TMG150N085T

N-Channel Enhancement Mosfet

General Description
- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications
- Load switch
- PWM

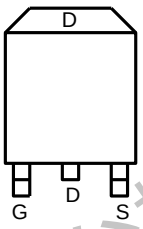
General Features

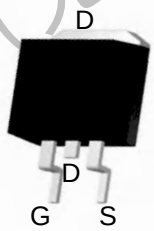
V_{DS} = 85V I_D = 150A

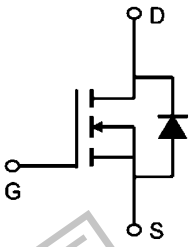
$R_{DS(ON)}$ =3.2mΩ (typ)@ V_{GS}=10V

100% UIS Tested
100% R_g Tested

T:TO-263-3L







Marking: G150N10

Absolute Maximum Ratings (T_C = 25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	85	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V	150	A
I_{DM}	Pulsed Drain Current	515	A
EAS	Single Pulse Avalanche Energy	434	mJ
P_D@T_C=25°C	Total Power Dissipation	192	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	45	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	0.65	°C/W

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Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	85	-	-	V
Drain-Source Leakage Current	V_{DS} = 80V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 20 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	2	3	4	V
Drain-Source On-State Resistance	VGS=10V, ID=20A	RDS(on)	-	3.2	4	mΩ
Forward Transconductance	VDS=5V, ID=20A	gFS	-	43	-	S
Input Capacitance	VDS=40V , VGS=0V , f=1MHz	C_{iss}	-	4083	-	pF
Output Capacitance		C_{oss}	-	1313	-	pF
Reverse Transfer Capacitance		C_{rss}	-	42	-	pF
Turn-on Delay Time(Note2)	VGS = 10V, VDS = 40V RL = 2.0Ω, RGEN = 3Ω	$t_{d(ON)}$	-	18.9	-	ns
Rise Time(Note2)		t_r	-	28	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	38	-	ns
Fall Time(Note2)		t_f	-	13.1	-	ns
Total Gate Charge(Note2)	VDS=40V , VGS=10V , ID=20A	Q_G	-	62	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	21	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	13.8	-	nC

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	150	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	515	A
Drain-Source Diode Forward Voltage	VGS=0V , IS=1A , TJ=25℃	V_{SD}	-	-	1	V
Reverse Recovery Time	I_S = I_F, ISD=20A,V_{GS} = 0 V, dI / dt = 100 A/μs (Note3)	trr	-	57	-	ns
Reverse Recovery Charge		Qrr	-	85	-	nC

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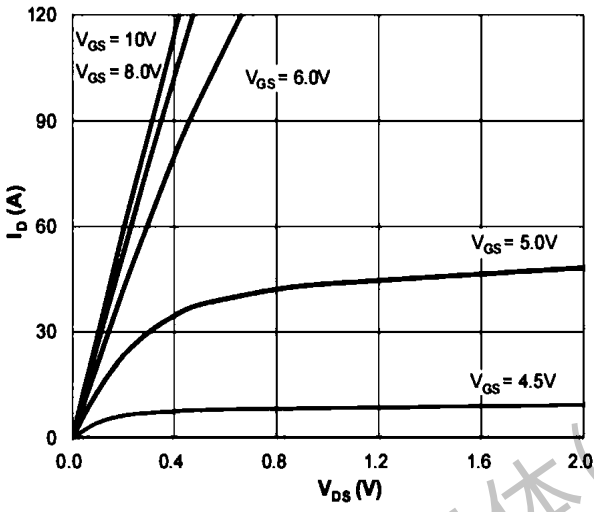

Figure 1: Saturation Characteristics

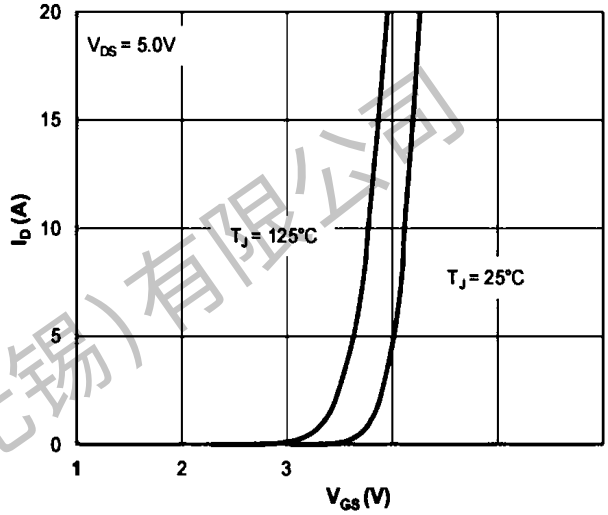

Figure 2: Transfer Characteristics

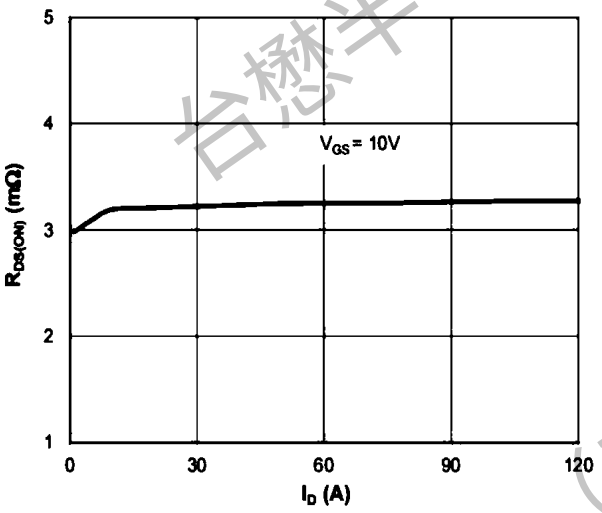

Figure 3: $R_{DS(ON)}$ vs. Drain Current

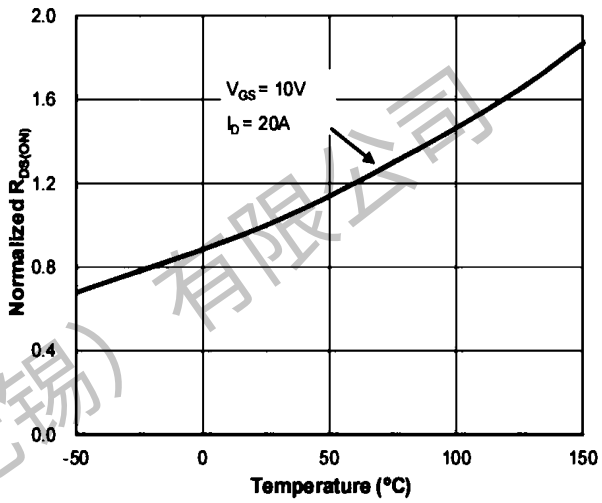

Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

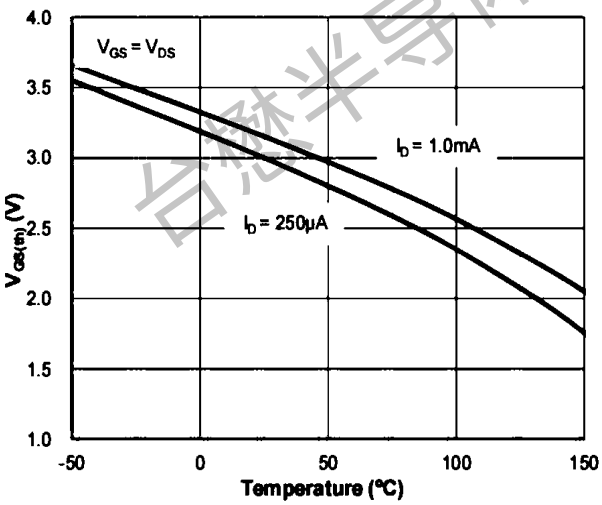

Figure 5: $V_{GS(th)}$ vs. Junction Temperature

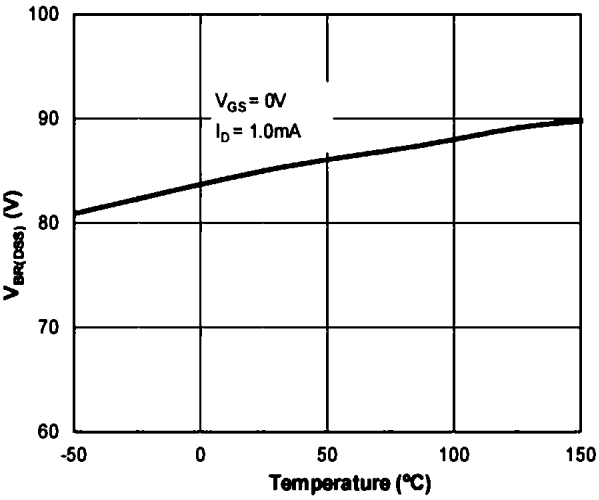

Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

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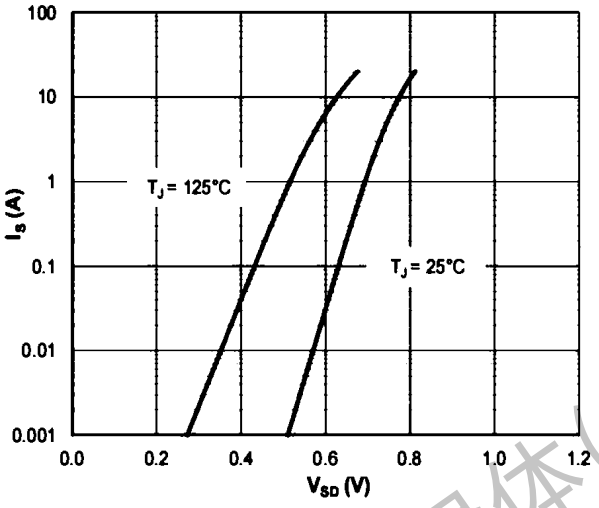

Figure 7: Body-Diode Characteristics

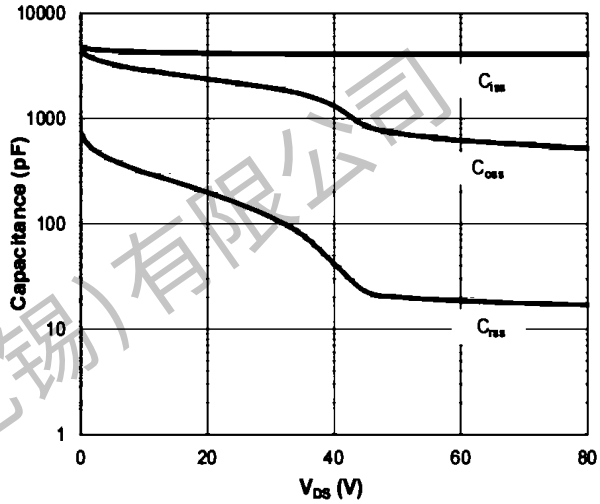

Figure 8: Capacitance Characteristics

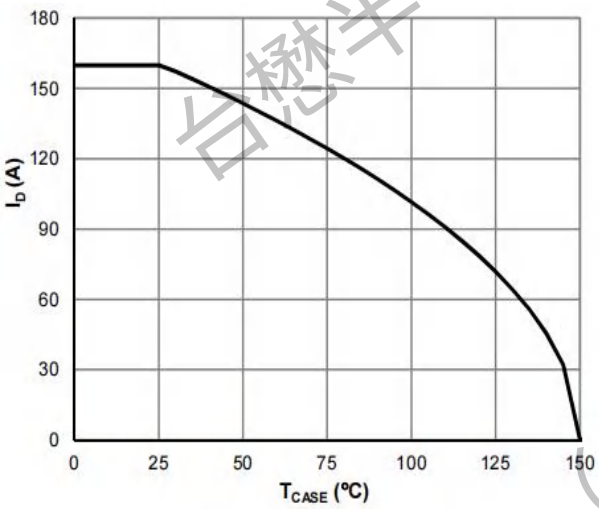

Figure 9: Current De-rating

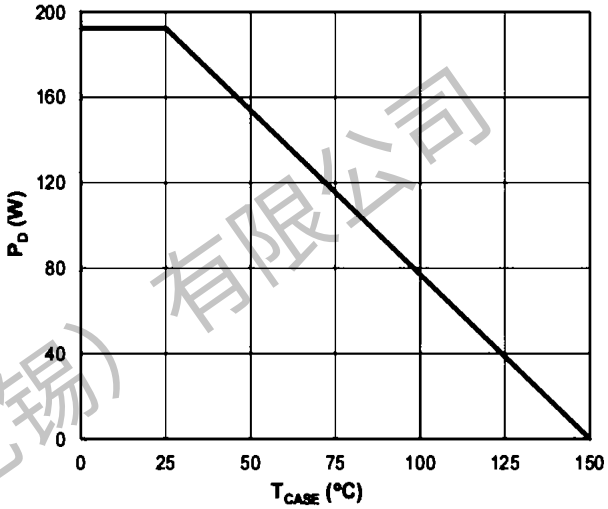

Figure 10: Power De-rating

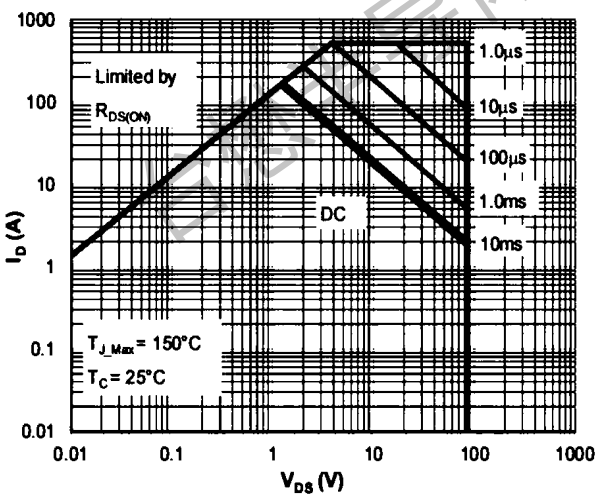

Figure 11: Maximum Safe Operating Area

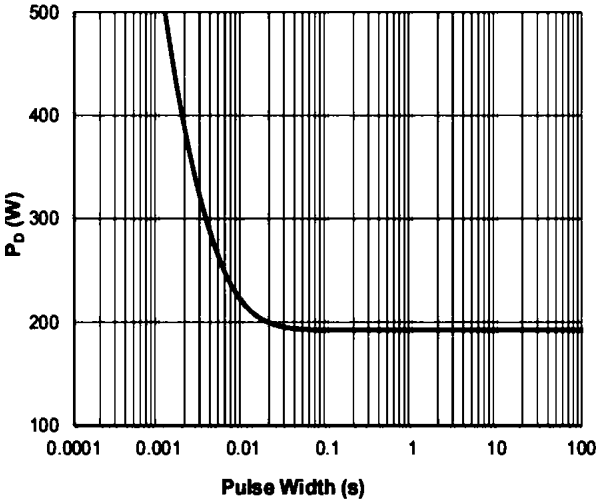

Figure 12: Single Pulse Power Rating, Junction-to-Case

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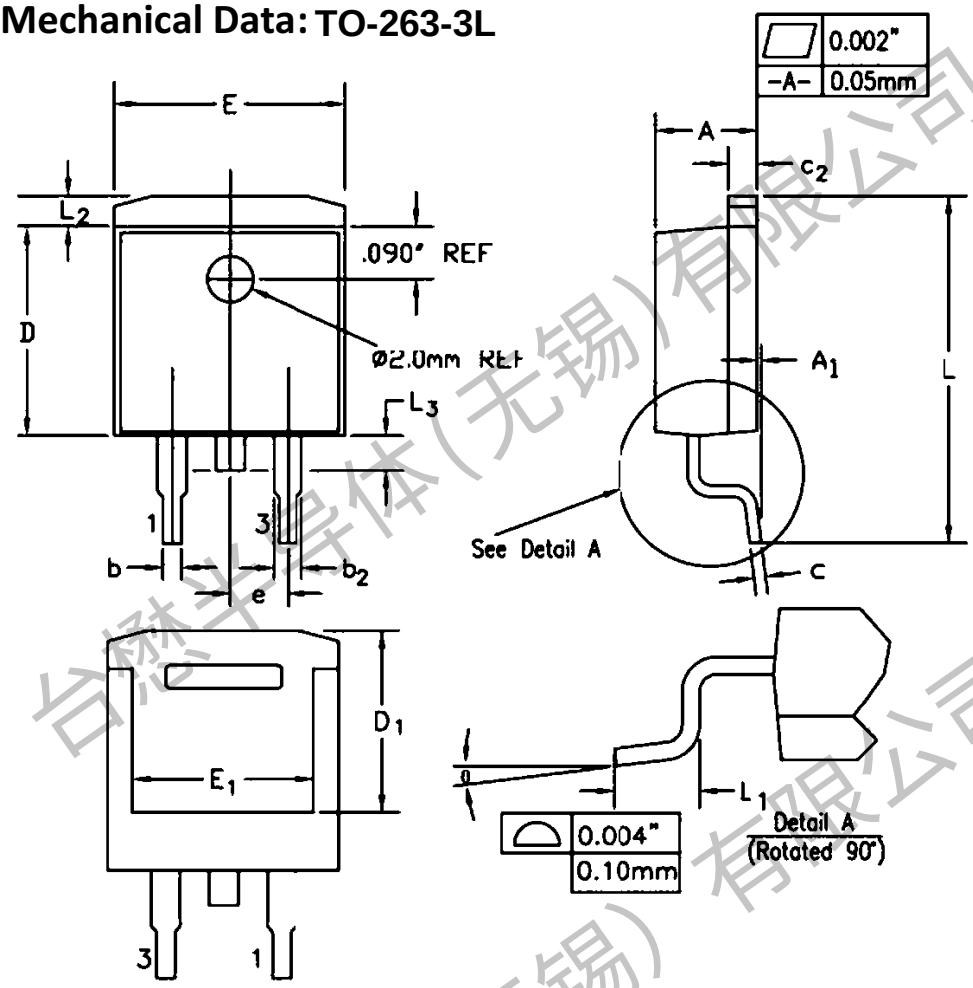
Package Mechanical Data: TO-263-3L



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.170	0.180	4.32	4.57	
A1	-	0.010	-	0.25	
b	0.028	0.037	0.71	0.94	
b2	0.045	0.055	1.15	1.40	
c	0.018	0.024	0.46	0.61	
c2	0.048	0.055	1.22	1.40	
D	0.350	0.370	8.89	9.40	
D1	0.315	0.324	8.01	8.23	
E	0.395	0.405	10.04	10.28	
E1	0.310	0.318	7.88	8.08	
e	0.100 BSC.		2.54 BSC.		
L	0.580	0.620	14.73	15.75	
L1	0.090	0.110	2.29	2.79	
L2	0.045	0.055	1.15	1.39	
L3	0.050	0.070	1.27	1.77	
θ	0°	8°	0°	8°	

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Revision history:

Date	Rev	Description	Page
2023.05.31	23.05	Original	

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