TM30NL03D

N-Channel Enhancement Mosfet

General Description

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

Applications

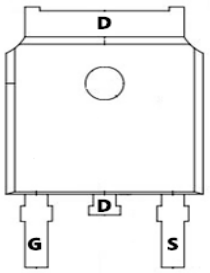
- Load switch
- PWM

General Features

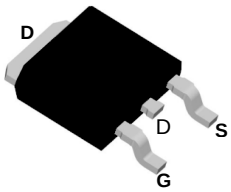
V_{DS} =30V I_D =30 A

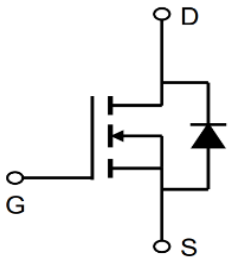
$R_{DS(ON)}$=15 mΩ (Typ.) @ V_{GS}=10V

100% UIS Tested
100% R_g Tested



D:TO-252-3L





Marking: 30NL03

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Continuous Drain Current-T_C=25℃	30	A
	Continuous Drain Current-T_C=100℃	16	
E_{AS}	Single Pulse Avalanche Energy[1]	20	mJ
I_{DM}	Pulsed Drain Current[2]	90	A
P_D	Power Dissipation,T_C=25℃	30	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	4	℃/W
$R_{\theta JA}$	Thermal Resistance Junction to mbient	-	

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	0.5	0.9	1	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=10A	---	15	22	mΩ
	Drain-Source On Resistance	V_{GS}=4.5V,I_D=8A	---	21	25	mΩ
	Drain-Source On Resistance	V_{GS}=2.5V,I_D=6A	---	25	35	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	550	---	pF
C_{oss}	Output Capacitance		---	65	---	
C_{rss}	Reverse Transfer Capacitance		---	55	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=4.5V ,V_{DD}=15V, I_D=2A R_{GEN}=3.3Ω	---	17	---	ns
t_r	Rise Time		---	48	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	20	---	ns
t_f	Fall Time		---	13	---	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=15V, I_D=4A	---	5.5	---	nC
Q_{gs}	Gate-Source Charge		---	1.2	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	1.8	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	I_D=30A	---	---	1.2	V
trr	Reverse Recovery Time	I F =10A,T J =25℃ diF/dt=100A/μs	---	9.1	---	ns
Qrr	Reverse Recovery Charge		---	2	---	nC

Notes:
1.The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V DD =25V,V GS =10V,L=0.1mH,I AS =12.7A
4.The power dissipation is limited by 150℃ junction temperature
5.The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

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

Figure1: Output Characteristics

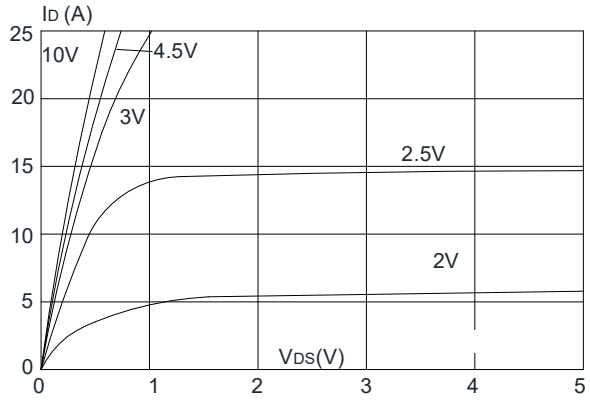


Figure 2: Typical Transfer Characteristics

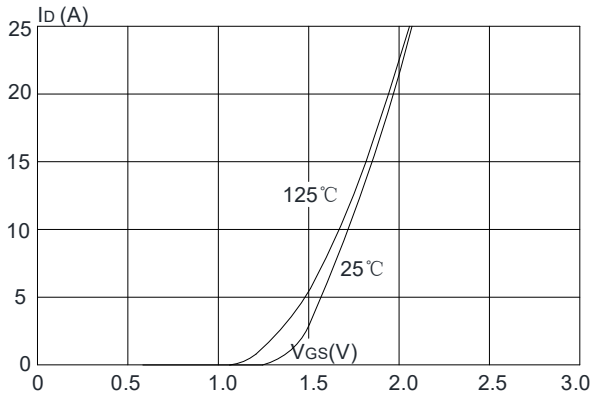


Figure 3: On-resistance vs. Drain Current

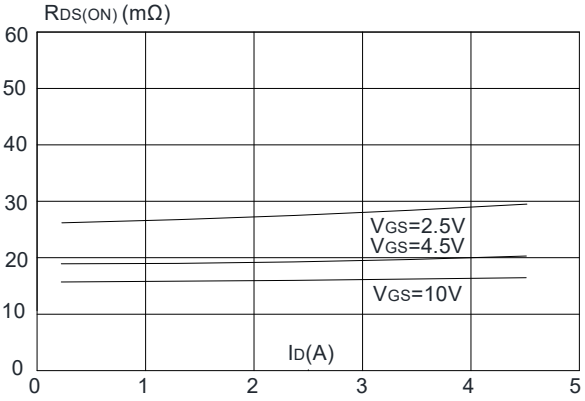


Figure 4: Body Diode Characteristics

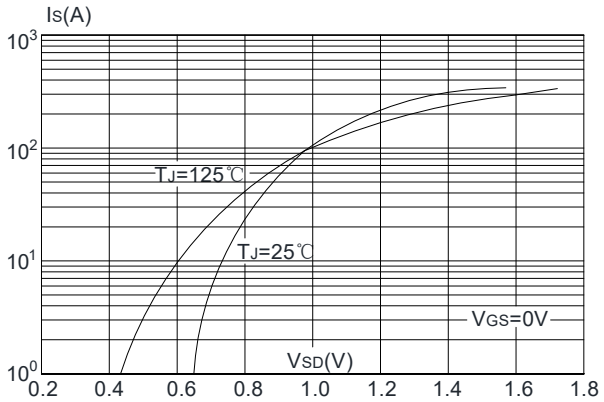


Figure 5: Gate Charge Characteristics

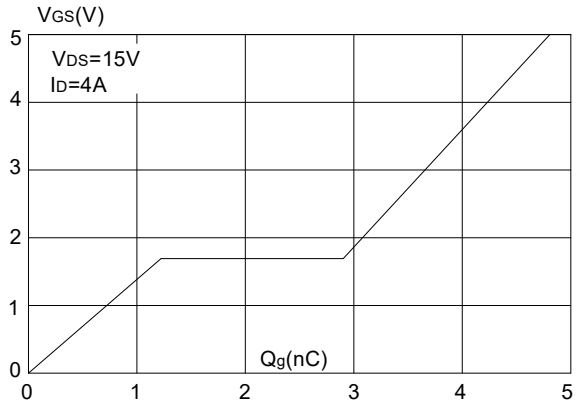


Figure 6: Capacitance Characteristics

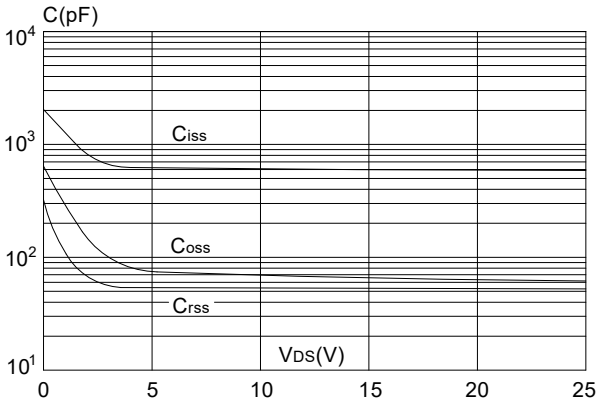


Figure 7: Normalized on Resistance vs. Junction Temperature

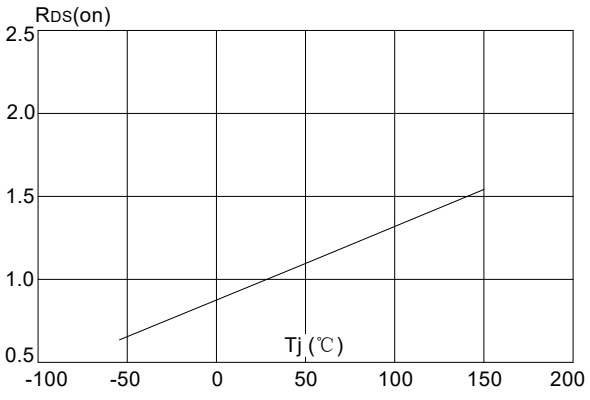


Figure 8: Safe Operating Area

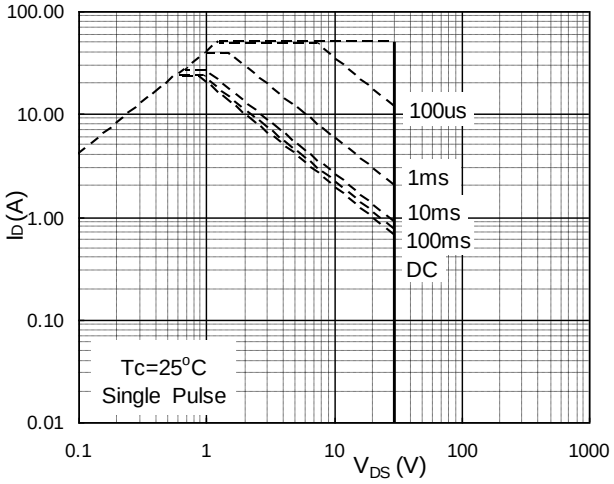
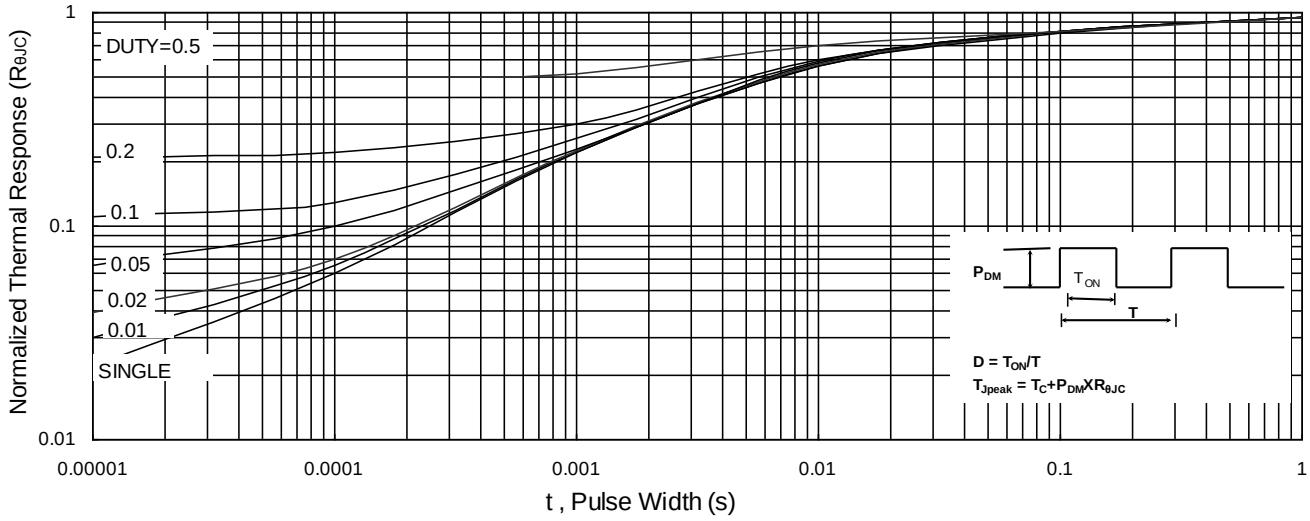
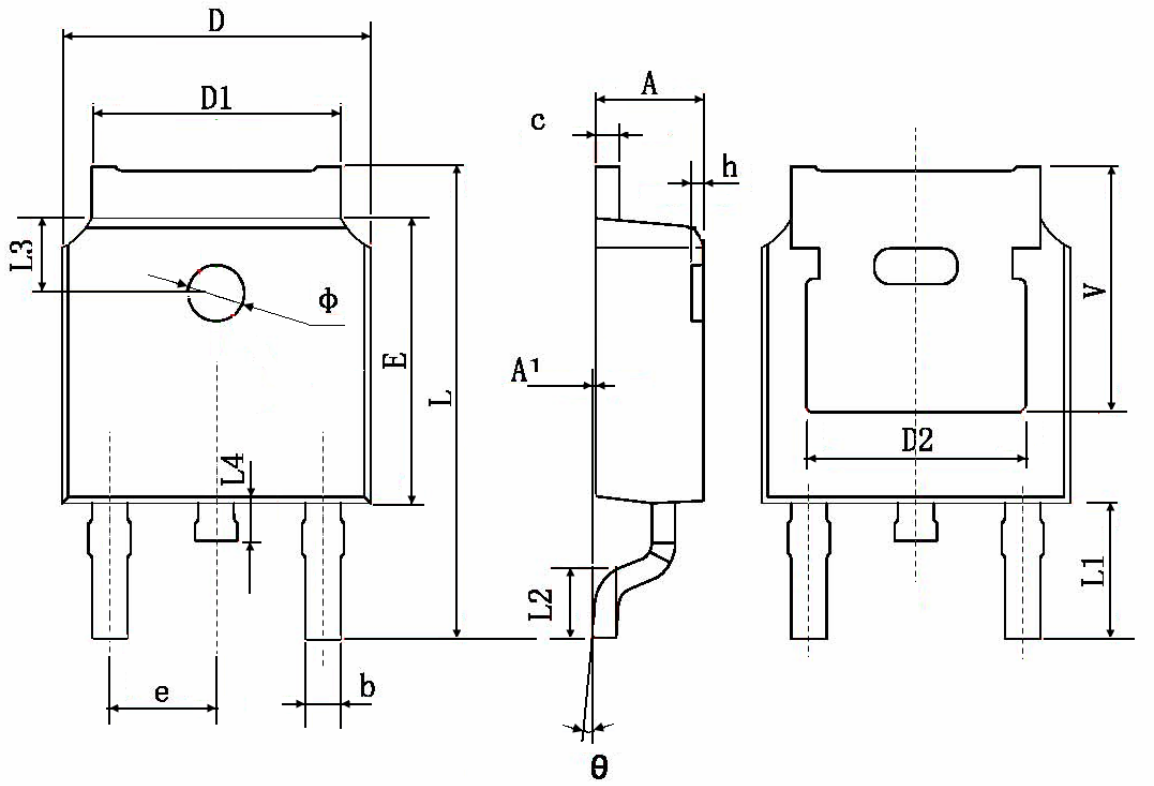


Figure 9: Normalized Maximum Transient Thermal Impedance



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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