
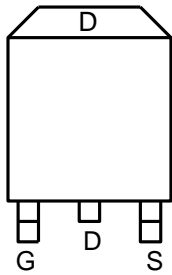




TMG100N04T

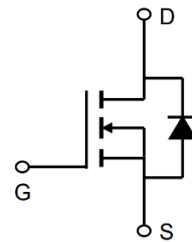
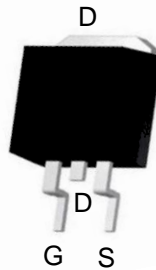
N-Channel Enhancement Mosfet

<p>General Description</p> <ul style="list-style-type: none"> • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM 	<p>General Features</p> <p>$V_{DS} = 40V$ $I_D = 100A$</p> <p>$R_{DS(ON)} = 3.1 m\Omega (typ.) @ V_{GS} = 10V$</p> <p>100% UIS Tested 100% R_g Tested</p> 
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Marking: G100N04

T:TO-263-3L



Absolute Maximum Ratings: ($T_C = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C = 25^\circ C$	100	A
	Continuous Drain Current- $T_C = 125^\circ C$	59	
I_{DM}	Pulsed Drain Current ²	240	
I_{AR}	Avalanche Current, Repetitive ²	20	A
E_{AS}	Single Pulse Avalanche Energy ³	170	mJ
P_D	Power Dissipation	89	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	1.4	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to ambient	50	$^\circ C/W$

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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-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=40V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.2	1.7	2.4	V
$R_{DS(on)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=35A$	---	3.1	3.5	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=15A$	---	4.3	5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1\text{MHz}$	---	1900	---	pF
C_{oss}	Output Capacitance		---	758	---	
C_{rss}	Reverse Transfer Capacitance		---	50	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=20V, V_{GS}=10V, R_G=1.6\ \Omega, I_D=35A$	---	9	---	ns
t_r	Rise Time		---	32	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	32	---	ns
t_f	Fall Time		---	7	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=20V, I_D=35A$	---	6.1	---	nC
Q_{gs}	Gate-Source Charge		---	4.7	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	40	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage ³	$V_{GS}=0V, I_S=35A$	---	0.84	---	V
I_{trr}	Continuous Source Current	$V_R=20V, I_F=35A, dI_F/dt=100A/\mu\text{s}$	---	52	---	ns
I_{qrr}	Pulsed Source Current		---	91	---	nC

Notes:

1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. $I_{AS}=20.0A, V_{DD}=20V, R_G=25\ \Omega, \text{Starting } T_J=25^\circ\text{C}$



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

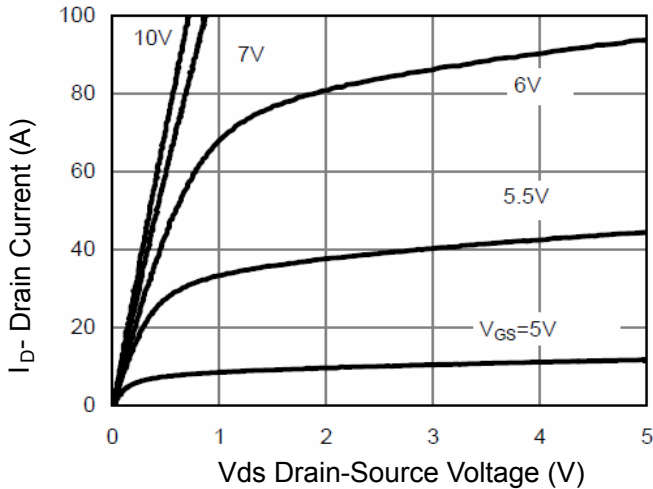


Figure 1 Output Characteristics

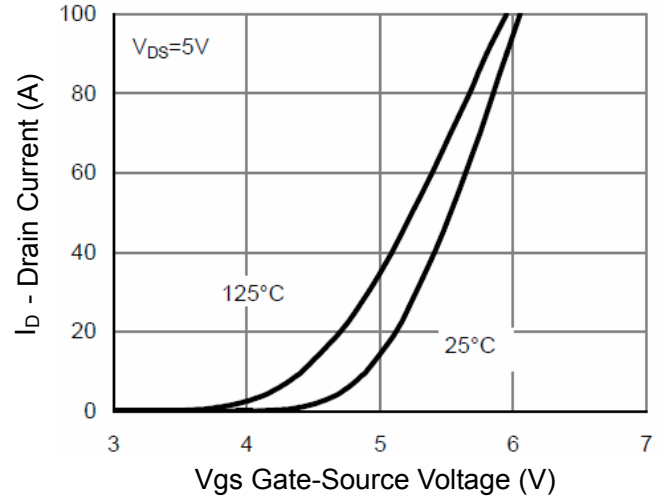


Figure 2 Transfer Characteristics

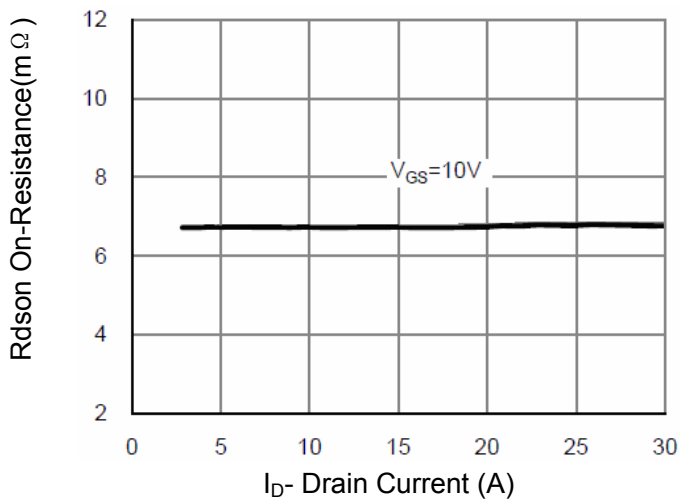


Figure 3 Rdson- Drain Current

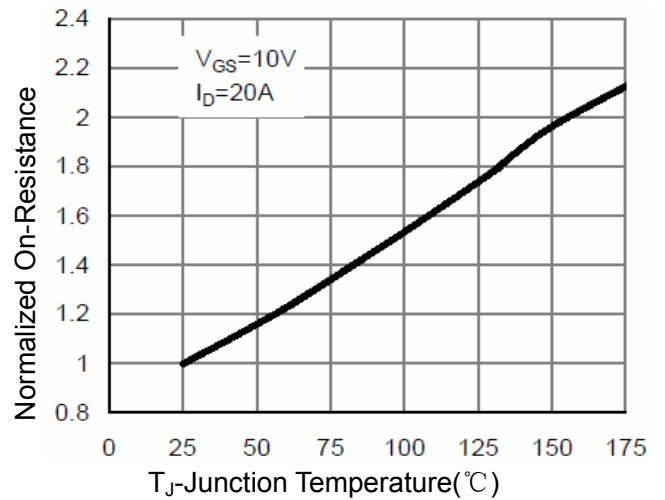


Figure 4 Rdson-Junction Temperature

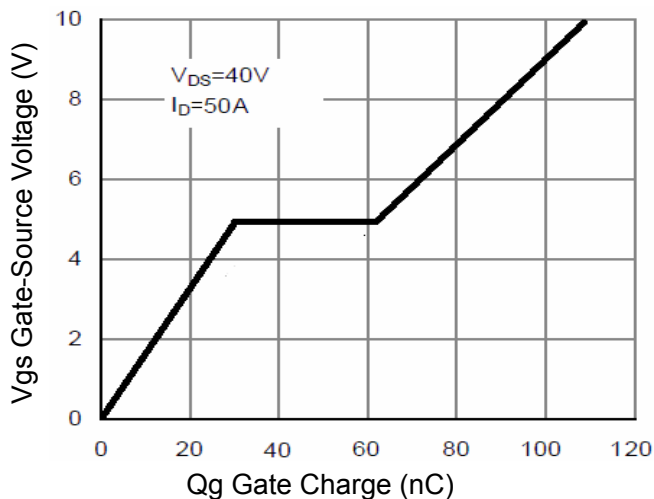


Figure 5 Gate Charge

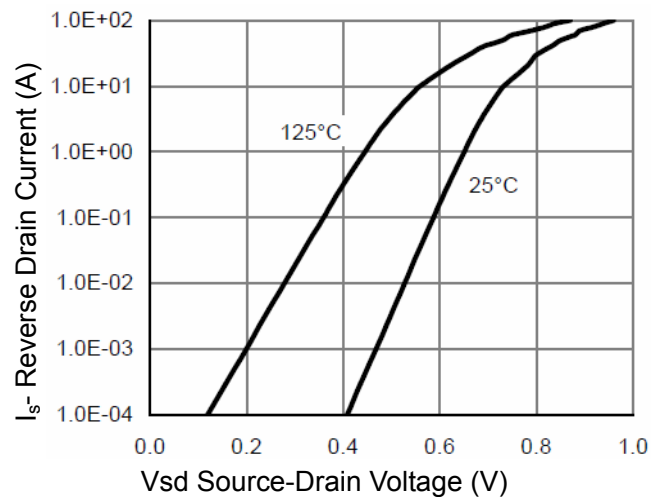


Figure 6 Source- Drain Diode Forward

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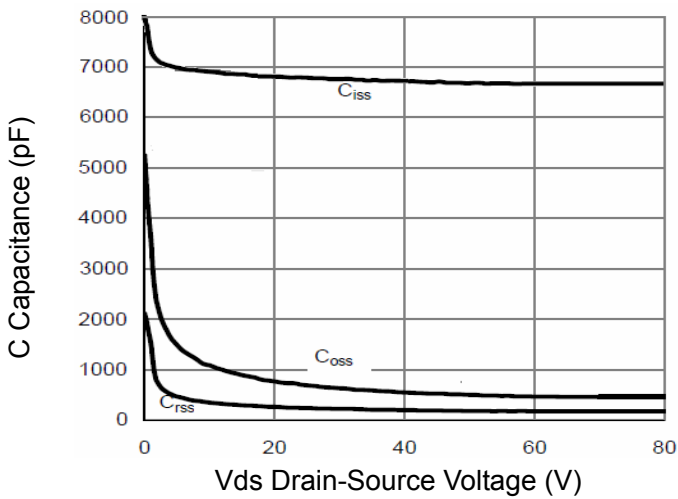


Figure 7 Capacitance vs Vds

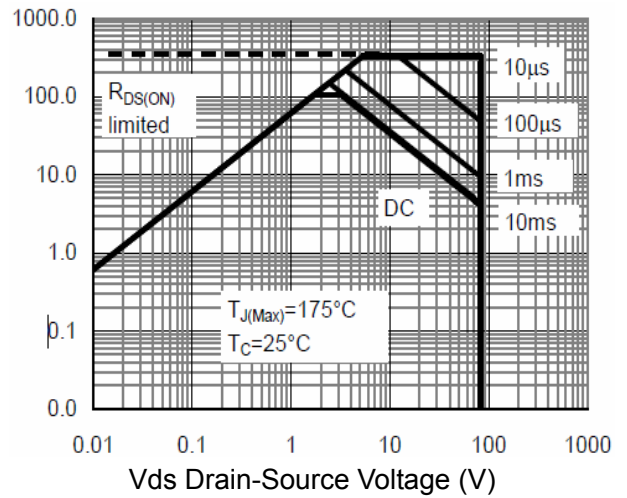


Figure 8 Safe Operation Area

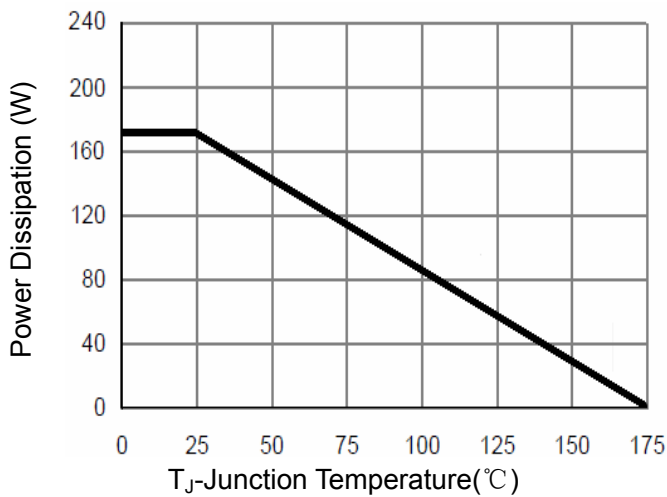


Figure 9 Power De-rating

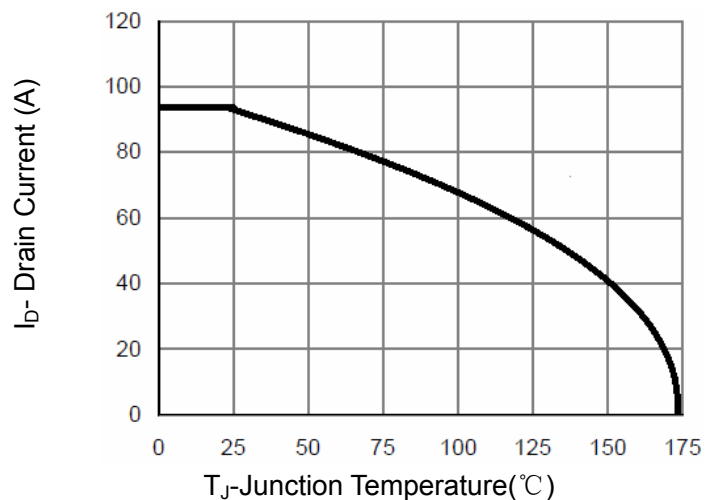


Figure 10 Id Current De-rating

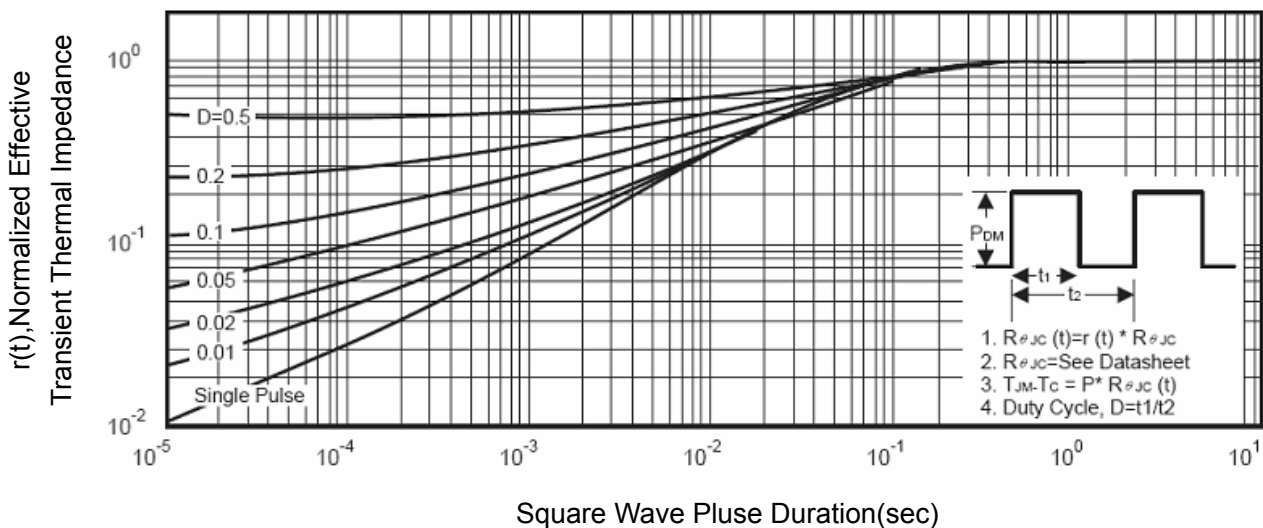
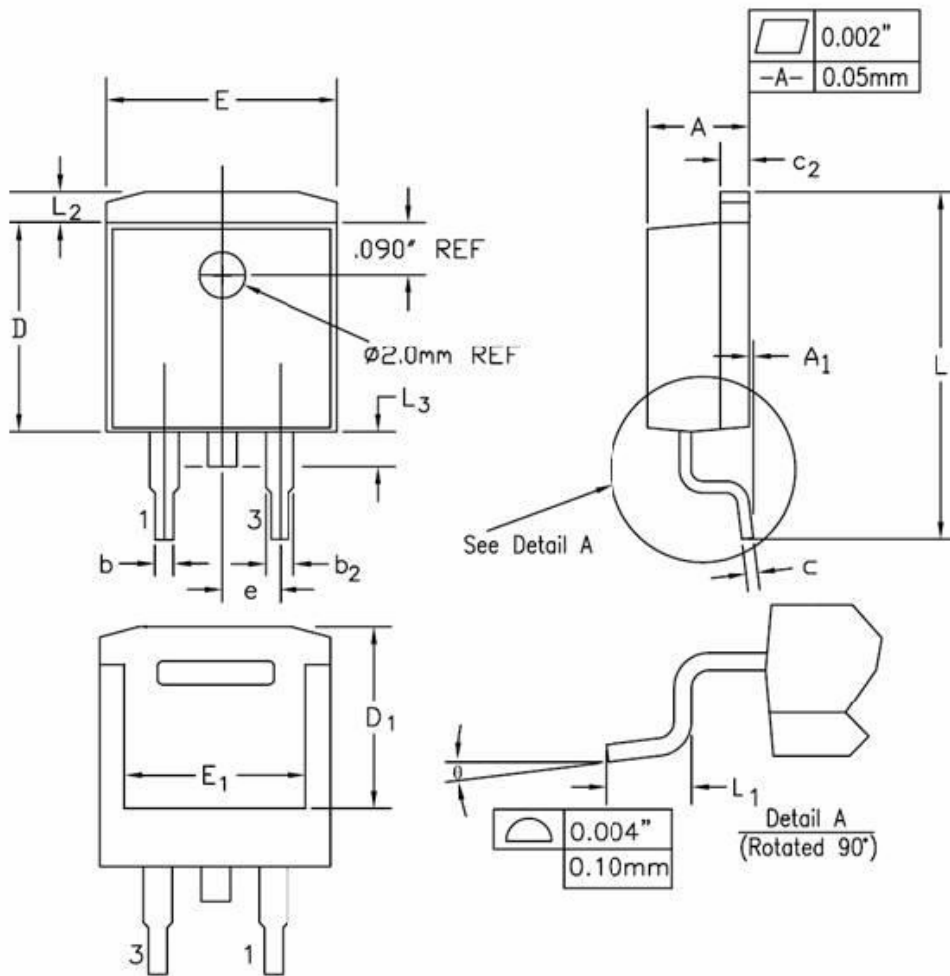


Figure 11 Normalized Maximum Transient Thermal Impedance

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°	