TMG180N10HT

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

General Features

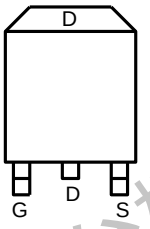
V_{DS} = 100V I_D =180A

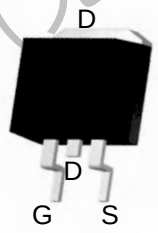
$R_{DS(ON)}$ =2.8mΩ (typ.) @ V_{GS}=10V

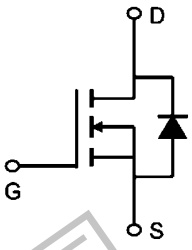
100% UIS Tested

100% R_g Tested

T:TO-263-3L







Marking: G180N10

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V	180	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ 10V	120	A
I_{DM}	Pulsed Drain Current	720	A
EAS	Single Pulse Avalanche Energy	1332	mJ
I_{AS}	Avalanche Current	---	A
P_D@T_C=25°C	Total Power Dissipation	210	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	---	0.6	°C/W

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

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	100	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS=80V , VGS=0V , TJ=25℃	-	-	1	μA
Gate Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	-	-	±0.1	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	3.0	4.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 30A	-	2.8	3.5	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=50V , VGS=0V , f=1MHz	-	6180	-	pF
Output Capacitance	C_{oss}		-	920	-	
Reverse Transfer Capacitance	C_{rss}		-	31	-	
Total Gate Charge	Q_g	VDS=50V , VGS=10V , ID=125A	-	91	-	nC
Gate-Source Charge	Q_{gs}		-	40.5	-	
Gate-Drain Charge	Q_{gd}		-	20	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=50V, VGS=10V , RG=6Ω, ID=125A	-	22	-	nS
Rise Time	t_r		-	65	-	
Turn-Off Delay Time	$t_{d(off)}$		-	75	-	
Fall Time	t_f		-	26	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	180	A
Reverse Recovery Time	Trr	I_S=20A, di/dt=100A/us, TJ=25℃	-	75	-	nS
Reverse Recovery Charge	Qrr		-	210	-	nC

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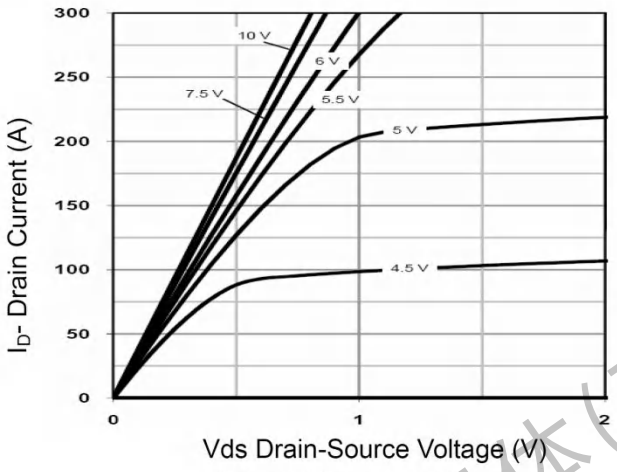
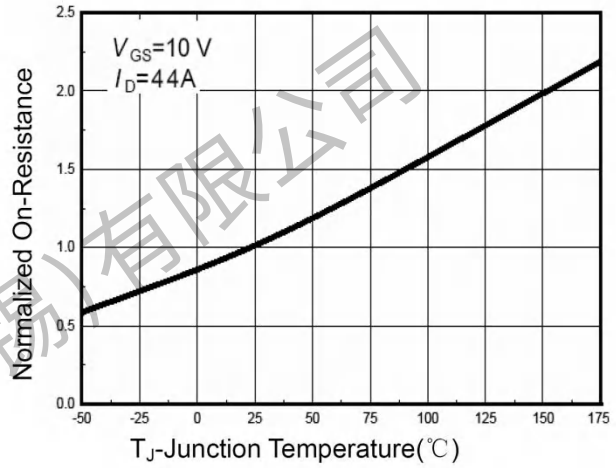
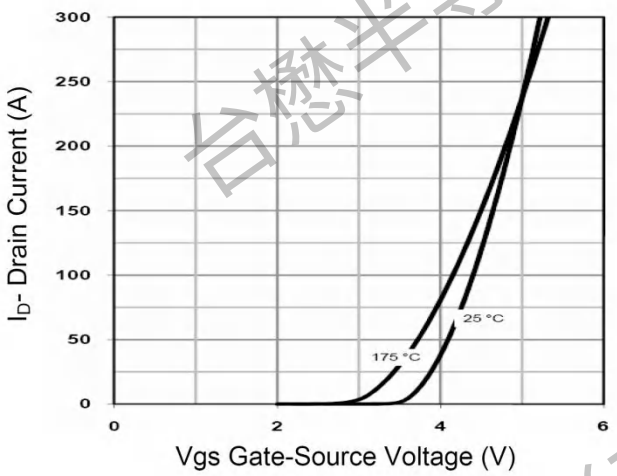


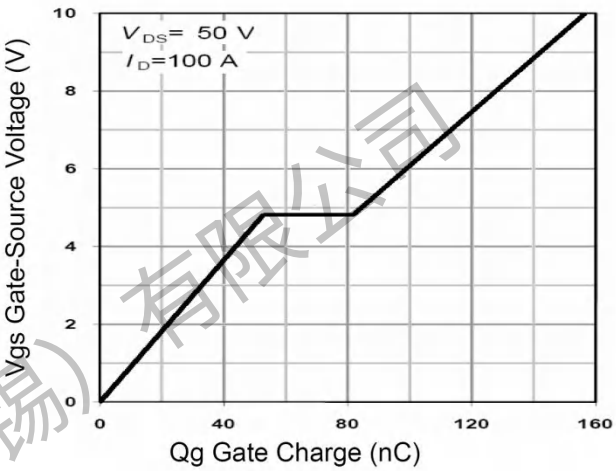
Output Characteristics



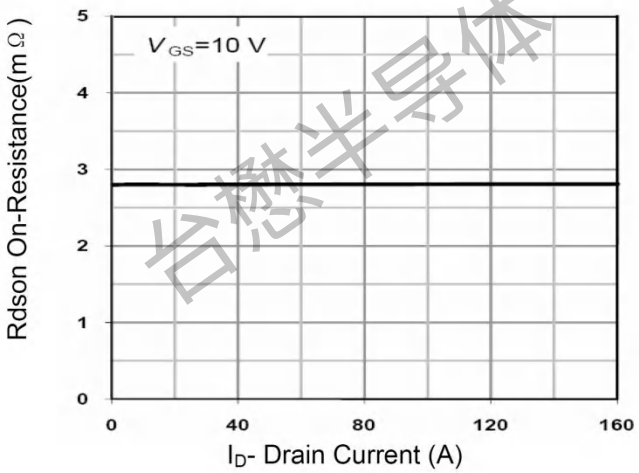
Rdson-Junction Temperature



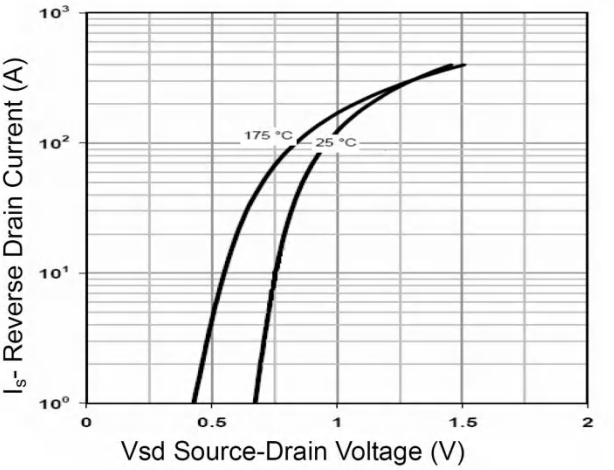
Transfer Characteristics



Gate Charge



Rdson- Drain Current



Source- Drain Diode Forward

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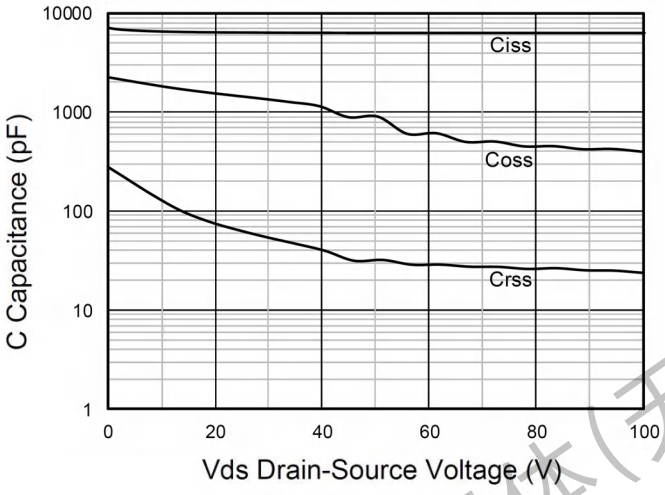
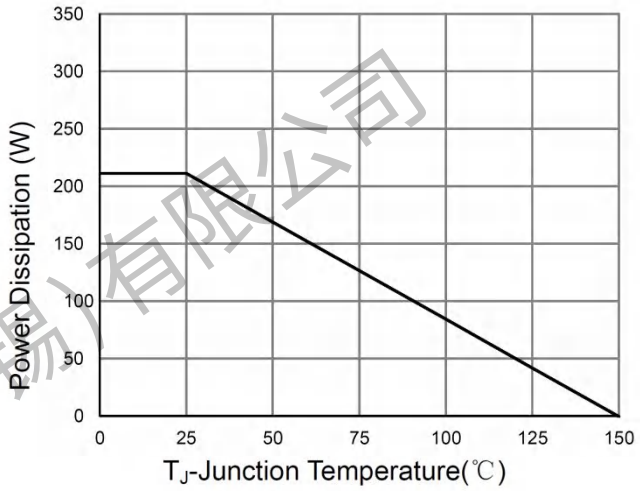
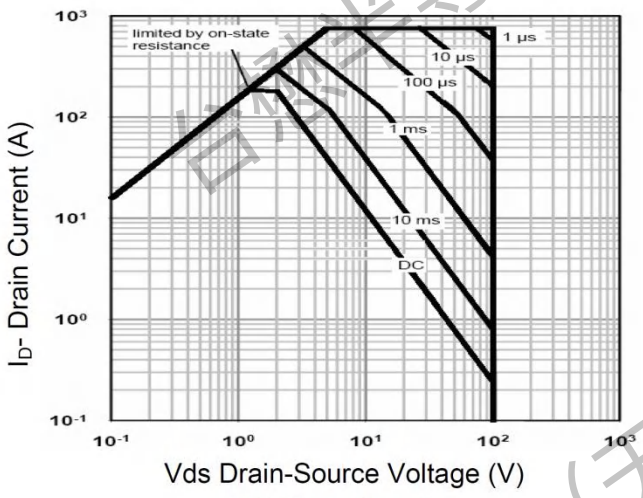


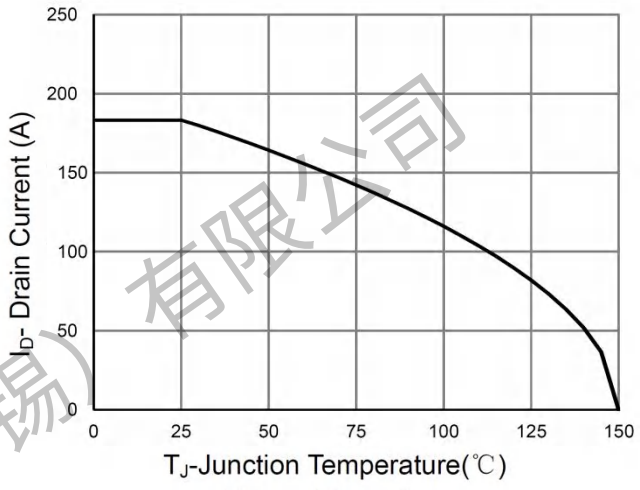
Capacitance vs Vds



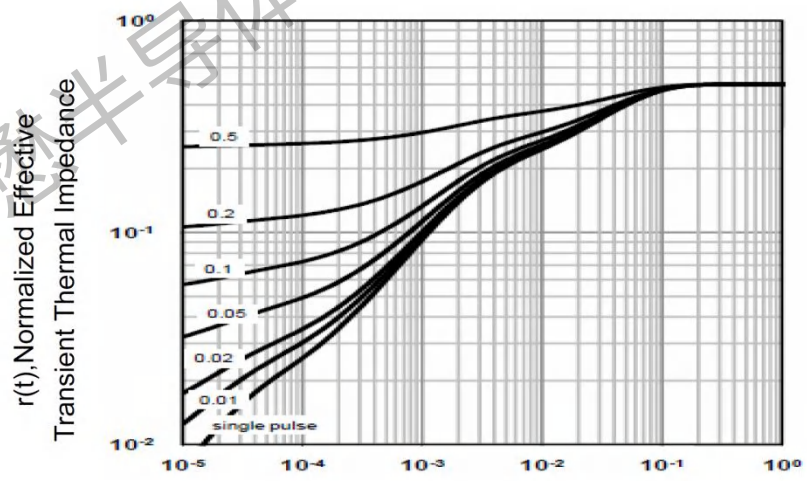
Power De-rating



Safe Operation Area

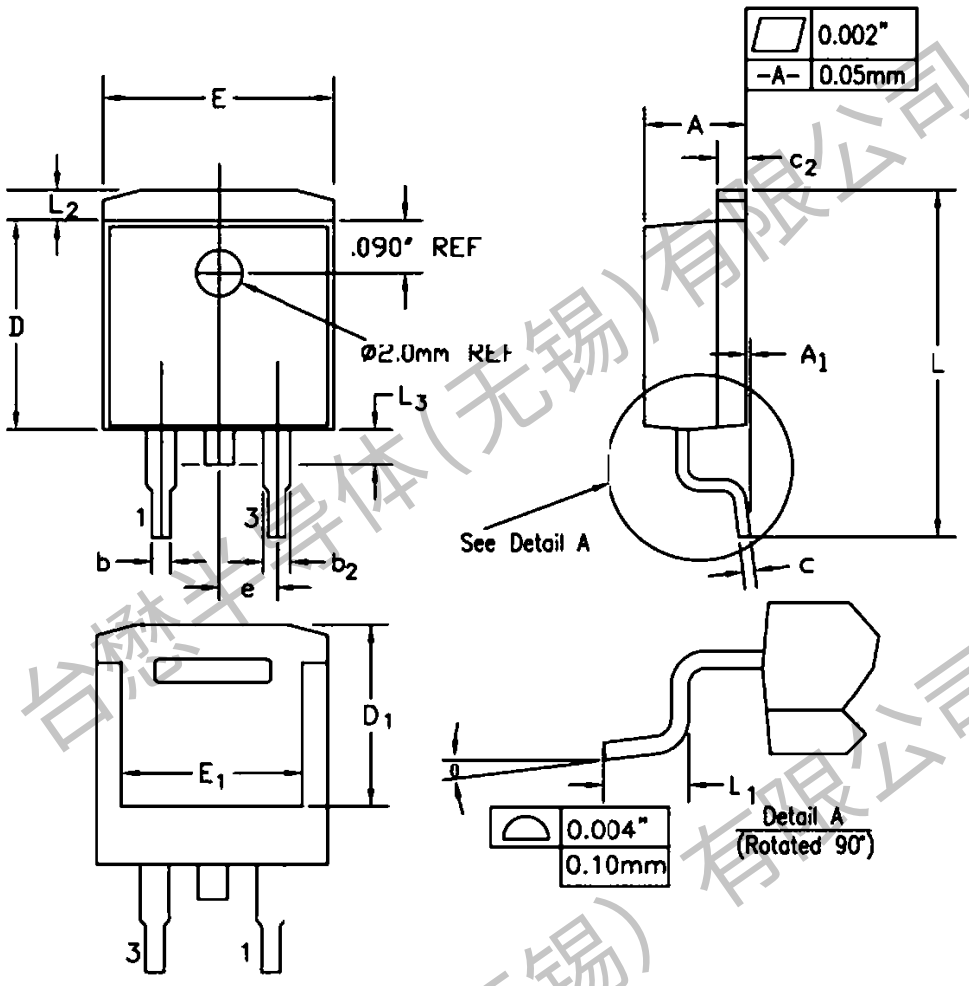


Current De-rating



Normalized Maximum Transient Thermal Impedance

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	