TMD100N03D / TMI100N03
N-CHANNEL POWER MOSFET

General Description

The 100N03 uses advanced trench technology to provide excellent $R_{DS(ON)}$,device is suitable for use as a Battery protection or in other Switching application.

Product Summary

V_{DS} = 30V I_D = 95A

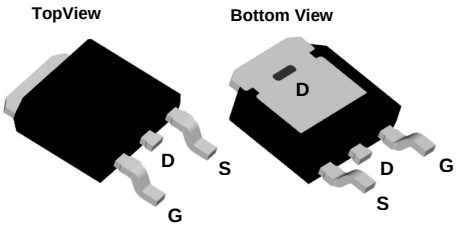
$R_{DS(ON)}$ < 6mΩ @ V_{GS}=10V

$R_{DS(ON)}$ < 10mΩ @ V_{GS}= 4.5V

100% UIS Tested
100% R_g Tested

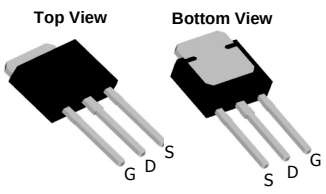
Green Product

TO-252

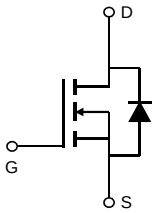


TMD100N03D

TO-251



TMI100N03



Absolute Maximum Ratings T_A=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V	95	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	55	A
I_{DM}	Pulsed Drain Current[1]	350	A
P_D@T_C=25℃	Total Power Dissipation	107	W
	Linear Derating Factor	0.7	W/℃
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃
Rthj-c	Maximum Thermal Resistance, Junction-case	1.4	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount)[3]	62.5	℃/W

© 2018 Tritech-MOS Technology Corporation

Rthj-a	Maximum Thermal Resistance, Junction-ambient	110	℃/W

Absolute Maximum Ratings T_A=25℃ unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=1mA	-	0.02	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=45A	-	-	6	mΩ
		V_{GS}=4.5V, I_D=30A	-	-	10	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	-	3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=30A	-	55	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V, V_{GS}=0V	-	-	1	uA
	Drain-Source Leakage Current (T_j=125°C)	V_{DS}=24V, V_{GS}=0V	-	-	250	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=30A	-	33	52	nC
Q_{gs}	Gate-Source Charge	V_{DS}=24V	-	8		nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	24		nC
Q_{oss}	Output Charge	V_{DD}=15V,V_{GS}=0V	-	24.5	39	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=15V	-	11	-	ns
t_r	Rise Time	I_D=30A	-	77	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω	-	35	-	ns
t_f	Fall Time	V_{GS}=10V	-	67	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	2700	4200	pF
C_{oss}	Output Capacitance	V_{DS}=25V f=1.0MHz	-	550	-	pF
C_{rss}	Reverse Transfer Capacitance		-	380	-	pF
V_{SD}	Forward On Voltage[2]	I_S=45A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=30A, V_{GS}=0V, dI/dt=100A/μs	-	28	-	ns
Q_{rr}	Reverse Recovery Charge		-	10	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse width ≤300us , duty cycle ≤2%.

3.Surface mounted

© 2018 Tritech-MOS Technology Corporation

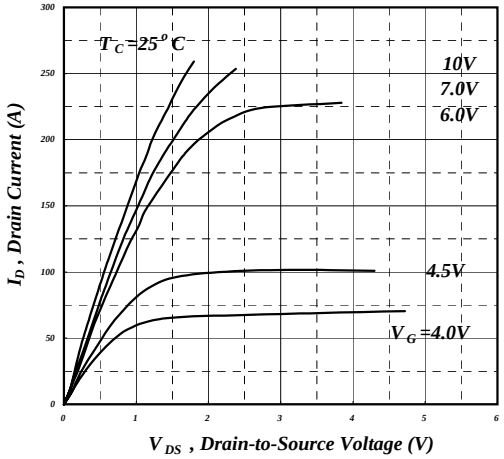


Fig 1. Typical Output Characteristics

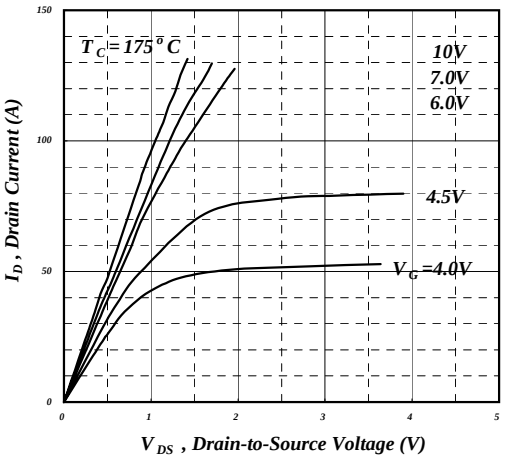


Fig 2. Typical Output Characteristics

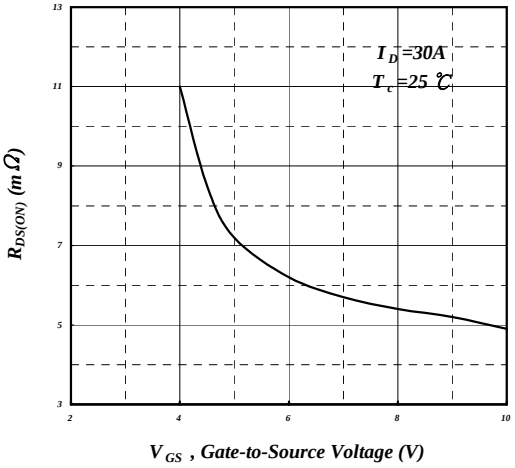


Fig 3. On-Resistance v.s. Gate Voltage

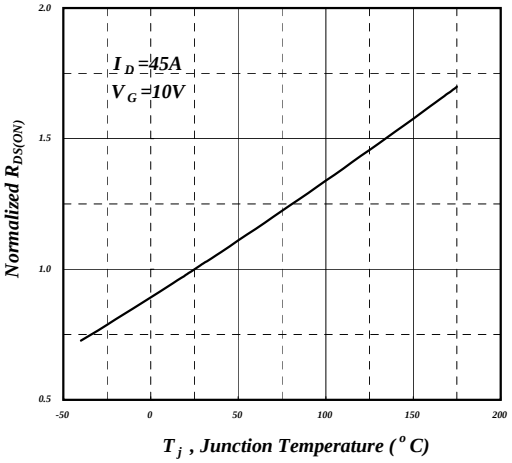


Fig 4. Normalized On-Resistance v.s. Junction Temperature

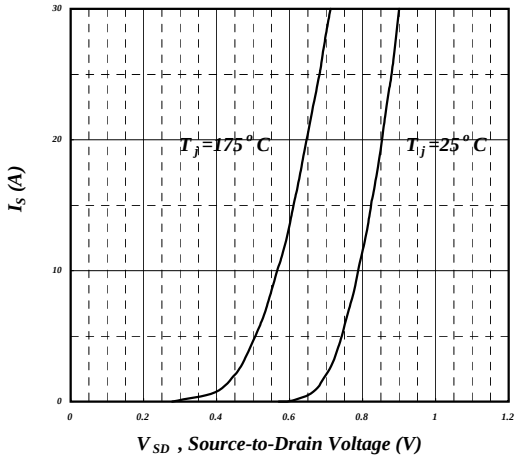


Fig 5. Forward Characteristic of Reverse Diode

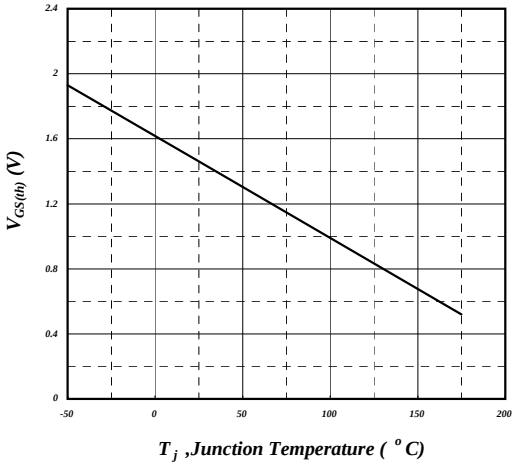


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

© 2018 Tritech-MOS Technology Corporation

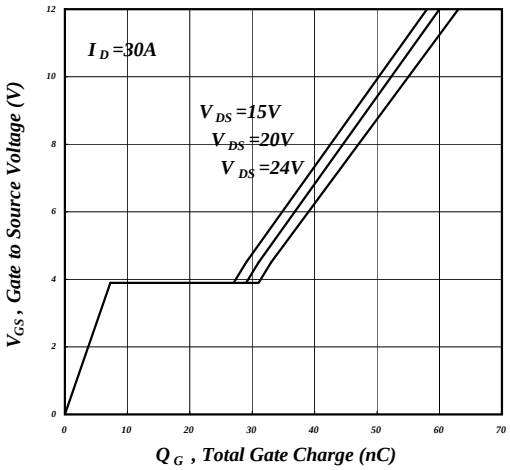


Fig 7. Gate Charge Characteristics

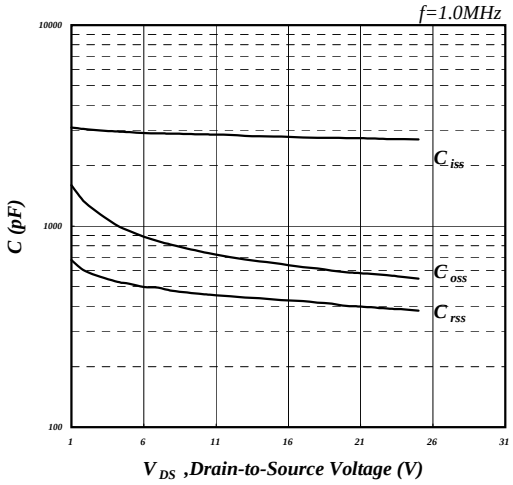


Fig 8. Typical Capacitance Characteristics

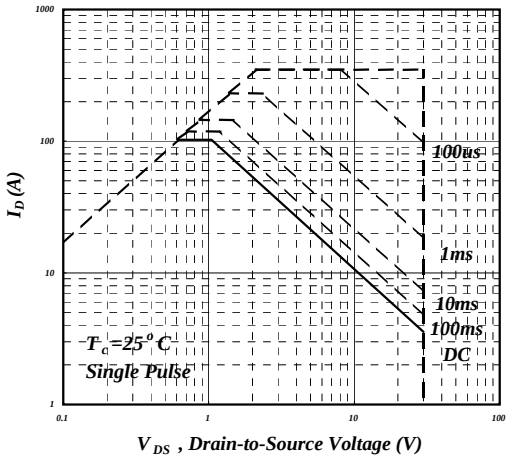


Fig 9. Maximum Safe Operating Area

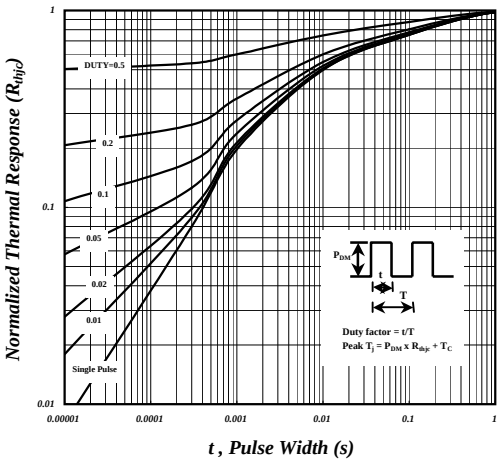


Fig 10. Effective Transient Thermal Impedance

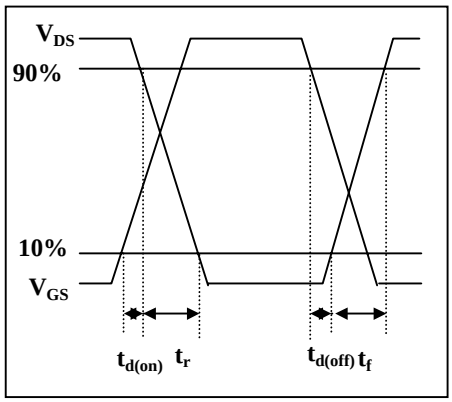


Fig 11. Switching Time Waveform

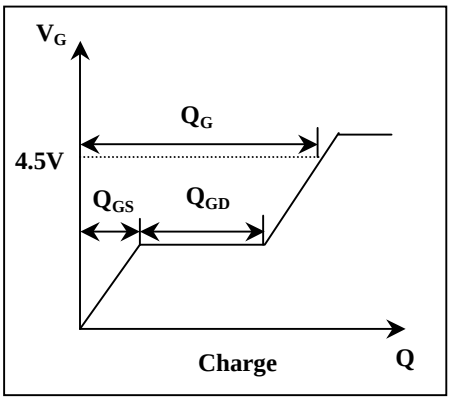
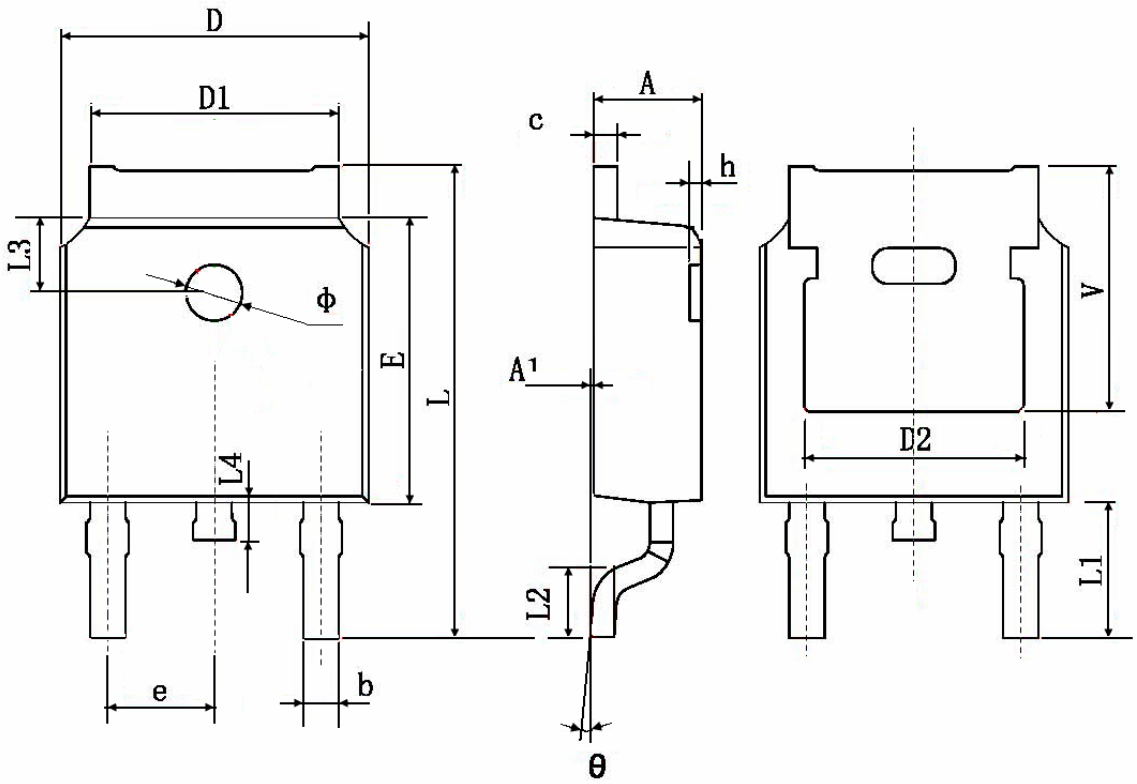


Fig 12. Gate Charge Waveform

© 2018 Tritech-MOS Technology Corporation

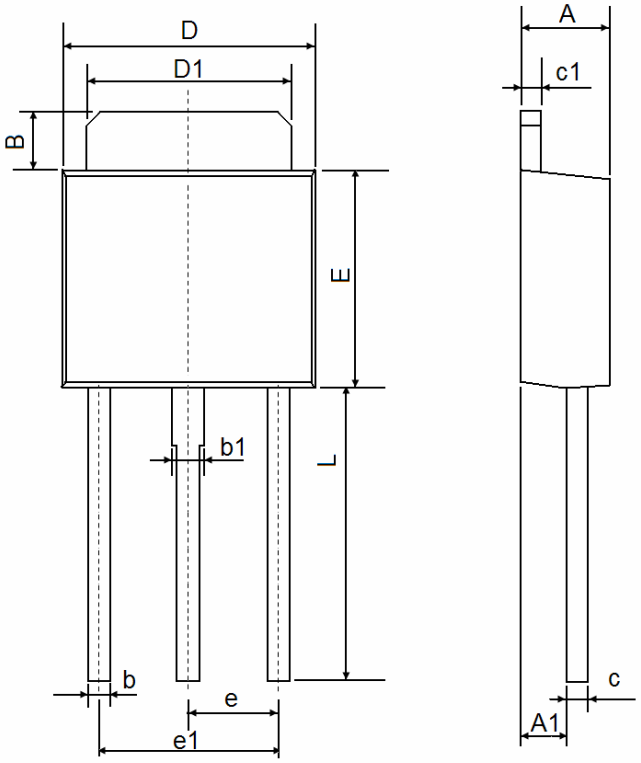
TO-252 Package Information



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.	

© 2018 Tritech-MOS Technology Corporation

TO-251 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	7.500	7.900	0.295	0.311

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exac

© 2018 Tritech-MOS Technology Corporation