TM100N20HT

N -Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

General Features

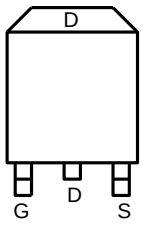
V_{DS} =200V I_D= 100A

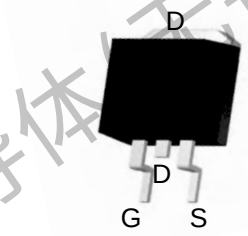
$R_{DS(ON)}$= 17mΩ(typ.) @ V_{GS}= 10V

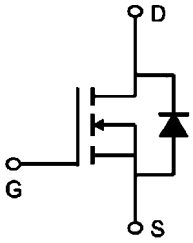
100% UIS Tested

100% R_g Tested

T:TO-263-3L







Marking: 100N20H

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V	100	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ 10V	63	A
I_{DM}	Pulsed Drain Current	400	A
EAS	Single Pulse Avalanche Energy	1190	mJ
I_{AS}	Avalanche Current	---	A
P_D	Total Power Dissipation	272	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	---	---	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	0 46	°C/W

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Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	200	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	---	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10 V, I_D=61A	---	17	22	mΩ
		V_{GS}=4.5V , I_D=61A	---	---	---	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	3	4	5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ 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}=10V , I_D=31A	---	73	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.2	---	Ω
Q_g	Total Gate Charge	V_{DS}=50V , V_{GS}=10V , I_D=61A	---	134	---	nC
Q_{gs}	Gate-Source Charge		---	49.6	---	
Q_{gd}	Gate-Drain Charge		---	39.6	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD} = 50V,R_L=1.25Ω R_G = 3Ω, V_{GS}=10V	---	36.3	---	ns
T_r	Rise Time		---	9.2	---	
$T_{d(off)}$	Turn-Off Delay Time		---	64	---	
T_f	Fall Time		---	6.3	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , f=1MHz	---	8826	---	pF
C_{oss}	Output Capacitance		---	532	---	
C_{rss}	Reverse Transfer Capacitance		---	148	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	100	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=31A , T_J=25C	---	---	1.2	V
t_{rr}	Reverse Recovery Time	IF=61A ,di/dt=100A/μs , T_J= 25 C	---	102	---	nS
Q_{rr}	Reverse Recovery Charge		---	550.3	---	nC

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics

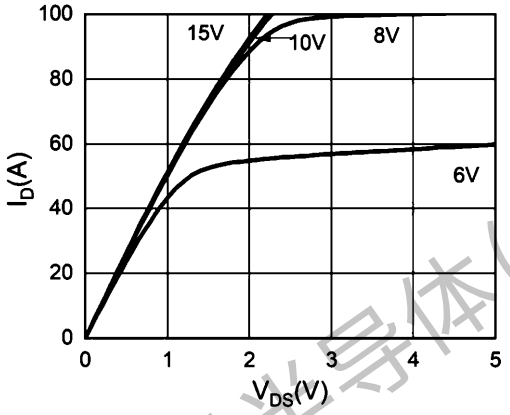


Figure 2. Transfer Characteristics

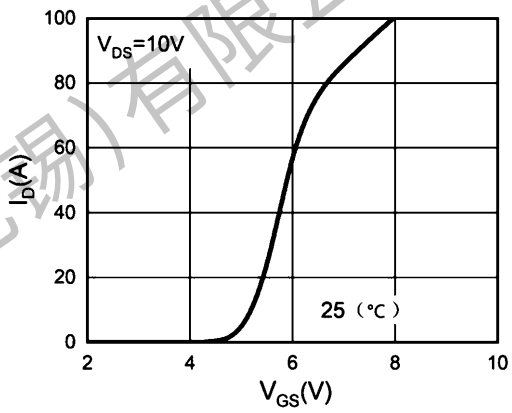


Figure 3. Power Dissipation

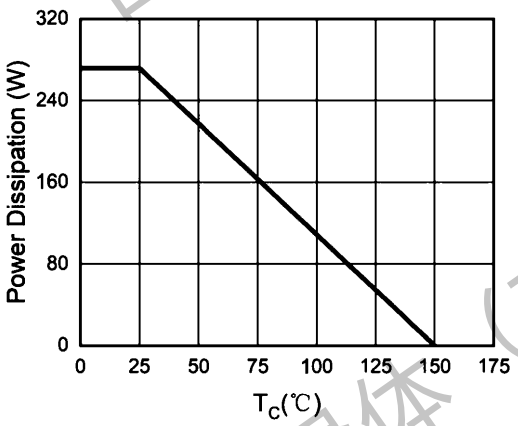


Figure 4. Drain Current

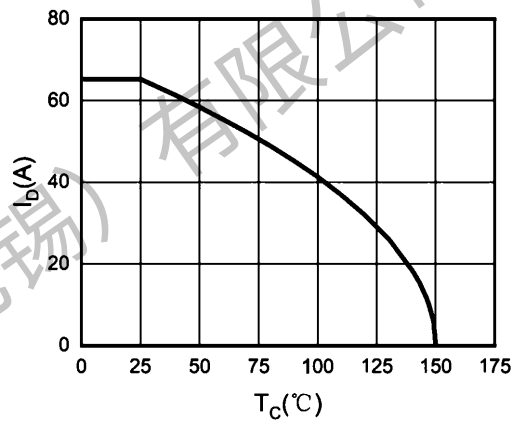


Figure 5. BV_{DSS} vs Junction Temperature

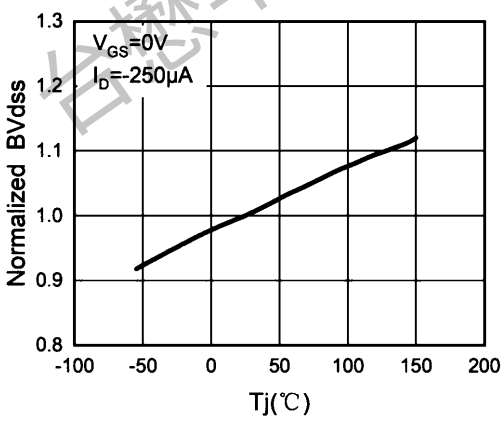
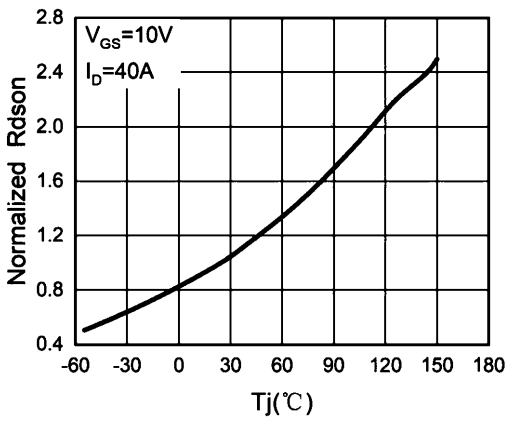


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



Typical Electrical And Thermal Characteristics (Curves)

Figure 7. Gate Charge Waveforms

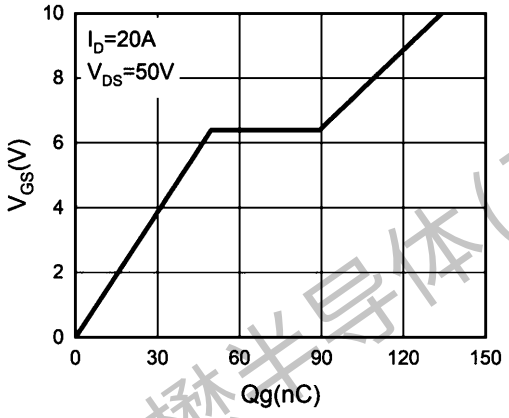


Figure 8. Capacitance

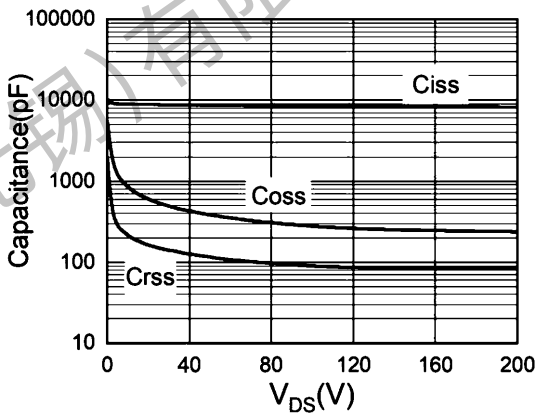


Figure 9. Body-Diode Characteristics

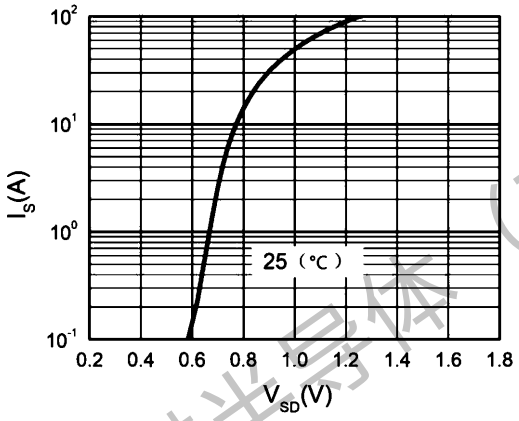
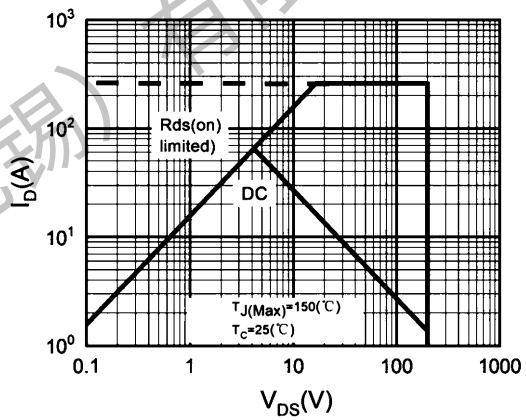


Figure 10. Maximum Safe Operating Area



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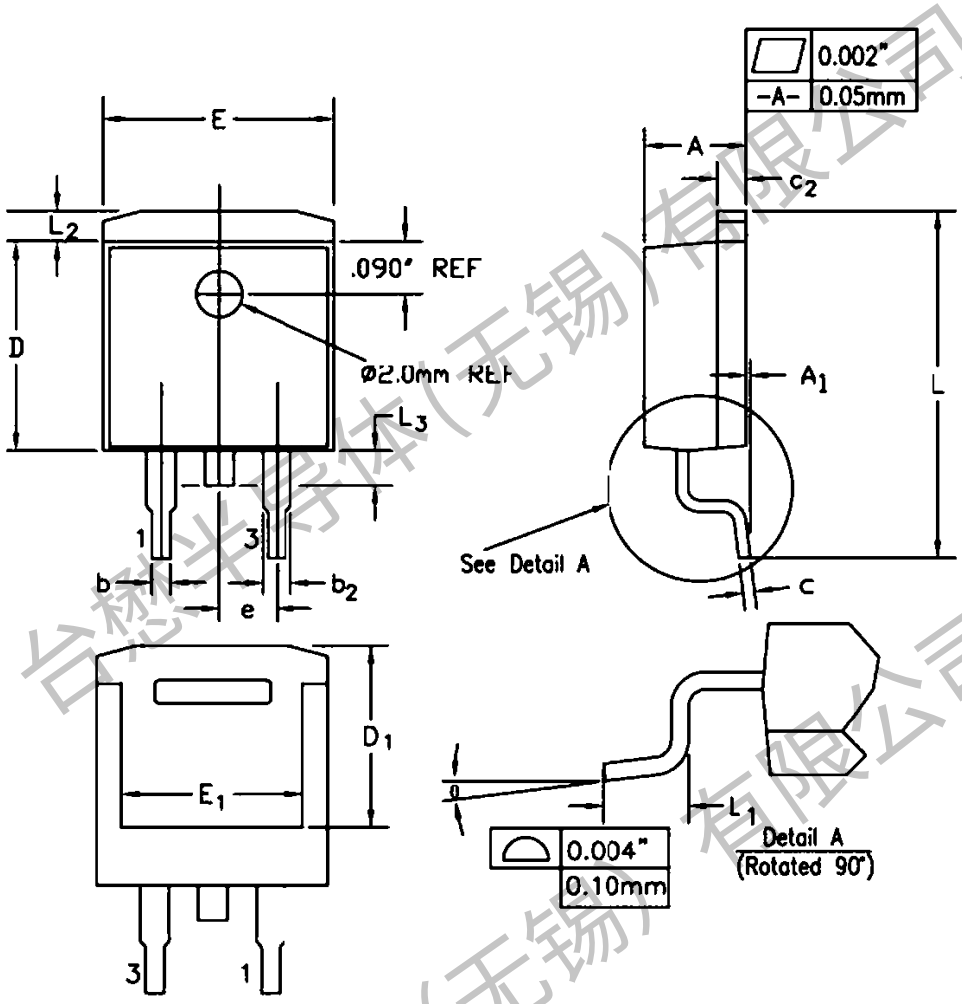
Package Mechanical Data: TO-263-3L



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
2023.12.11	23.12	Original	