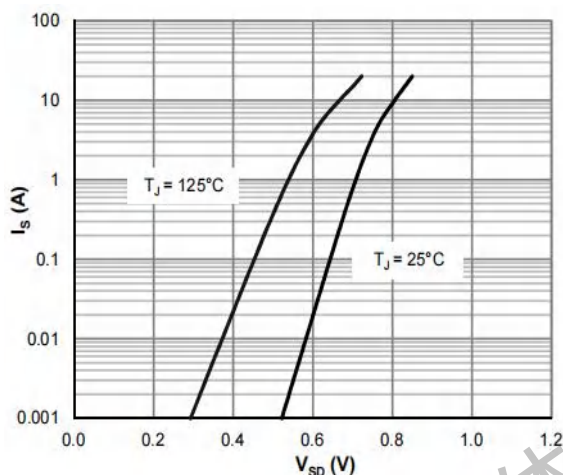


Figure 7: Body-Diode Characteristics

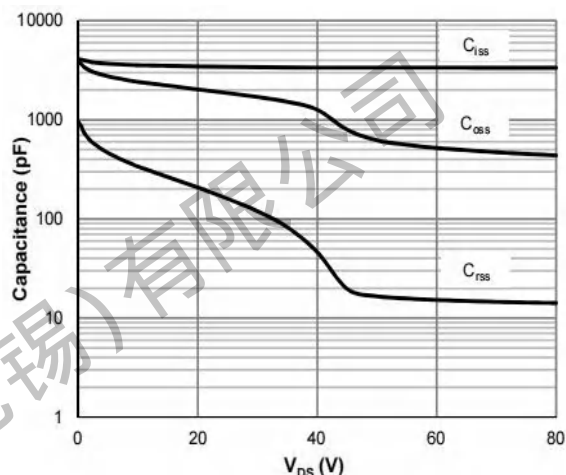


Figure 8: Capacitance Characteristics

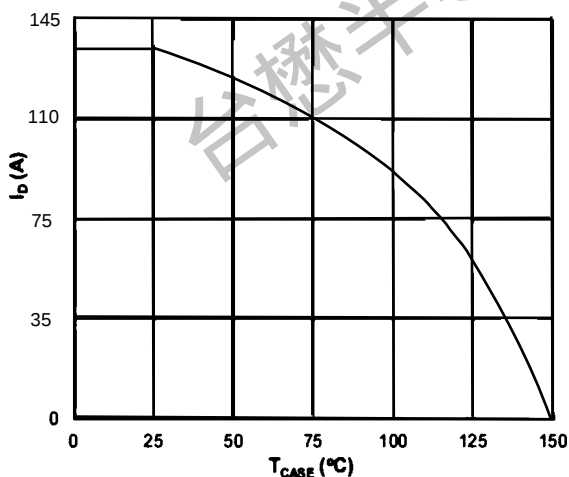


Figure 9: Current De-rating

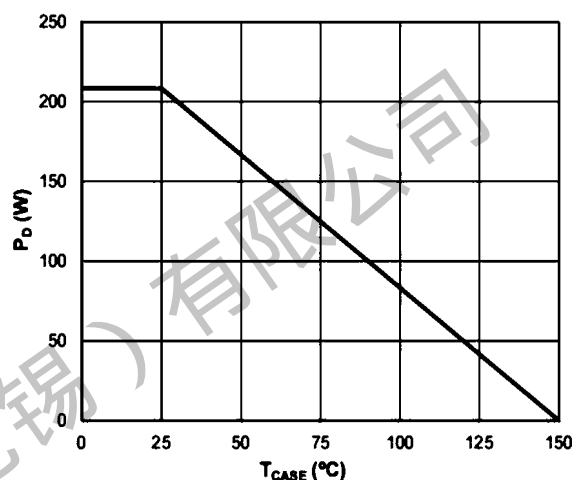


Figure 10: Power De-rating

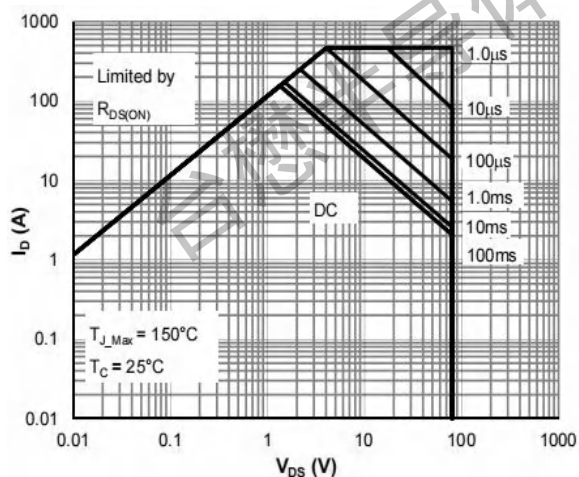


Figure 11: Maximum Safe Operating Area

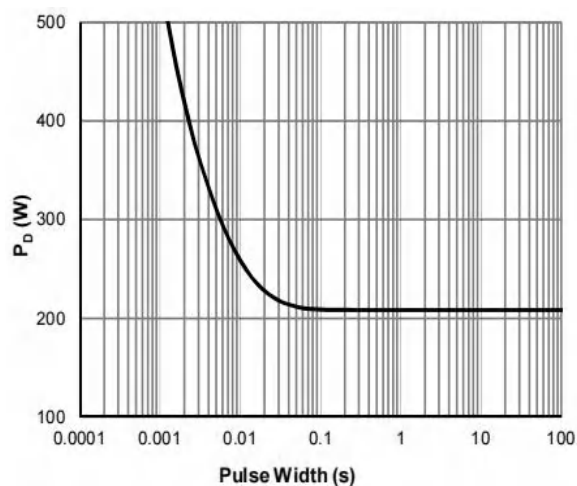
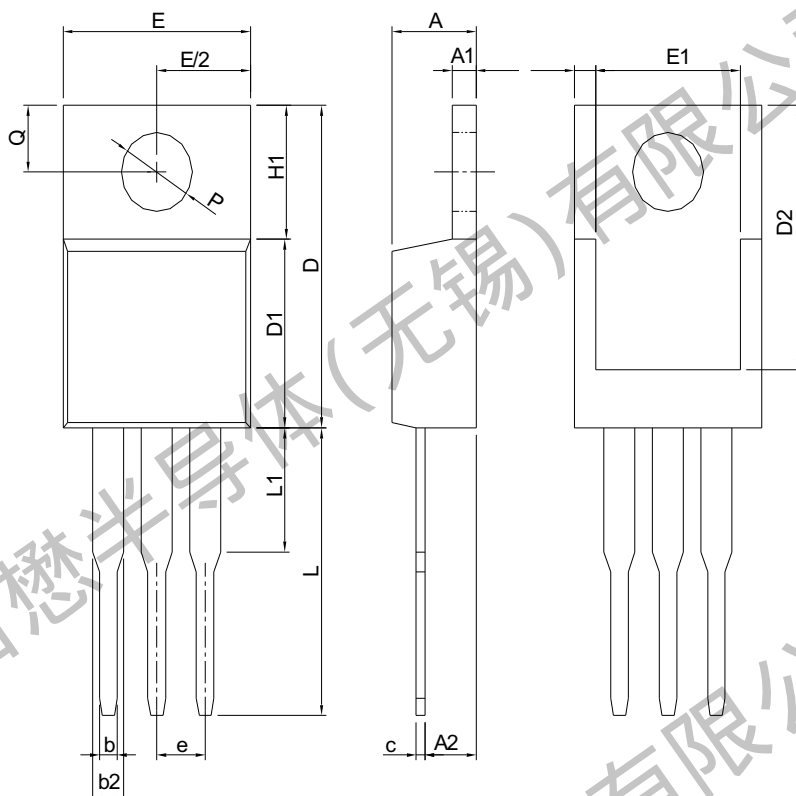


Figure 12: Single Pulse Power Rating, Junction-to-Case

TMG130N085P

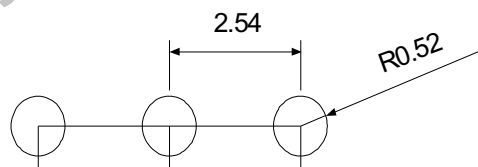
N-Channel Enhancement Mosfet

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

RECOMMENDED LAND PATTERN

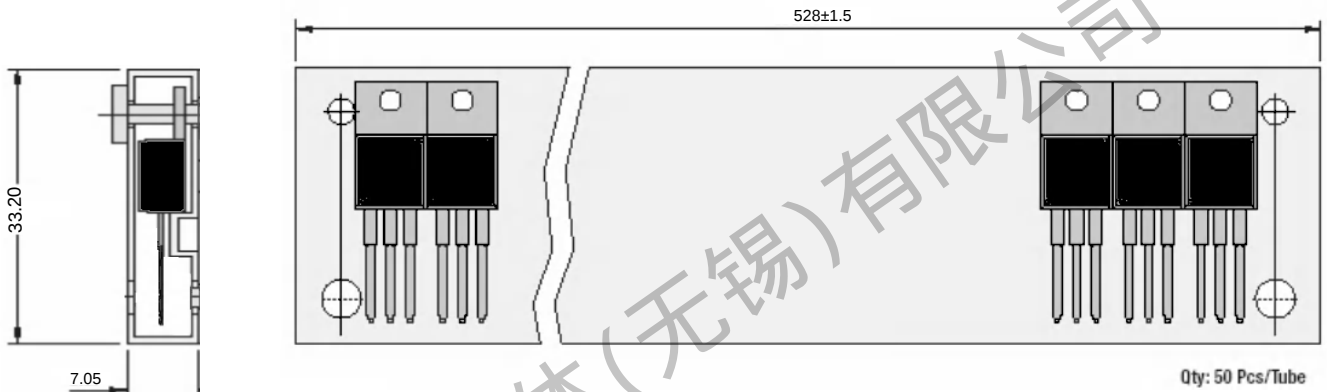


UNIT: mm

Note: Follow JEDEC TO-220 AB.

TMG130N085P

N-Channel Enhancement Mosfet



All Dimensions are in mm

1.TO-220AB Packaging

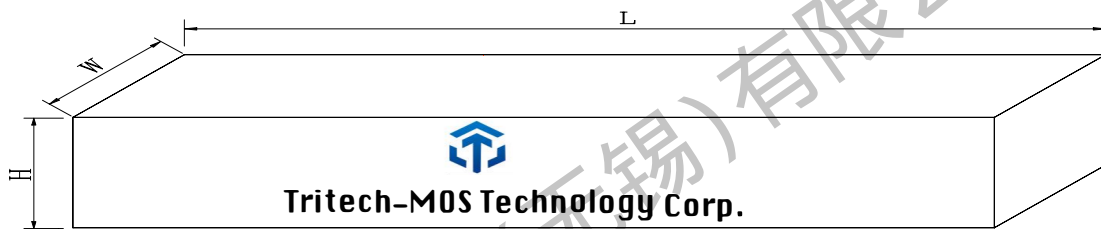
Package	Packing Form	Quantity		
		Tube	Inner Box [kpcs]	Outbox [kpcs]
TO-220AB	Tube Tape	50	5	1



TMG130N085P

N-Channel Enhancement Mosfet

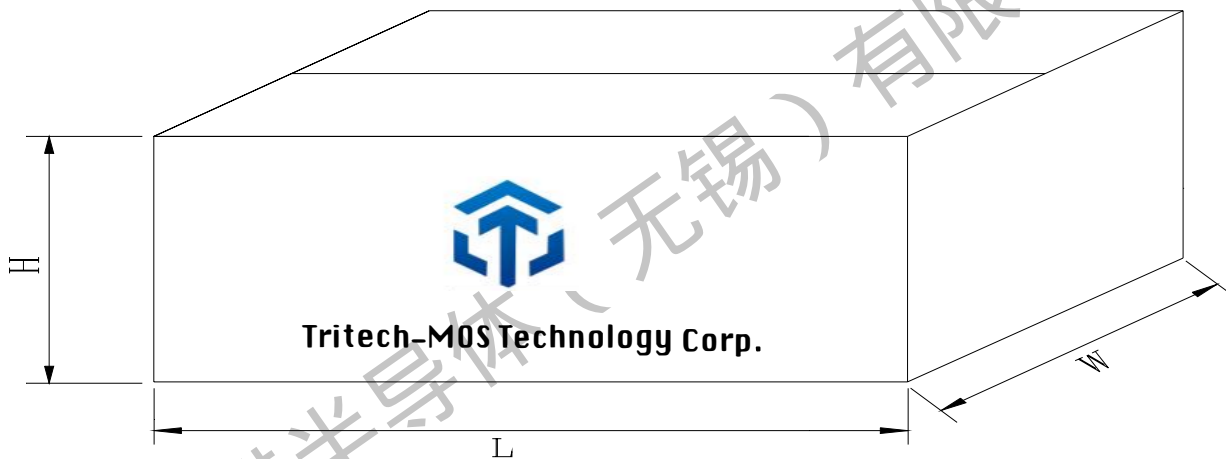
Inner Box



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
2023.09.28	23.09	Original	