A1MNK2P0

80V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
80 V	2 mΩ	310 A

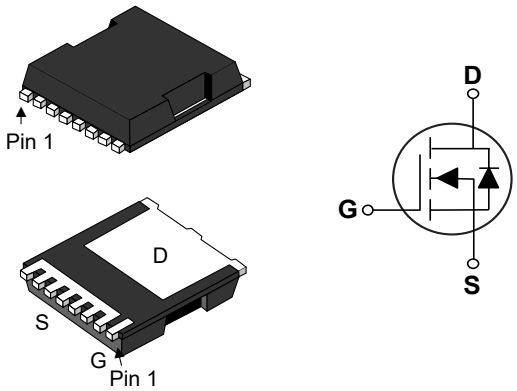
General Description

These N-Channel enhancement mode power field effect transistors are using trench MOS 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

- $R_{DS(ON)} \leqq 2m\Omega @ V_{GS}=10V$
- Fast Switching
- Improved dv/dt Capability
- Green Device Available

TOLLA-8 Pin Configuration



Applications

- DC/DC Converter
- Power Management Switching
- Motor Driver

Absolute Maximum Ratings $T_A=25^oC$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous ($T_C=25^oC$)	310	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	1240	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	625	mJ
P_D	Power Dissipation ($T_C=25^oC$)	347.2	W
T_{STG}	Storage Temperature Range	-55 to 150	^oC
Marking Code		NK2P0	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	40	$^oC/W$
$R_{\theta JC}$	Thermal Resistance Junction to Case	0.36	$^oC/W$

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	80	---	---	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=20A	---	---	2	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	2.0	---	4.0	V
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	70	---	S

Dynamic and switching Characteristics (NOTE 4)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=40V , V_{GS}=10V , I_D=20A	---	140	---	nC
Q_{gs}	Gate-Source Charge		---	37.5	---	
Q_{gd}	Gate-Drain Charge		---	37.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=40V , V_{GS}=10V , R_G=3Ω , I_D=20A	---	27.5	---	nS
T_r	Rise Time		---	82	---	
$T_{d(off)}$	Turn-Off Delay Time		---	85	---	
T_f	Fall Time		---	52	---	
C_{iss}	Input Capacitance	V_{DS}=40V , V_{GS}=0V , F=1MHz	---	8980	---	pF
C_{oss}	Output Capacitance		---	1560	---	
C_{rss}	Reverse Transfer Capacitance		---	90	---	
R_g	Gate Resistance	V_{GS}=0V , V_{DS}=0V , F=1MHz	---	2.4	---	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	---	---	310	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A	---	---	1.2	V

NOTES：

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=50A.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Guaranteed by design, not subject to production testing.

Characteristics Curves

FIG. 1-Transfer Characteristics

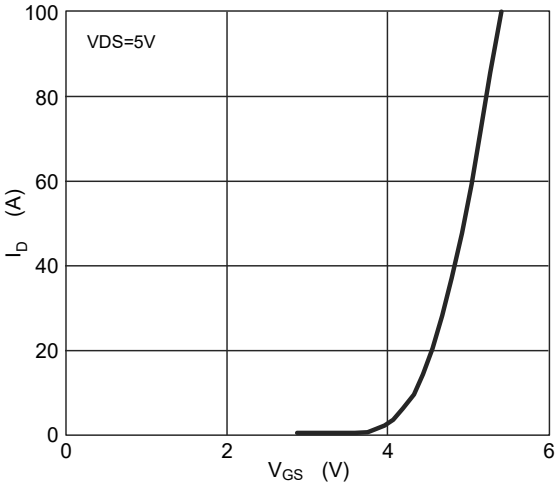


FIG. 2-I_S vs V_{SD}

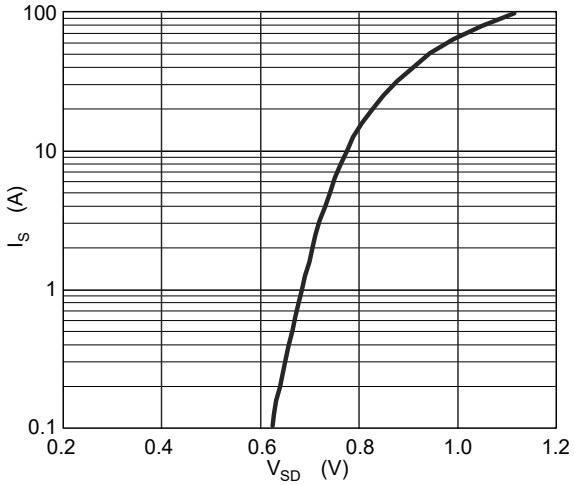


FIG. 3-$R_{DS(on)}$ vs I_D

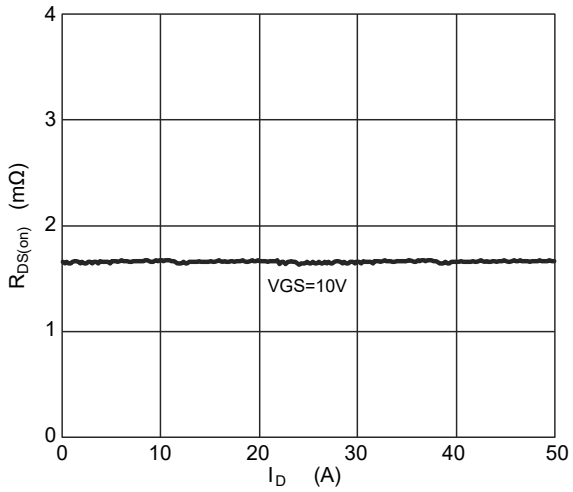


FIG. 4-Normalized $R_{DS(ON)}$ vs T_J

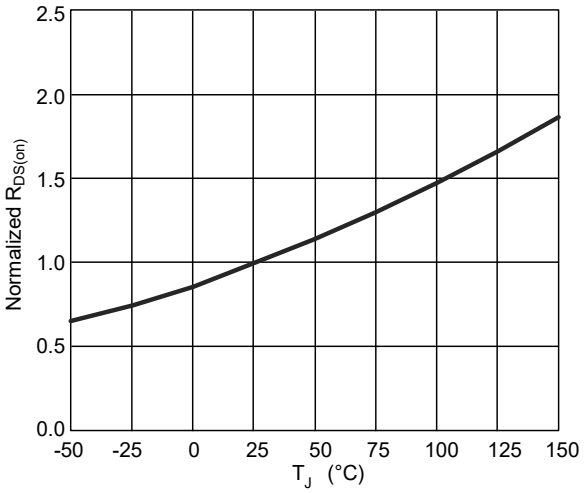


FIG. 5-Gate Charge Characteristics

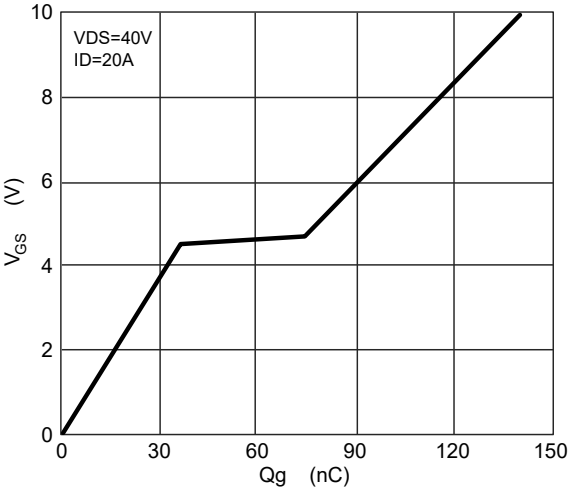
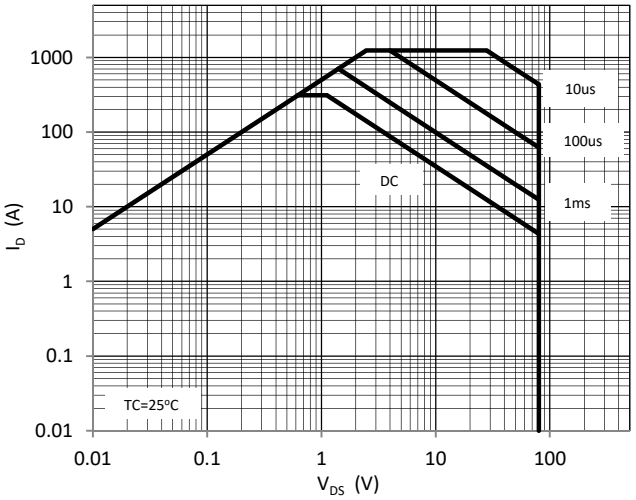


FIG. 6-Safe Operating Area



Characteristics Curves

FIG. 7-Transient Thermal Impedance

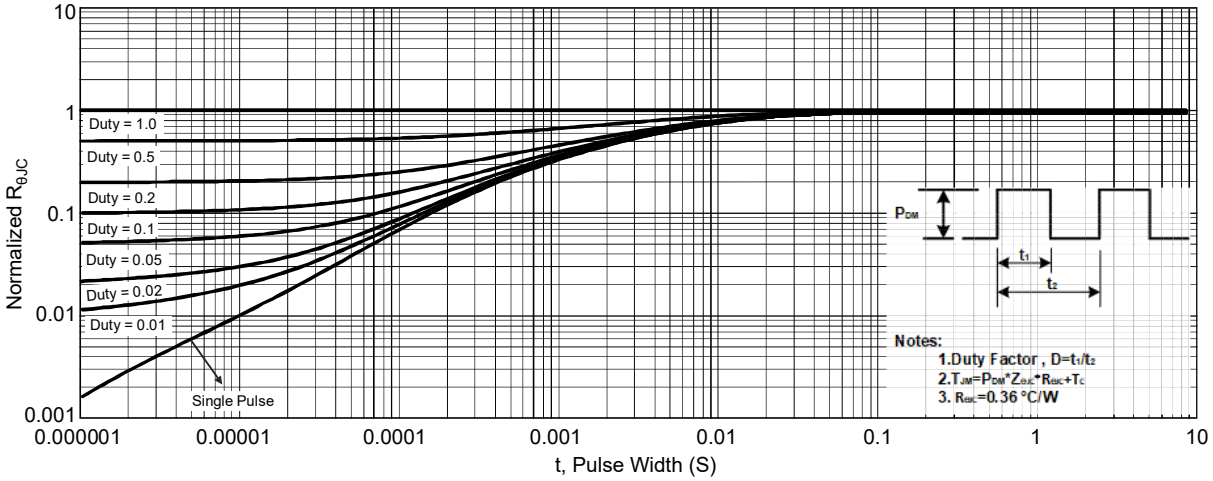


FIG. 8-Power Dissipation

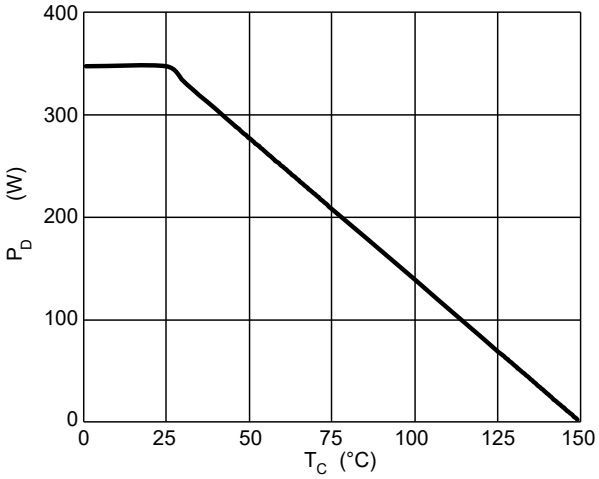
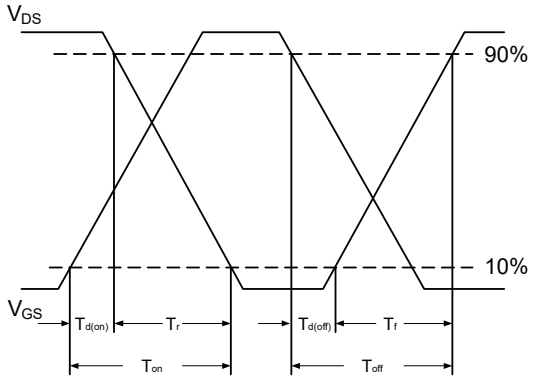
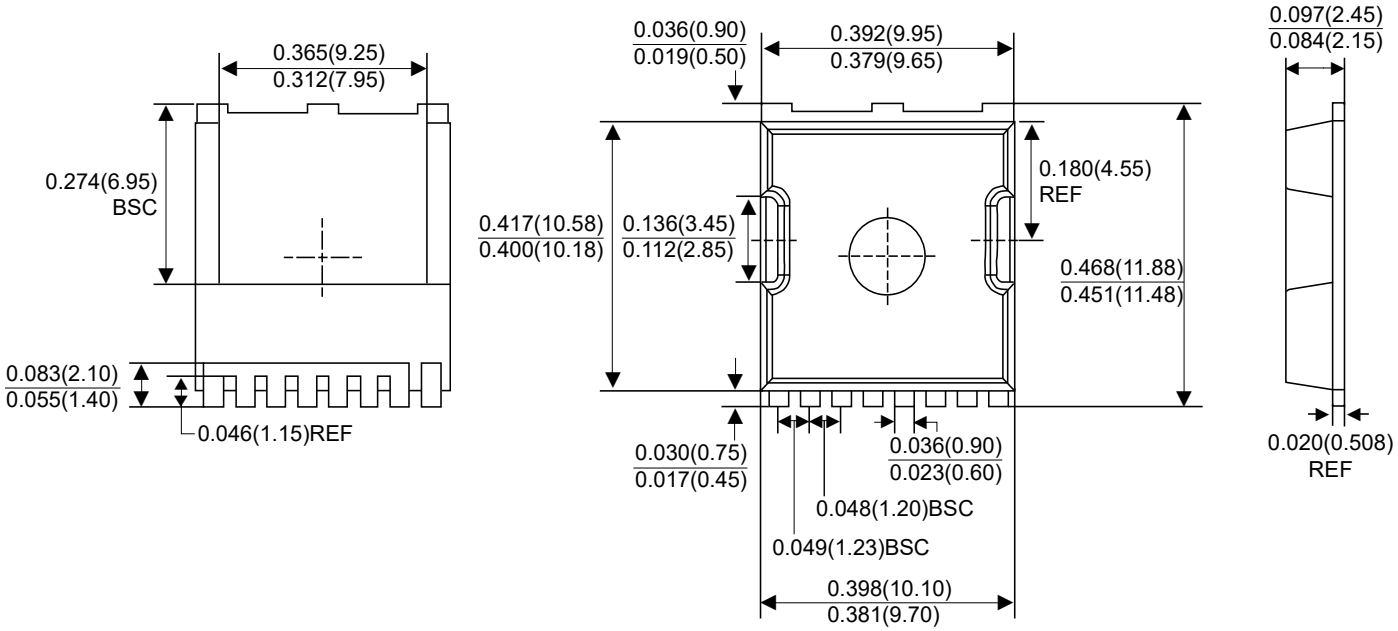
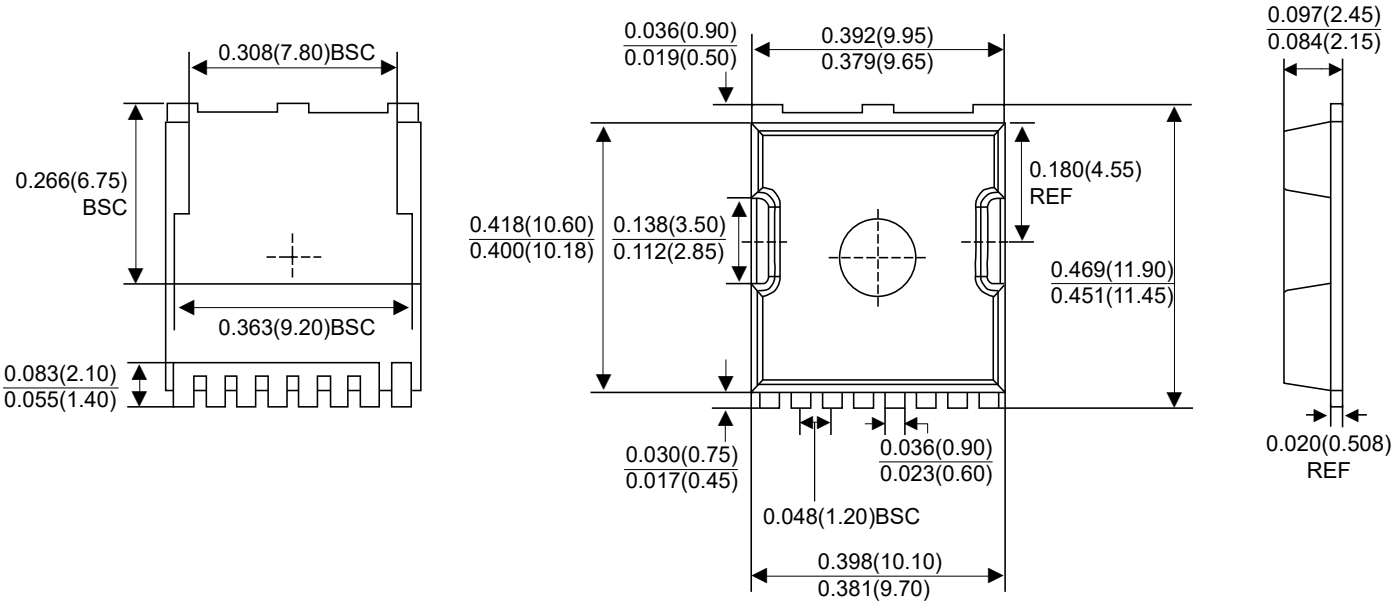


FIG. 9-Switching Time Waveform



Package Outline Dimensions





TOLLA-8

Dimensions in inches and (millimeters)

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