TMG150N15T

N -Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

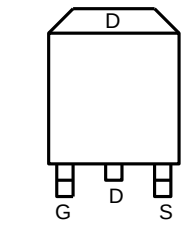
General Features

V_{DS} =150V I_D=150A

$R_{DS(ON)}$= 6.0 mΩ(typ.) @ V_{GS}= 10V

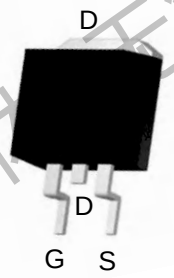
100% UIS Tested
100% R_g Tested

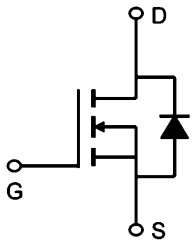
Green Product



Marking: 150N15

T:TO-263-3L





Absolute Maximum Ratings: (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Curren	150	A
	Continuous Drain Current-T_C=100℃	86	
I_{DM}	Pulsed Drain Current	560	
P_D	Power Dissipation T_C=25°C	298	W
E_{AS}	Single pulse avalanche energy	1105	mJ
I_{AS}	Avalanche Current	66	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+175	℃

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	0.42	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	45	℃/W

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Electrical Characteristics at Tc=25°C unless otherwise s ecified

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	150	---	---	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=60A	---	6	7.4	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	2	2.5	3	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	---	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=150V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=150V, 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}=5V , I_D=60A	---	100.8	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	4	---	Ω
Q_g	Total Gate Charge	V_{DS}=75V , V_{GS}=10V , I_D=60A	---	74.5	---	nC
Q_{gs}	Gate-Source Charge		---	31.7	---	
Q_{gd}	Gate-Drain Charge		---	15.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DD}=75V, R_G=2.7Ω, I_D=60A	---	19.1	---	ns
T_r	Rise Time		---	90.8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	52.4	---	
T_f	Fall Time		---	82.5	---	
C_{iss}	Input Capacitance	V_{DS}=75V , V_{GS}=0V , f=1MHz	---	4936	---	pF
C_{oss}	Output Capacitance		---	609	---	
C_{rss}	Reverse Transfer Capacitance		---	21	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	150	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=60A , T_J=25℃	---	---	1.4	V
t_{rr}	Reverse Recovery Time	IF=17A , di/dt=100A/μs , T_J=25℃	---	132.7	---	nS
Q_{rr}	Reverse Recovery Charge		---	584.7	---	nC

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Typical Performance Characteristics

Fig 1: Output Characteristics

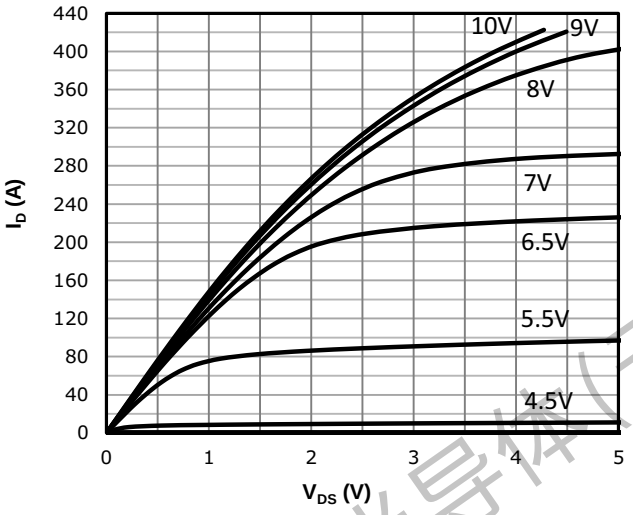


Fig 2: Transfer Characteristics

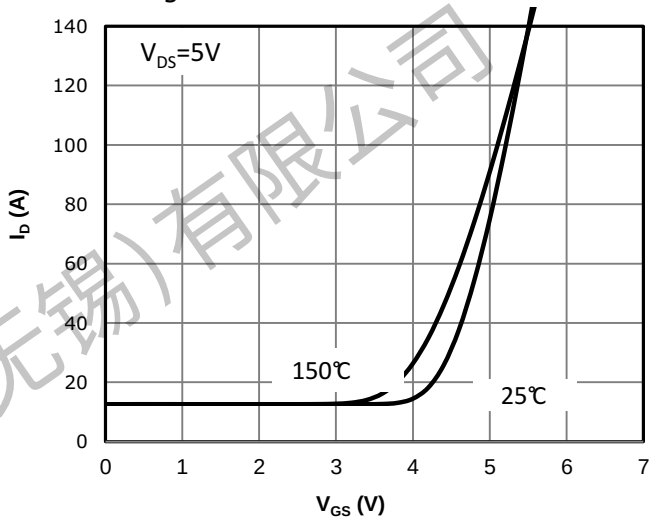


Fig 3: Rds(on) vs Drain Current and Gate Voltage

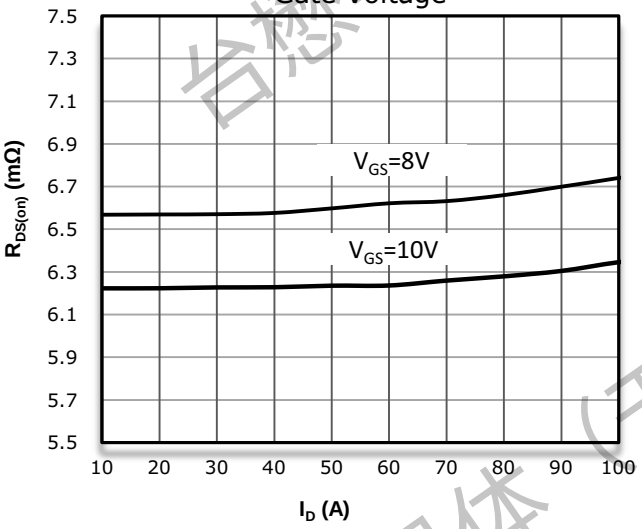


Fig 4: Rds(on) vs Gate Voltage

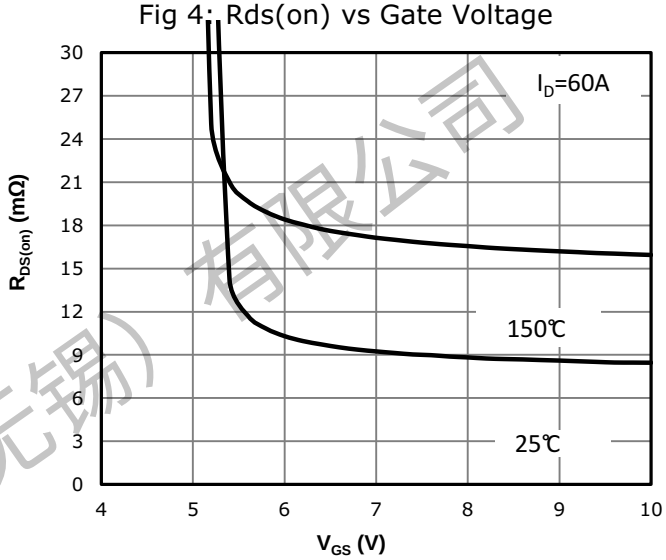


Fig 5: Rds(on) vs. Temperature

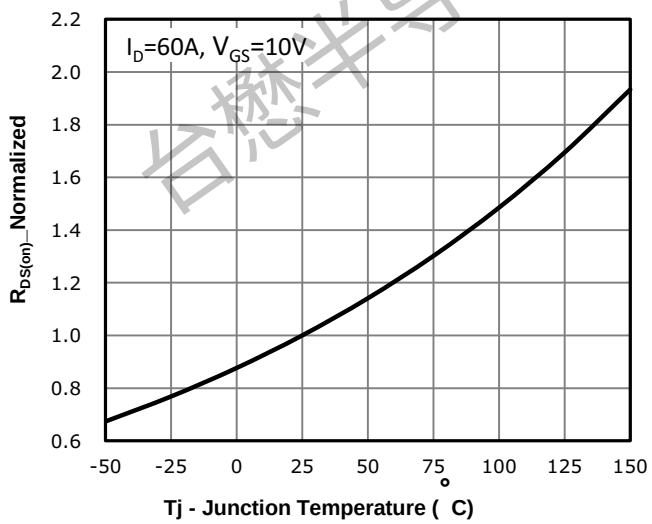


Fig 6: Vgs(th) vs. Temperature

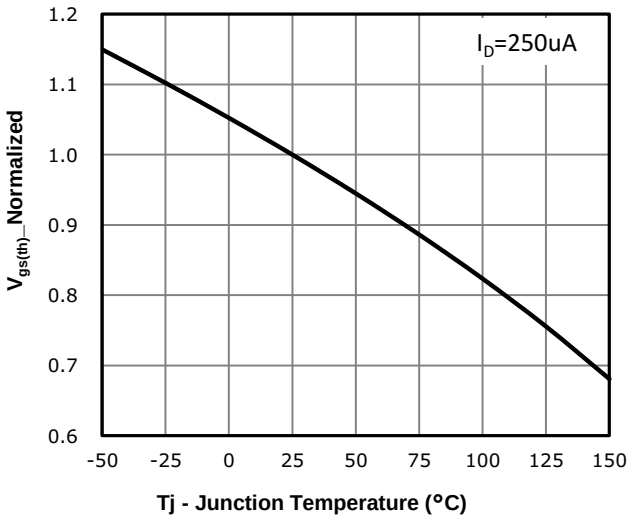


Fig 7: BVdss vs. Temperature

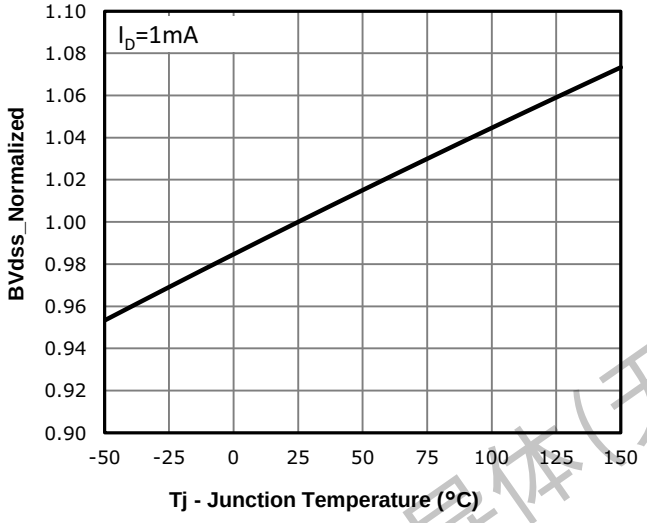


Fig 8: Capacitance Characteristics

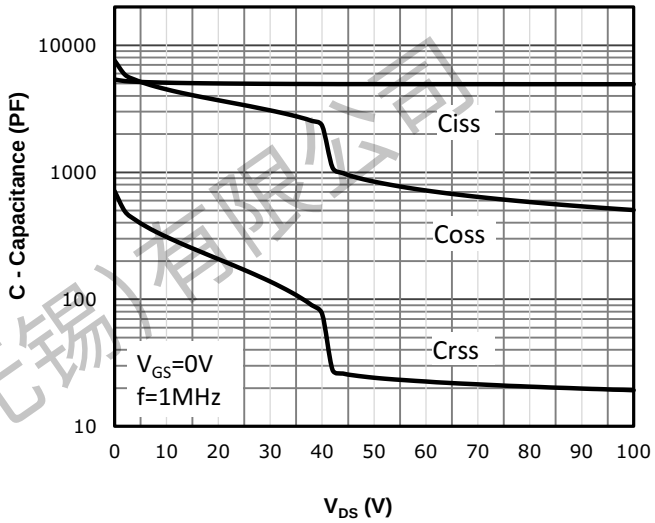


Fig 9:Gate Charge Characteristics

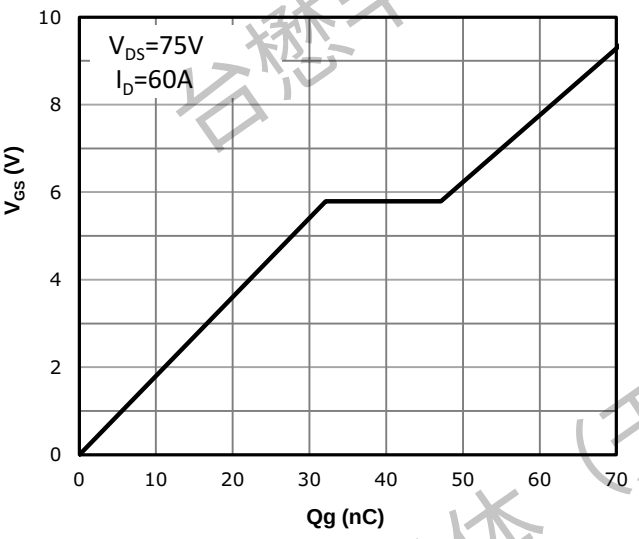


Fig 10: Body-diode Forward Characteristics

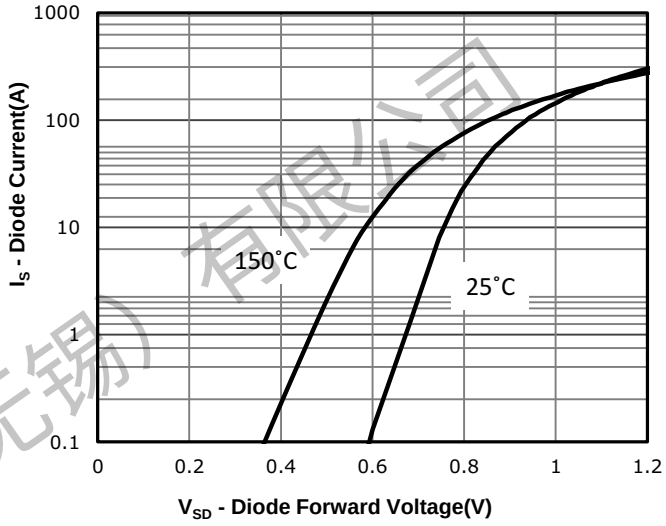


Fig 11: Power Dissipation

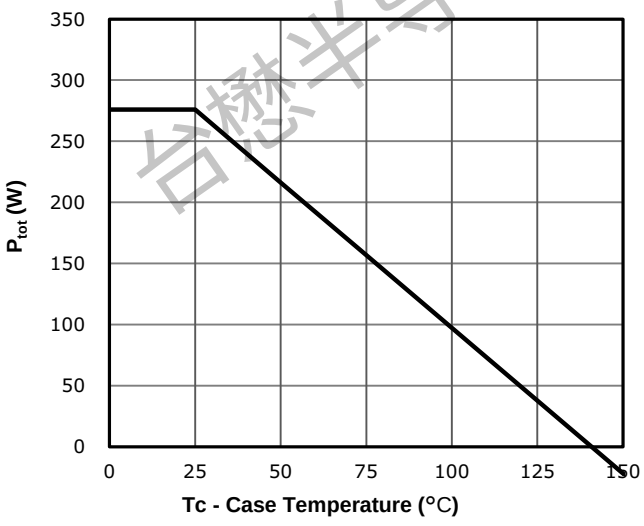


Fig 12: Drain Current Derating

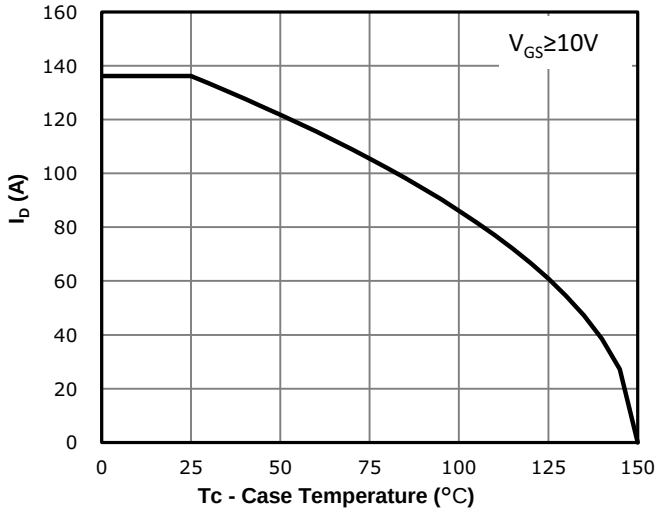


Fig 13: Safe Operating Area

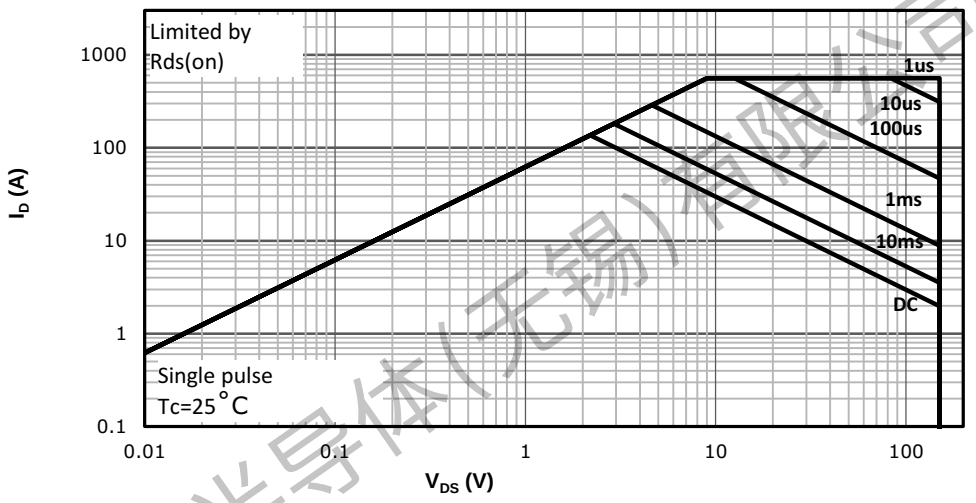
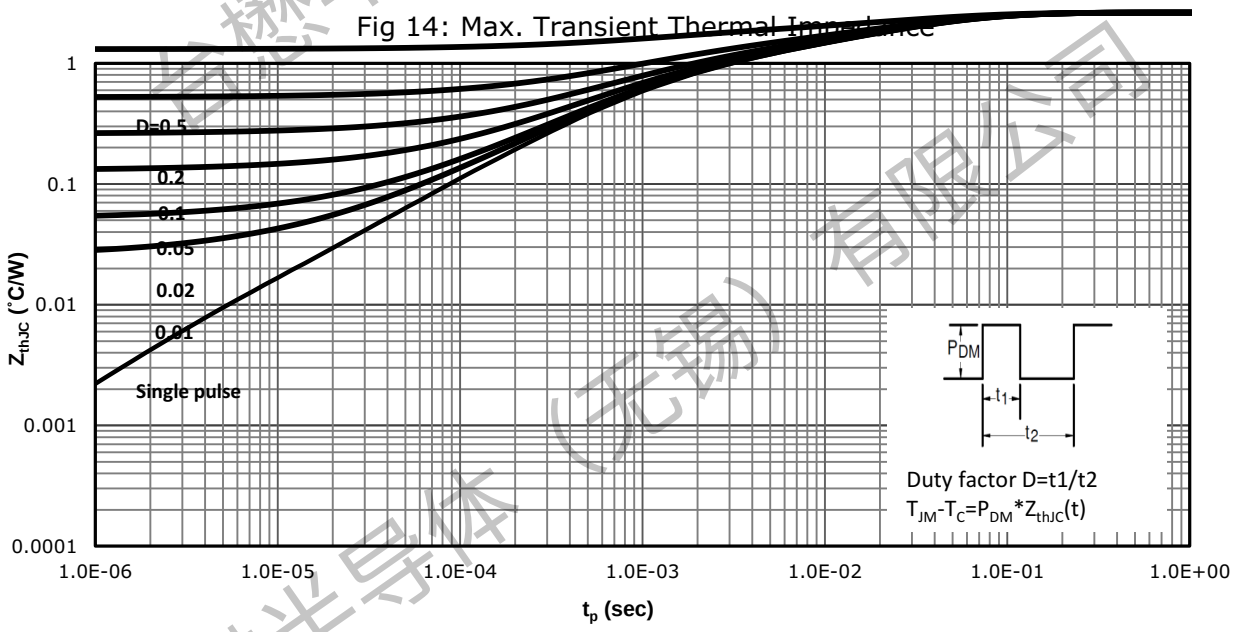


Fig 14: Max. Transient Thermal Impedance



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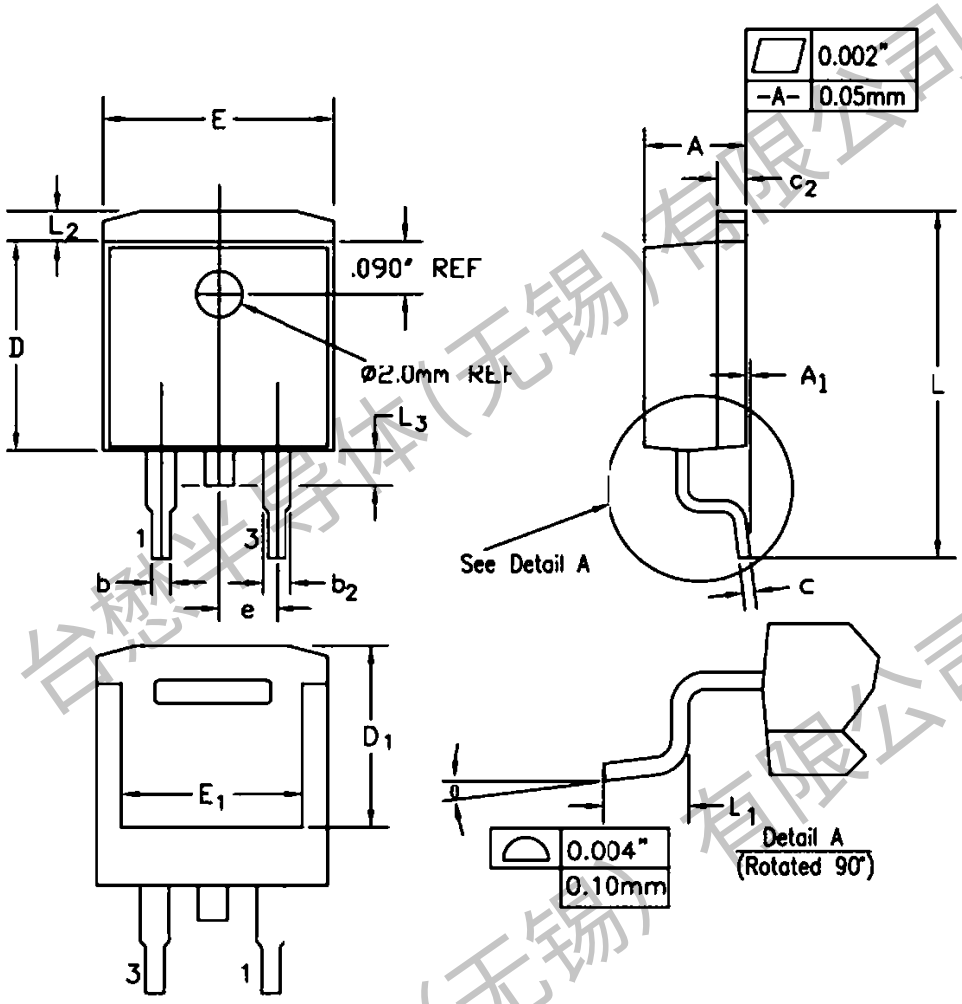
Package Mechanical Data: TO-263-3L



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
2023.07.14	23.07	Original	