

TMG130N06T

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

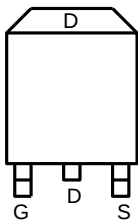
General Features

$V_{DS} = 60V$ $I_D = 130A$

$R_{DS(ON)} = 3.0 m\Omega (typ.) @ V_{GS} = 10V$

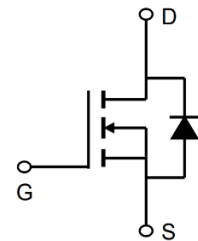
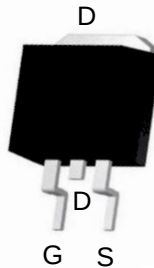
100% UIS Tested

100% R_g Tested



Marking: G130N06

T:TO-263-3L



Absolute Maximum Ratings: ($T_C = 25^\circ C$ 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 Current- $T_C = 25^\circ C$ ¹	130	A
	Continuous Drain Current- $T_C = 100^\circ C$	80	
	Pulsed Drain Current ²	385	
E_{AS}	Single Pulse Avalanche Energy ⁵	80	mJ
P_D	Power Dissipation ³	140	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.89	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to ambient ⁴	62	$^\circ C/W$



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Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =60V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics ³						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	1.8	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =20A	---	3	3.5	m Ω
		V _{GS} =4.5V, I _D =10A	---	3.5	4.5	
Dynamic Characteristics ⁴						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=100KHz	---	3377	---	pF
C _{oss}	Output Capacitance		---	1666	---	
C _{rss}	Reverse Transfer Capacitance		---	77.7	---	
Switching Characteristics ⁴						
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V, I _D =25A, R _G =2Ω V _{GS} =10V	---	22.5	---	ns
t _r	Rise Time		---	6.7	---	ns
t _{d(off)}	Turn-Off Delay Time		---	80.3	---	ns
t _f	Fall Time		---	26.8	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =25A	---	66.1	---	nC
Q _{gs}	Gate-Source Charge		---	10.7	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	10.9	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _S =20A	---	---	1.3	V
LS	Continuous Source Current	VGS\<Vth	---	---	130	A
LSp	Pulsed Source Current		---	---	390	
Trr	Reverse Recovery Time	I _S =25 A, di/dt=100 A/μs	---	68.3	---	NS
Qrr	Reverse Recovery Charge		---	73	---	NC

Notes:

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_d is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25^{\circ}\text{C}$.
- 5) $V_{DD}=50\text{ V}$, $R_G=25\ \Omega$, $L=0.3\text{ mH}$, starting $T_j=25^{\circ}\text{C}$.

Typical Characteristics: ($T_c=25^\circ\text{C}$ unless otherwise noted)

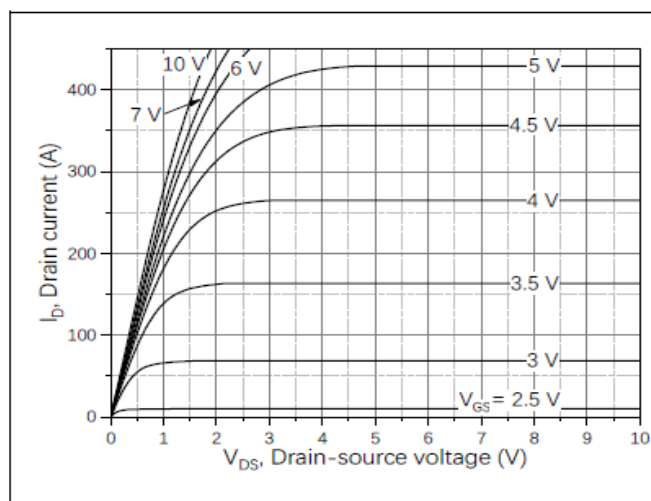


Figure 1, Typ. output characteristics

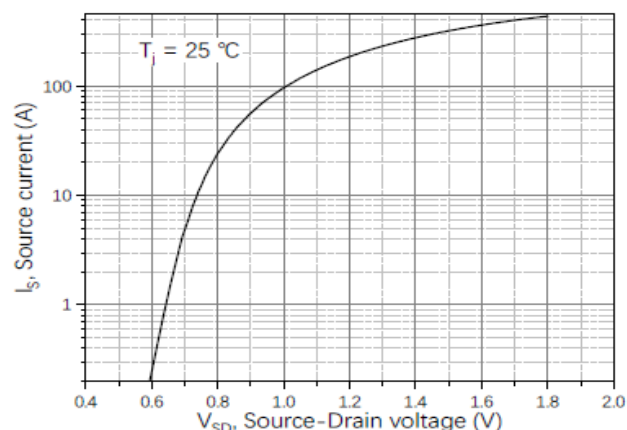


Figure 2, Typ. transfer characteristics

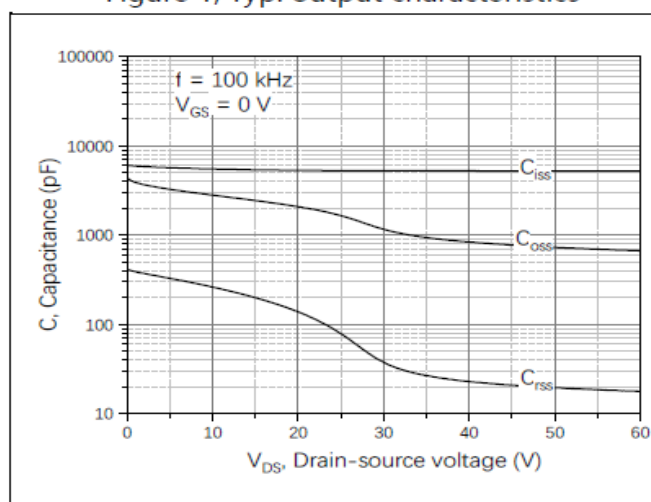


Figure 3, Typ. capacitances

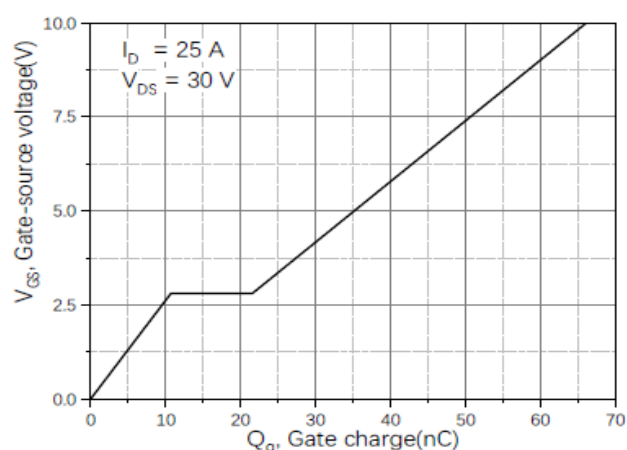


Figure 4, Typ. gate charge

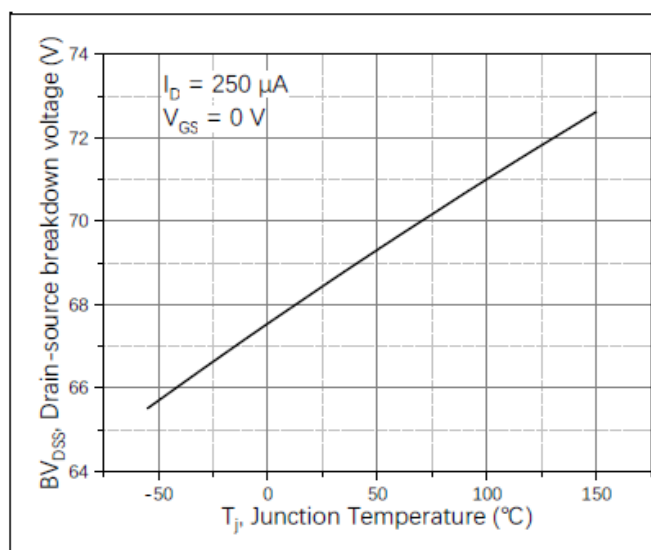


Figure 5, Drain-source breakdown voltage

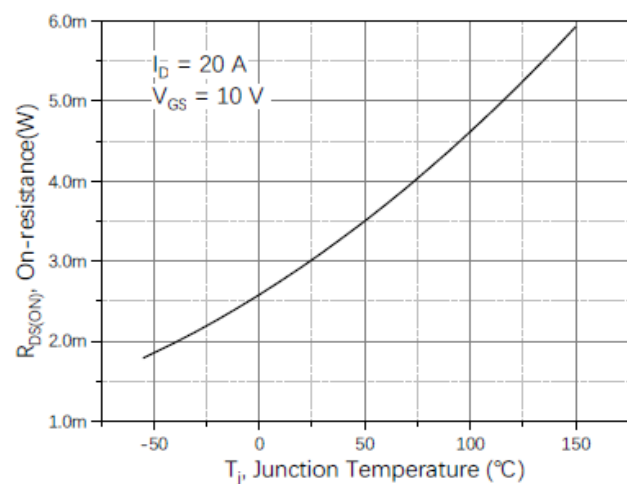


Figure 6, Drain-source on-state resistance

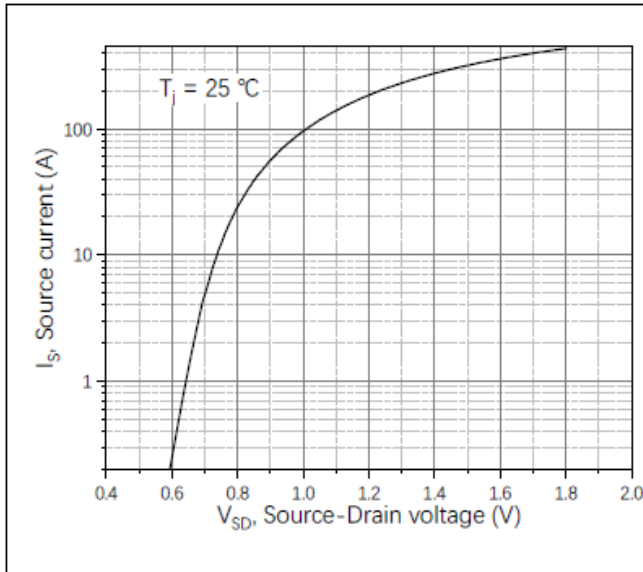


Figure 7, Forward characteristic of body diode

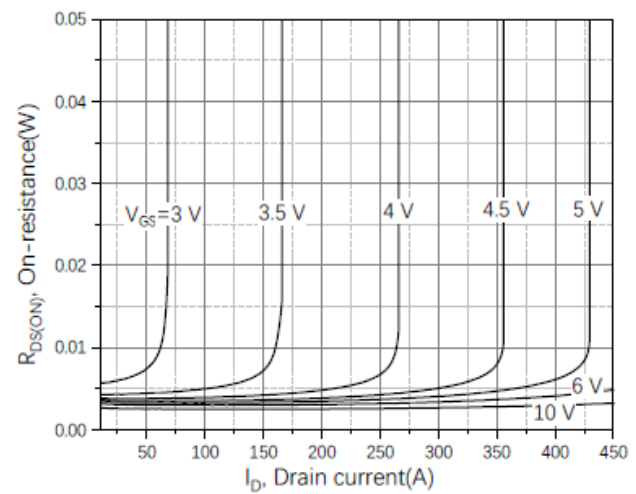
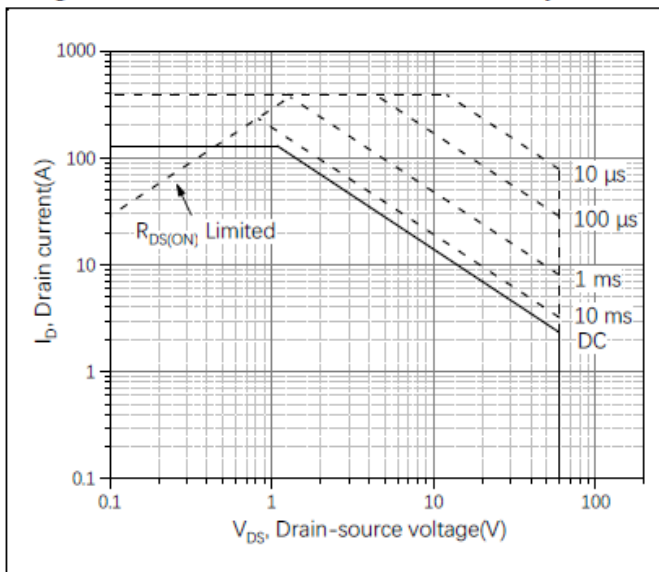
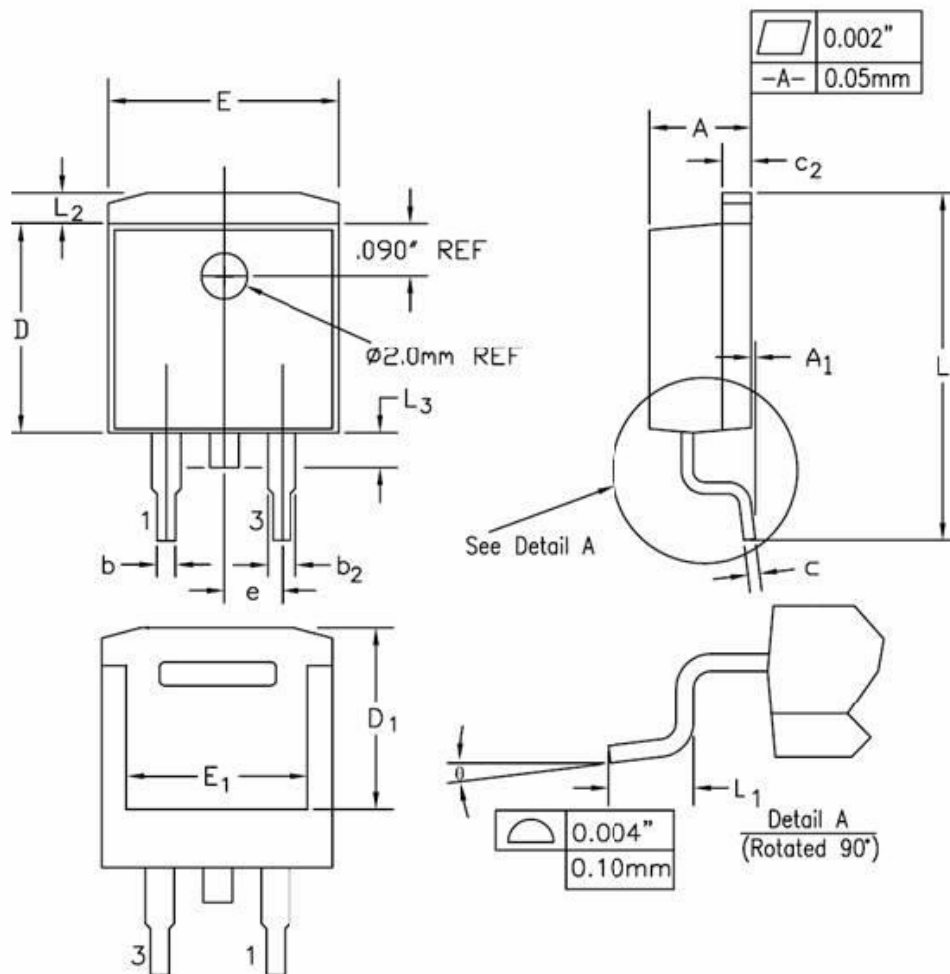


Figure 8, Drain-source on-state resistance

Figure 9, Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

Package Information: 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°	