A1MNM1P3

100V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
100 V	1.3 mΩ	395 A

General Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

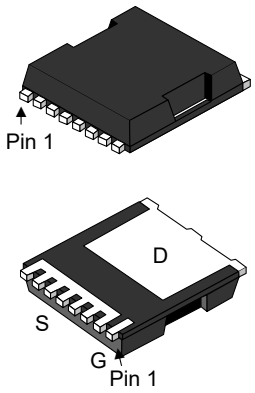
Features

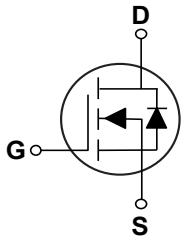
- $R_{DS(ON)} \leqq 1.3m\Omega @ V_{GS}=10V$
- Fast Switching
- Improved dv/dt Capability
- Green Device Available

Applications

- Battery Management System
- Machine Tool
- High Power Inverter System

TOLLA-8 Pin Configuration





Absolute Maximum Ratings T_J=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous (T_C=25°C)	395	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	987	A
EAS	Single Pulse Avalanche Energy (L=0.1mH)	500	mJ
IAS	Single Pulse Avalanche Current (L=0.1mH)	100	A
P_D	Power Dissipation (T_C=25°C)	312.5	W
T_J	Operating Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		NM1P3	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	40	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	0.4	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	100	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=30A	---	---	1.3	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	2.0	---	4.0	V
gfs	Forward Transconductance	V_{DS}=5V , I_D=50A	---	108	---	S

Dynamic and switching Characteristics (NOTE 3)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=50V , V_{GS}=10V , I_D=100A	---	231	---	nC
Q_{gs}	Gate-Source Charge		---	70.2	---	
Q_{gd}	Gate-Drain Charge		---	65.7	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=50V , V_{GEN}=10V , R_{GEN}=1Ω , I_D=1A	---	27.7	---	nS
T_r	Rise Time		---	21.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	89.6	---	
T_f	Fall Time		---	96.8	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	13000	---	pF
C_{oss}	Output Capacitance		---	2147	---	
C_{rss}	Reverse Transfer Capacitance		---	398	---	
R_g	Gate Resistance	V_{GS}=0V , V_{DS}=0V , F=1MHz	---	1.7	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	85	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=30A	---	---	1.1	V
t_{rr}	Reverse Recovery Time	V_{GS}=0V , I_{DS}=30A , dI/dt=100A/us	---	120	---	nS
Q_{rr}	Reverse Recovery Charge		---	400	---	nC

NOTES：

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Guaranteed by design, not subject to production testing.

Characteristics Curves

FIG. 1-I_D vs T_C

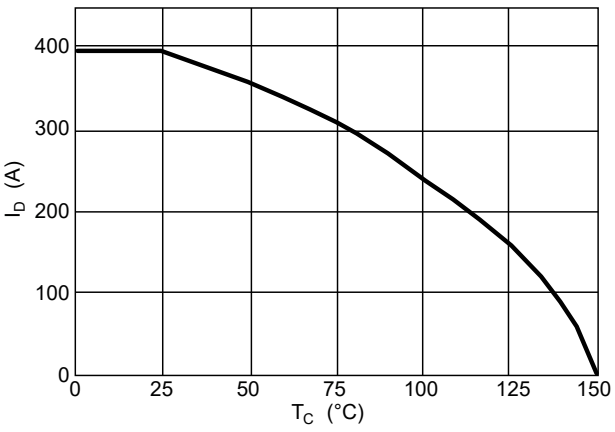


FIG. 2-Normalized $R_{DS(ON)}$ vs T_J

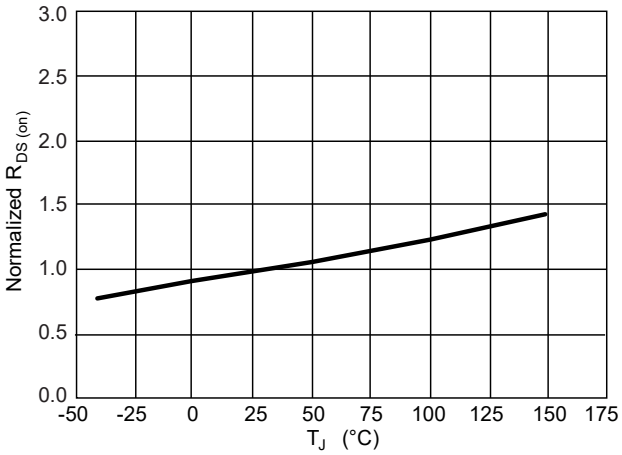


FIG. 3-Normalized $V_{GS(th)}$ vs T_J

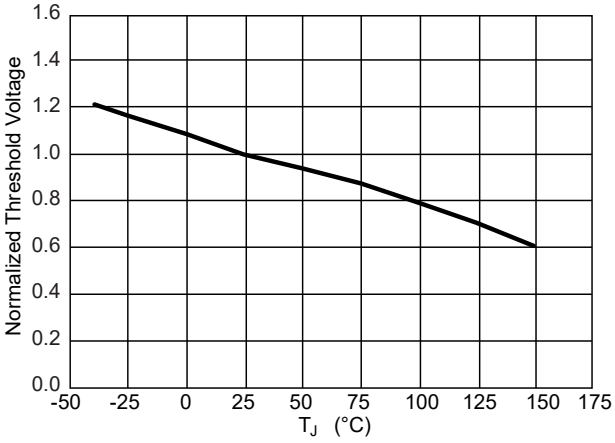


FIG. 4-Gate Charge Characteristics

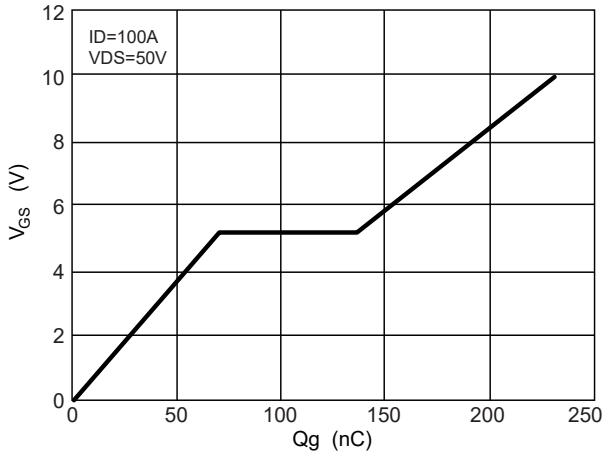


FIG. 5-$R_{DS(ON)}$ vs I_D

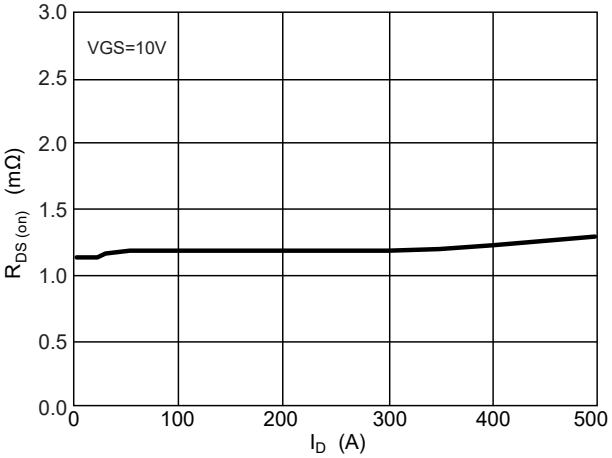
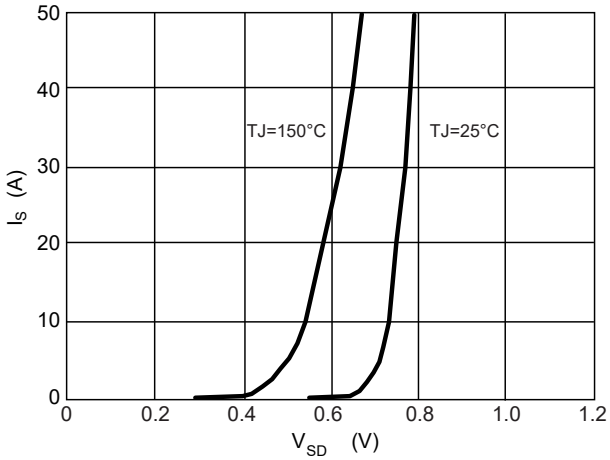


FIG. 6-I_S vs V_{SD}



Characteristics Curves

FIG. 7-Power Dissipation

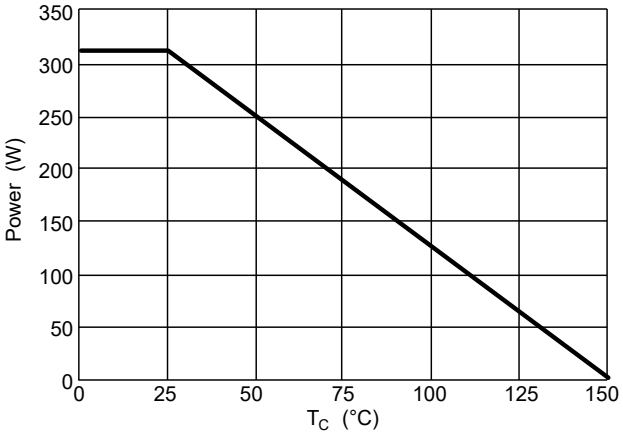


FIG. 8-Switching Time Waveform

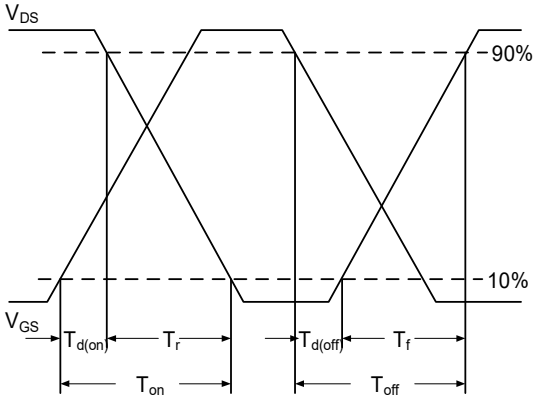
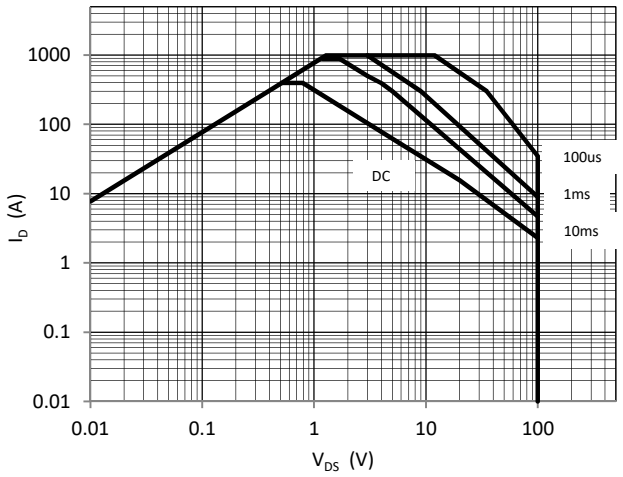
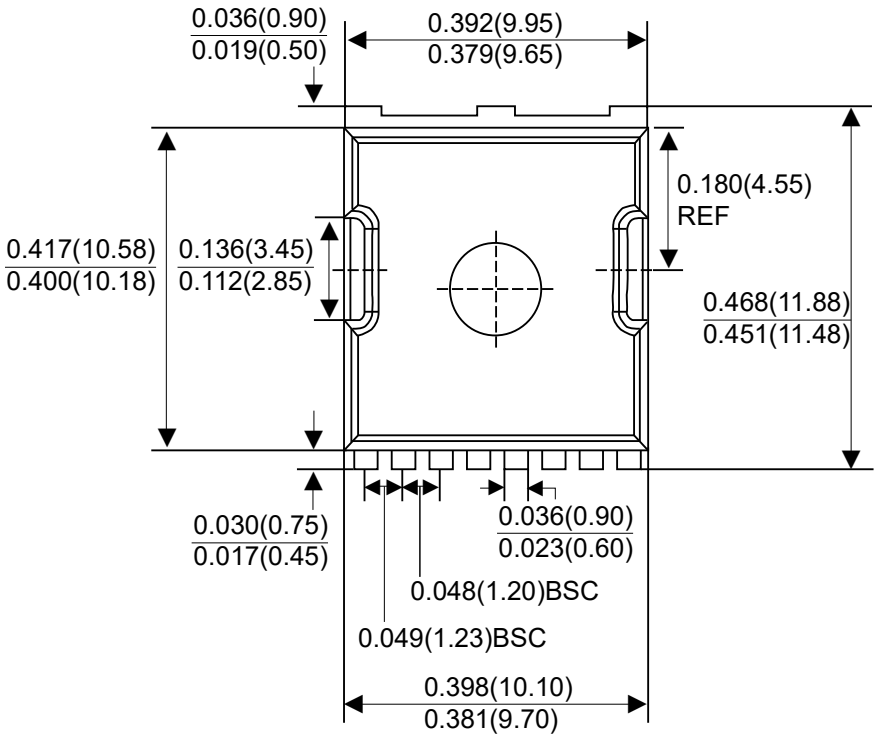
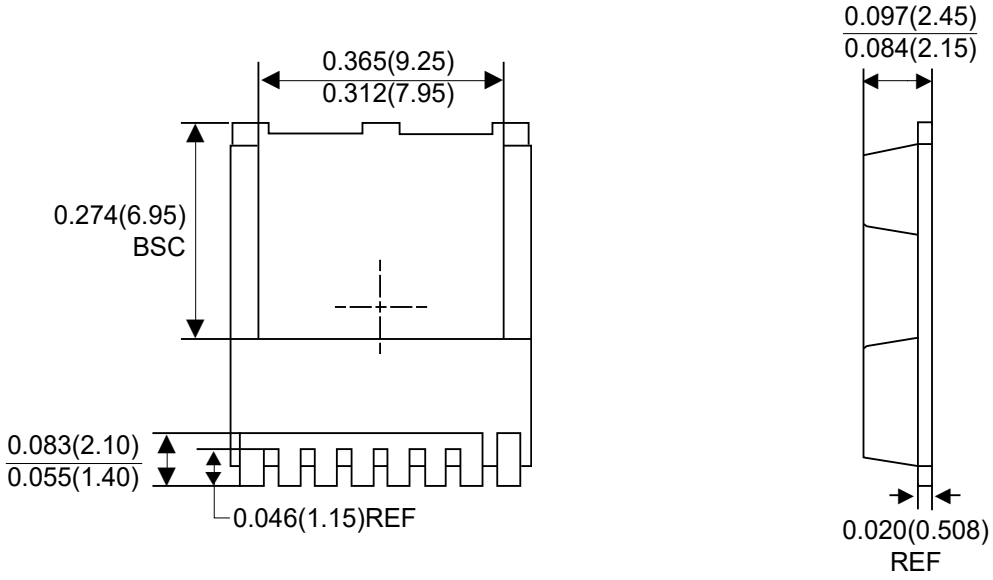


FIG. 9-Safe Operating Area



Package Outline Dimensions





TOLLA-8

Dimensions in inches and (millimeters)

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