TMN30100D

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

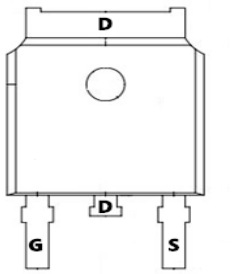
General Features

V_{DS} = 30V I_D =100A

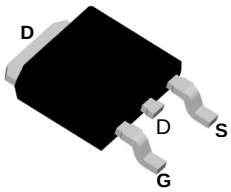
$R_{DS(ON)}$=3.5mΩ(typ) @V_{GS}=10V

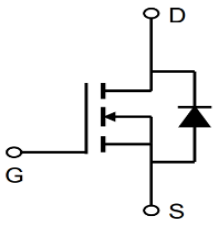
100% UIS Tested
100% R_g Tested

Green Product



D:TO-252-3





Marking: 100N03

Absolute Maximum Ratings (T_A= 25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
I_D	Continuous Drain Current	Tc=25°C	100	A
		Tc=100°C	39	
I_{DM}	Pulsed Drain Current	Tc=25°C	160	
P_D	Power Dissipation	T_A=25°C	3.6	W
P_D	Power Dissipation	T_C=25°C	52	W
T_{STG}, T_j	Storage Temperature Range		-55 to 150	°C
I_D	Continuous Drain Current	T_A=25°C	18	A
		T_A=70°C	14	

Note: Absolute maximum ratings are those values beyond which the device could be permanently
Absolute maximum ratings are stress rating only and functional device operation is not implied

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =24V, V_{GS}=0V	-	-	1	μA
		Tj=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_{DS}=250μA	1	-	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=20A	-	3.5	5.5	mΩ
		V_{GS}=4.5V, I_{DS}=15A	-	5.5	6.8	
Body Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=40A, V_{GS}=0V	-	0.7	1.3	V
Dynamic Characteristics[e]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS} =10V, Frequency=1.0MHz	-	1356	-	pF
C_{oss}	Output Capacitance		-	55	-	
C_{rss}	Reverse transfer capacitance		-	45	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GS}=10V ,V_{DS}=15V R_G=1.8Ω, I_D=20A， R_L=30Ω	-	8	-	nS
t_r	Turn-on rise Time		-	9	-	
$t_{d(OFF)}$	Turn-off delay Time		-	32	-	
t_f	Turn-off rise Time		-	6	-	
Gate Charge Characteristics[e]						
Q_g	Total Gate Charge	V_{DS} =15V, V_{GS}=10V, I_{DS}=20A	-	23	-	
Q_{gs}	Gate-Source Charge		-	5	-	
Q_{gd}	Gate-Drain Charge		-	3	-	

Note: 1. Pulse test: pulse width<=300uS, duty cycle<=2%

2.Static parameters are based on package level with recommended wire bonding

Typical Performance Characteristics

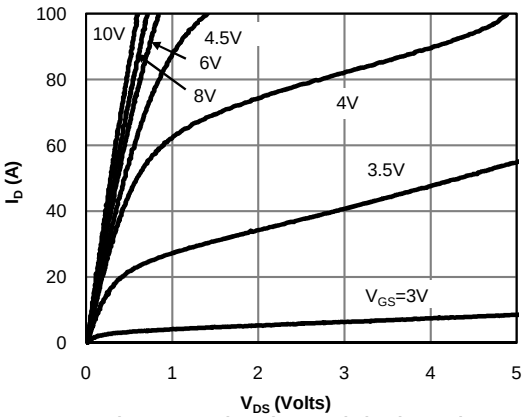


Fig 1: On-Region Characteristics (Note E)

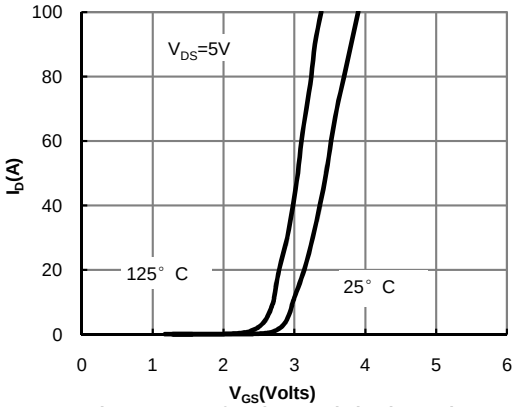


Figure 2: Transfer Characteristics (Note E)

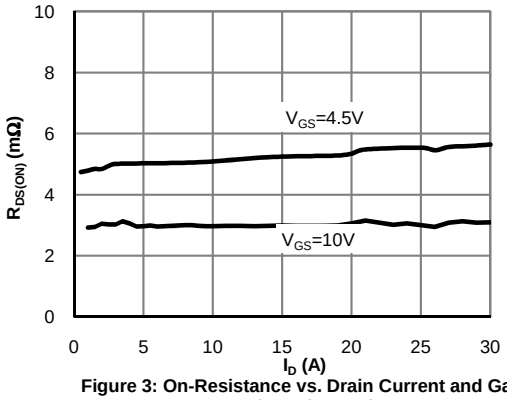


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

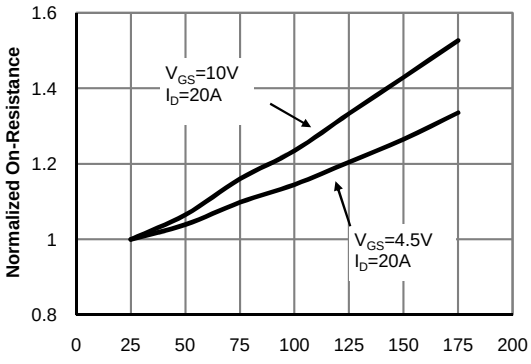


Figure 4: On-Resistance vs. Junction Temperature (Note E)

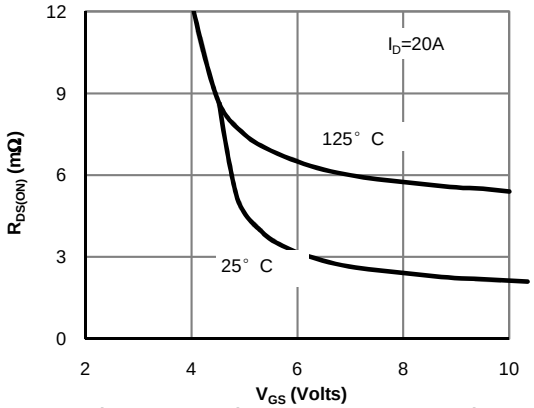


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

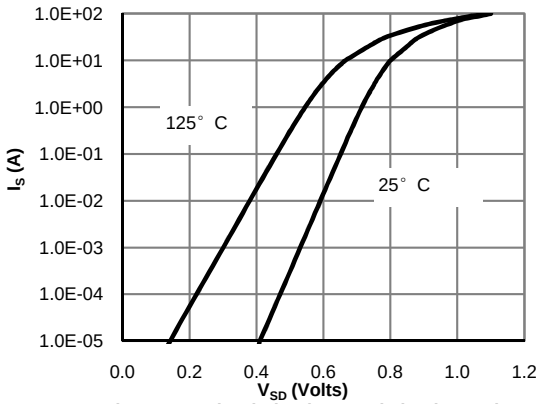


Figure 6: Body-Diode Characteristics (Note E)

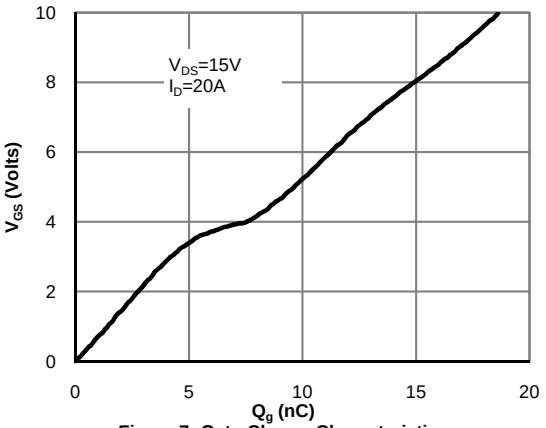


Figure 7: Gate-Charge Characteristics

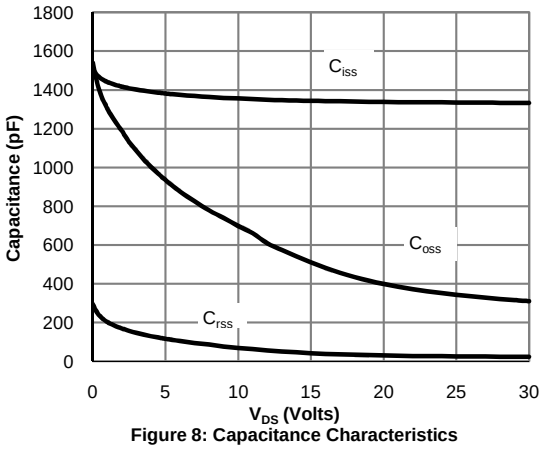


Figure 8: Capacitance Characteristics

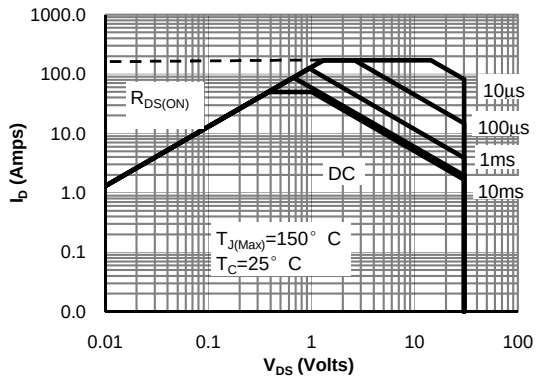


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

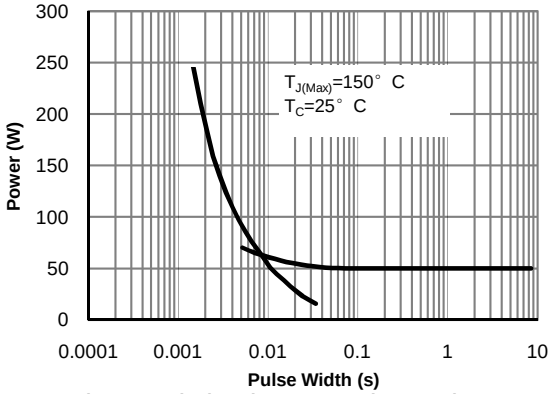


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

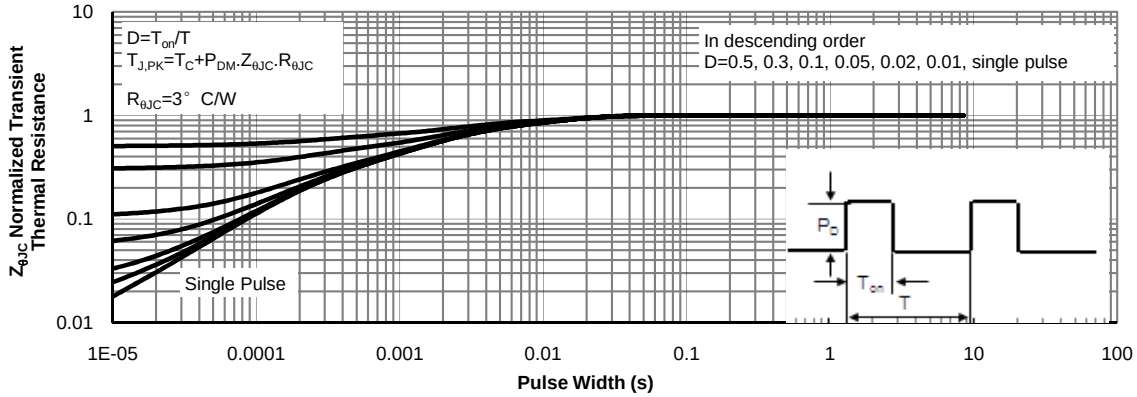
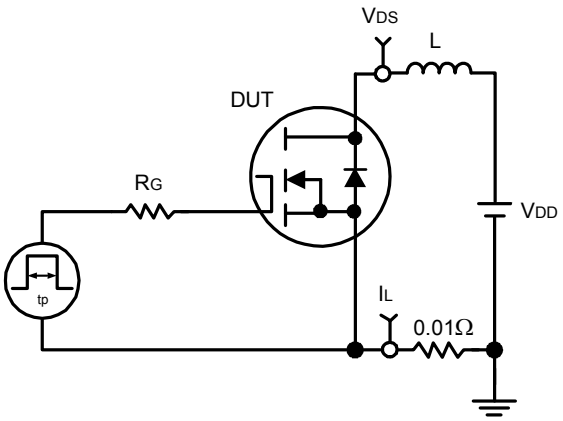
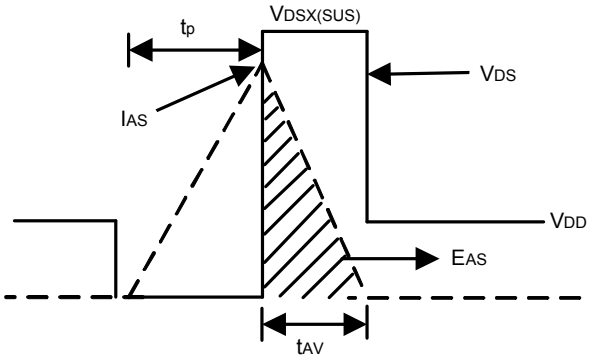


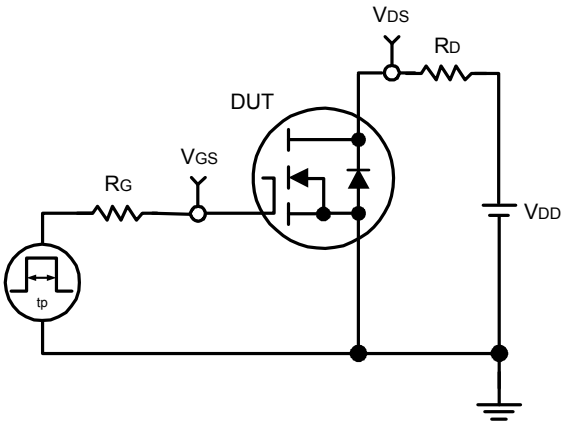
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

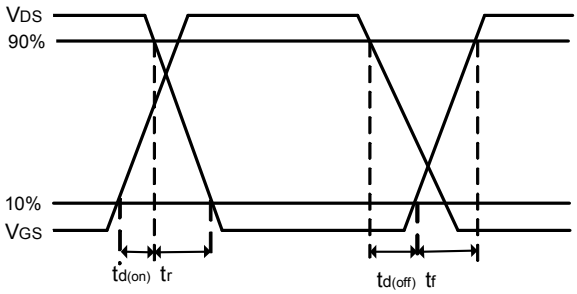
Avalanche Test Circuit and Waveforms



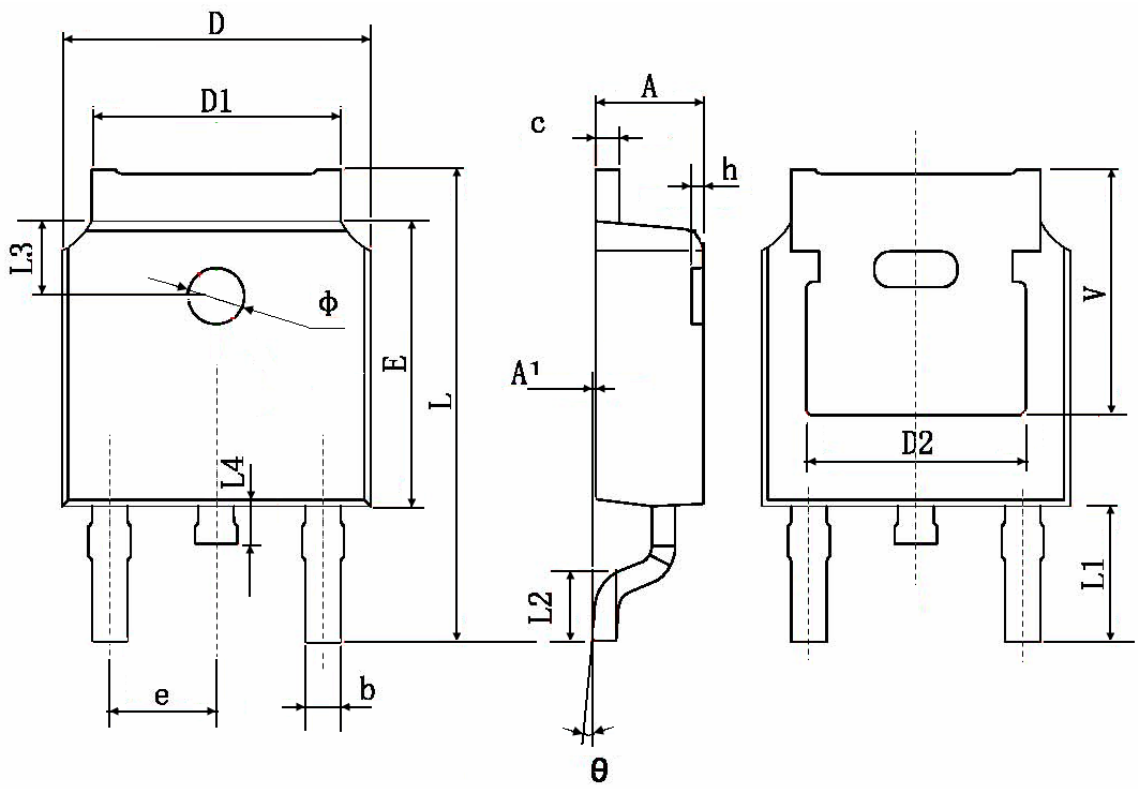


Switching Time Test Circuit and Waveforms





Package Information:TO-252-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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