TMG160N06HT

N -Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

General Features

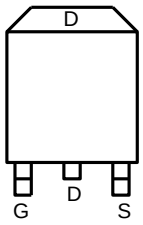
V_{DS} = 60V I_D =160A

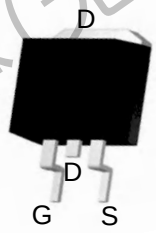
$R_{DS(ON)}$ =2.7mΩ(typ.)@ V_{GS}=10V

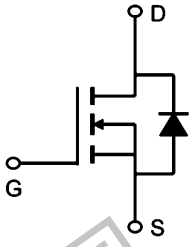
100% UIS Tested
100% R_g Tested

Green Product

T:TO-263-3L







Marking: G160N06

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Curren[2]	160	A
	Continuous Drain Current-T_C=100℃[2]	112	
I_{DM}	Pulsed Drain Current[3]	560	
P_D	Power Dissipation	240	W
E_{AS}	Single pulse avalanche energy[1]	1200	mJ
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	2	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	62	℃/W

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2	3	4	V
Drain-Source On-State Resistance(Note 3)	$R_{DS(ON)}$	V_{GS}=10V, I_D=50A	-	2.7	3.0	mΩ
Forward Transconductance	g_{FS}	V_{DS}=50V,I_D=75A	-	180	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	8280	-	pF
Output Capacitance	C_{oss}		-	760	-	pF
Reverse Transfer Capacitance	C_{rss}		-	680	-	pF
Switching Characteristics (Note 4)						
Turn-on Delay Time	td(on)	V_{DD}=30V, I_D=40A, V_{GS}=10V,R_{GEN}=3Ω	-	27	-	nS
Turn-on Rise Time	tr		-	25	-	nS
Turn-Off Delay Time	td(off)		-	90	-	nS
Turn-Off Fall Time	tf		-	40	-	nS
Total Gate Charge	Qg	V_{DS}=60V,I_D=40A V_{GS}=10V	-	186	-	nC
Gate-Source Charge	Qgs		-	46	-	nC
Gate-Drain Charge	Qgd		-	70	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=190A	-	-	1.2	V

Notes:
1.Repetitive Rating: Pulse width limited by maximum junction temperature.
2.EAS condition :T j=25℃,VDD=50V,VG=10V,L=0.5mH,Rg=25Ω
3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4.Guaranteed by design, not subject to production.

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Characteristics Curves

Figure 1 Output Characteristics

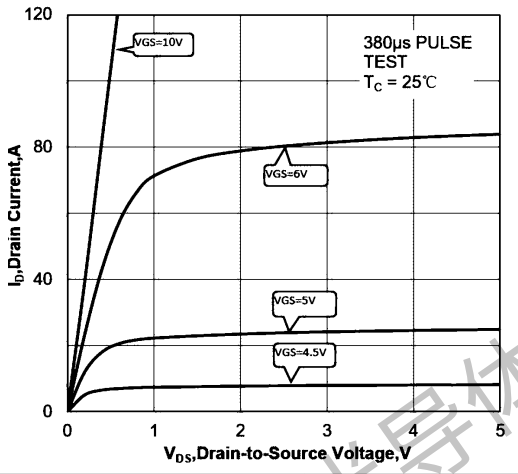

Figure 2 Transfer Characteristics

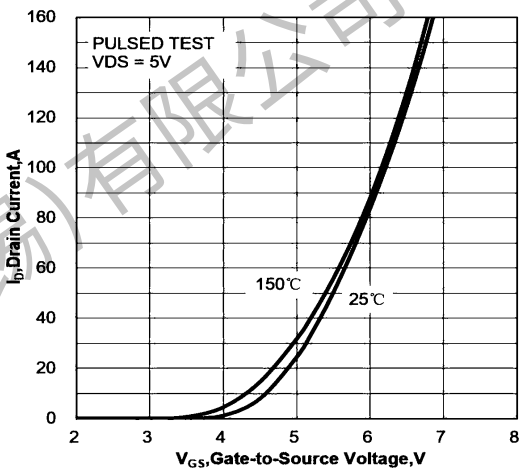

Figure 3 On-Resistance vs. ID and VGS

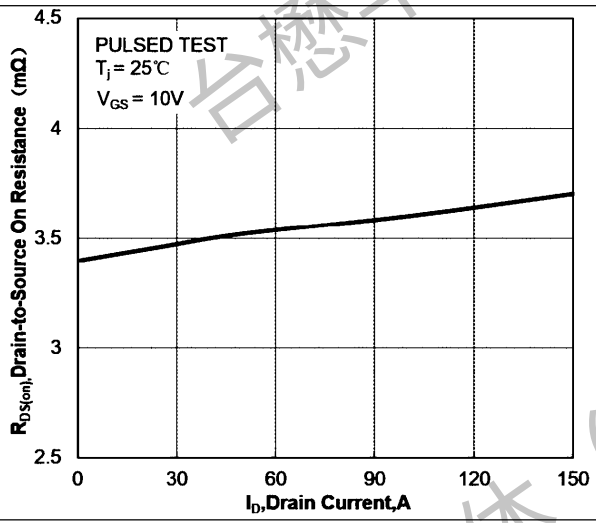

Figure 4 On-Resistance vs. Junction Temperature

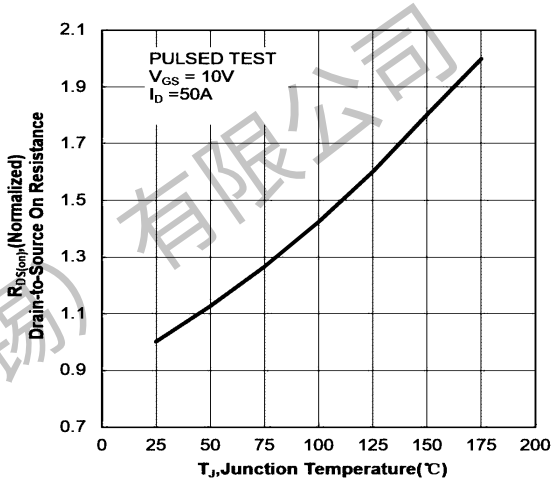

Figure 5 On-Resistance vs. VGS

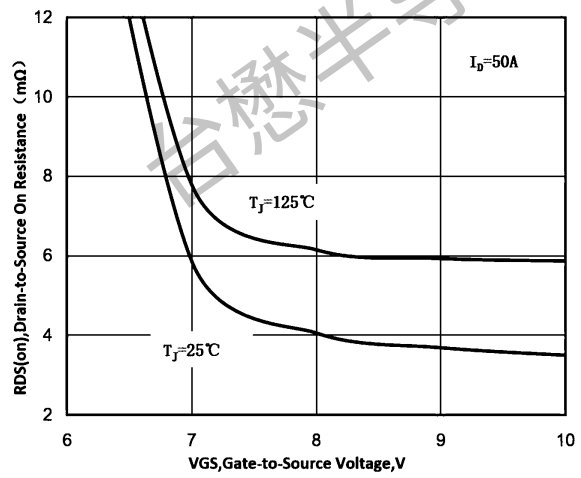

Figure 6 Body Diode Forward Voltage

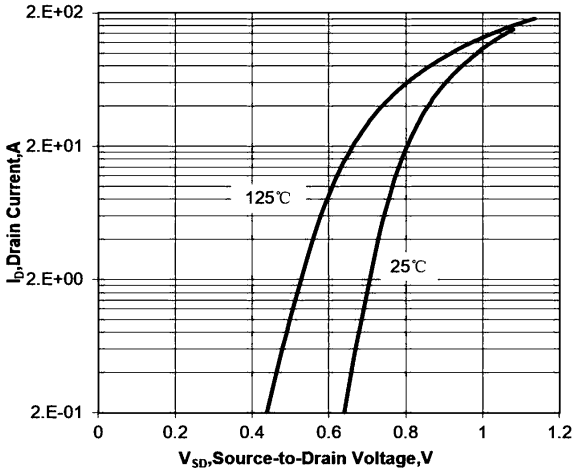

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Figure 7 Gate-Charge Characteristics

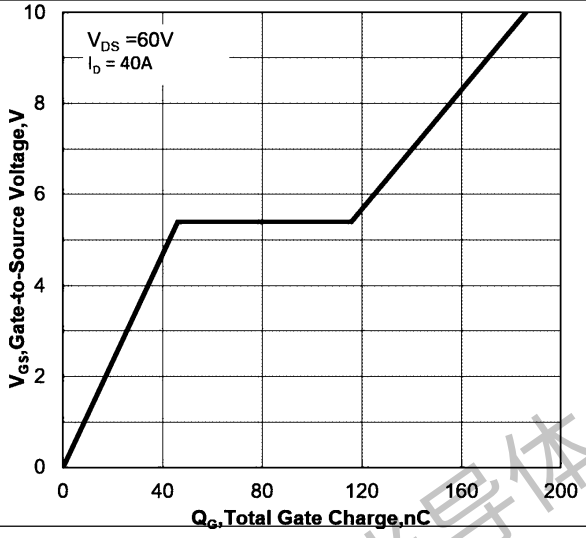


Figure 8 Capacitance Characteristics

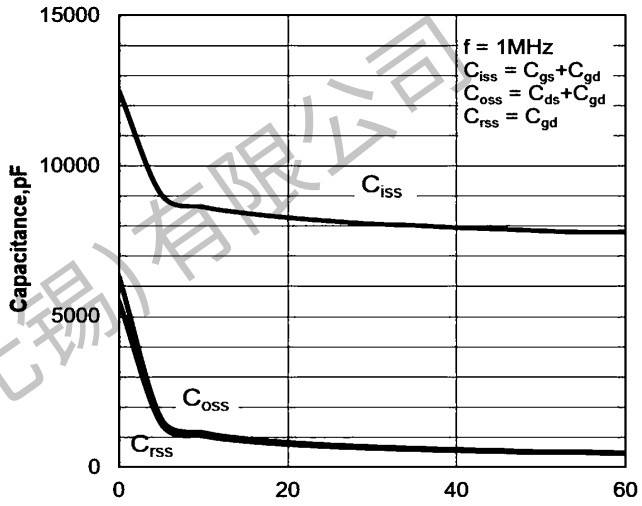


Figure 9 Maximum Forward Biased Safe Operation Area

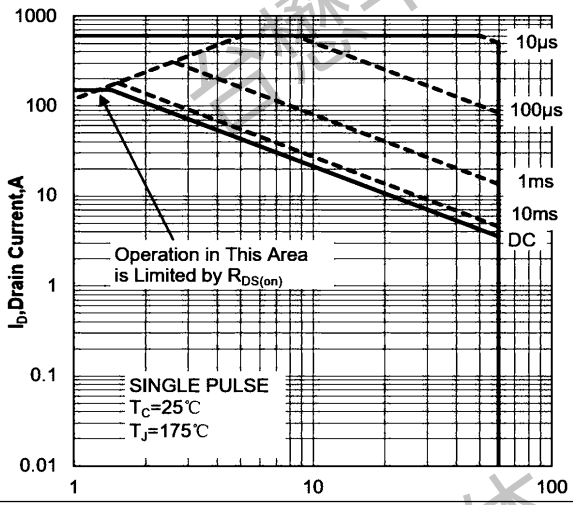


Figure 10 Single Pulse Power Rating Junction-to-Ambient

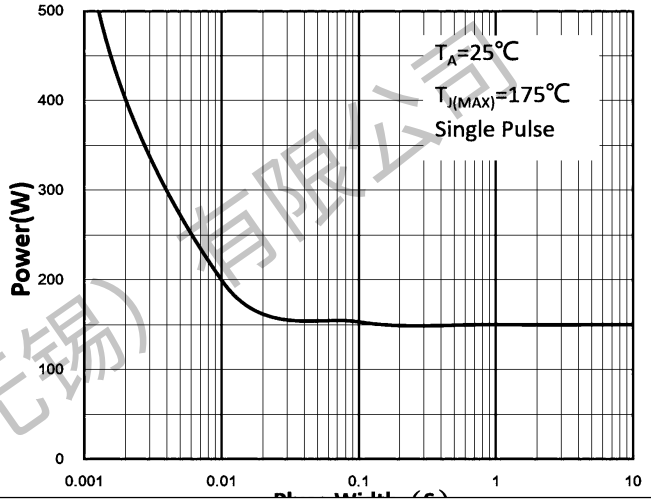
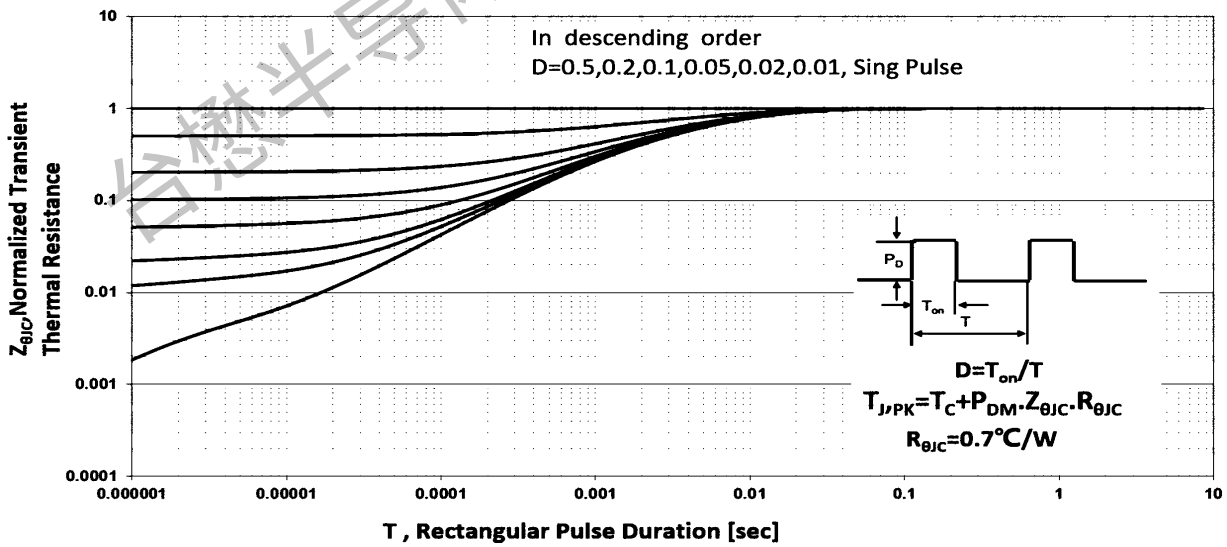


Figure 11Normalized Maximum Transient Thermal Impedance



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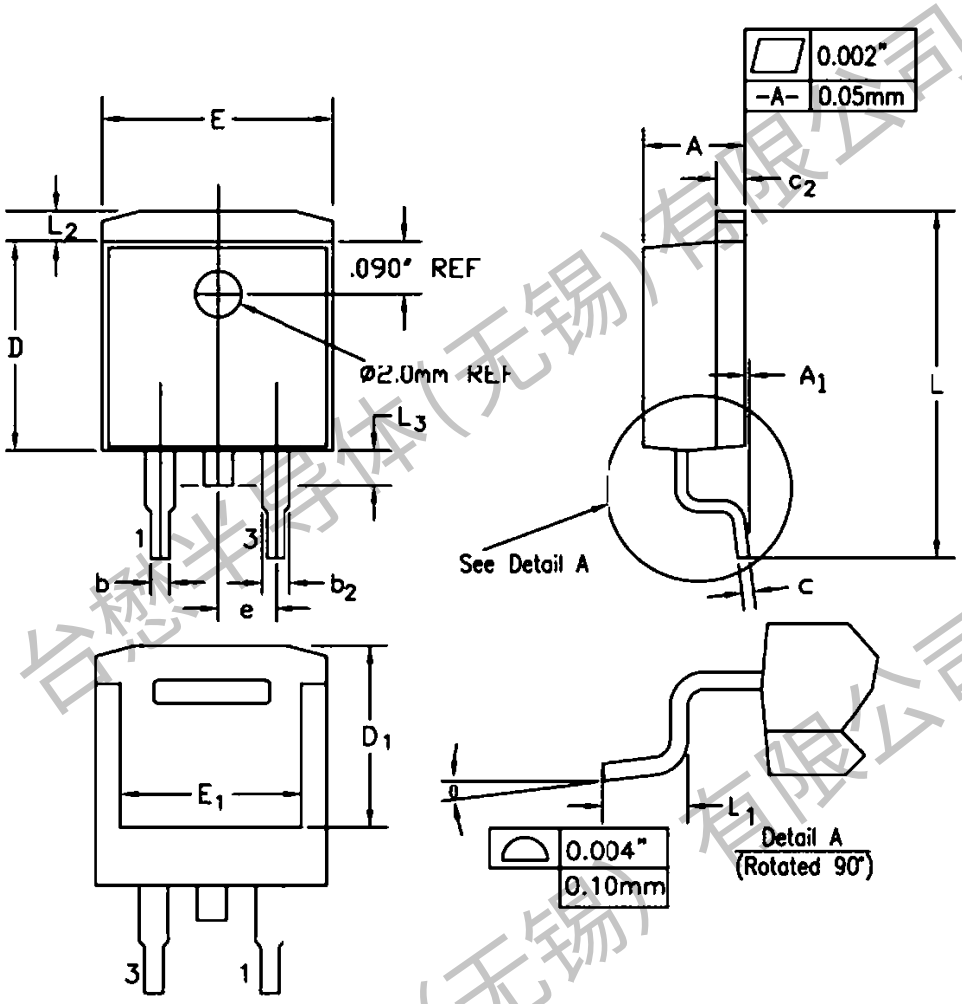
Package Mechanical Data: TO-263-3L



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
2023.08.25	23.08	Original	