

• General Description

The K80N03 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

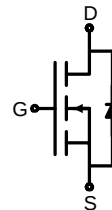
• Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

• Application

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

• Product Summary



V_{DS}	=30V	I_D	=80A
$R_{DS(ON)}$	(10V typ)		=4.2mΩ
$R_{DS(ON)}$	(4.5V typ)		=7.3mΩ



TO-252

• Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_D @ T_C = 25^\circ\text{C}$	80	A
	$I_D @ T_C = 75^\circ\text{C}$	60	A
	$I_D @ T_C = 100^\circ\text{C}$	48	A
Pulsed Drain Current ①	I_{DM}	240	A
Total Power Dissipation	$P_D @ T_C = 25^\circ\text{C}$	55	W
Total Power Dissipation	$P_D @ T_A = 25^\circ\text{C}$	2.0	W
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

Single Pulse Avalanche Energy	E _{AS}	230			mJ	
Avalanche Current	I _{AS} I _{AR}	30			A	
●Thermal resistance						
Parameter	Symbol	Min.	Typ.	Max.	Unit	
Thermal resistance, junction - case	R _{thJC}	-	-	2.0	° C/W	
Thermal resistance, junction - ambient	R _{thJA}	-	-	55	° C/W	
Soldering temperature, wave soldering for 8s	T _{sold}	-	-	265	° C	
●Electronic Characteristics						
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.5	2.3	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1.0	uA
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±20V ,V _{DS} =0V			±100	nA
Static Drain-source On Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =30A		4.2	5.5	mΩ
		V _{GS} =4.5V, I _D =20A		7.3	9.5	mΩ
Forward Transconductance	g _{FS}	V _{DS} =15V, I _D =20A		15		S
Source-drain voltage	V _{SD}	I _S =20A			1.20	V
●Electronic Characteristics						
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	V _{ds} =15V,V _{gs} =0V f = 1MHz	-	2016	-	pF
Output capacitance	C _{oss}		-	251	-	
Reverse transfer capacitance	C _{rss}		-	230	-	
●Gate Charge characteristics(T _a = 25°C)						
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Resistance	R _g	f = 1MHz		1.5		Ω
Total gate charge	Q _g	V _{DD} = 10V I _D = 30A V _{GS} = 10V	-	60.5	-	nC
Gate - Source charge	Q _{gs}		-	8.1	-	
Gate - Drain charge	Q _{gd}		-	7.8	-	
Turn-ON Delay time	t _{D(on)}	V _{GS} =10V ,V _{DS} =10V R _G =2.7Ω, I=30A		20		ns
Turn-ON Rise time	t _r			15		ns
Turn-Off Delay time	t _{D(off)}			60		ns
Turn-Off Fall time	t _f			10		ns

Fig.1 Power Dissipation

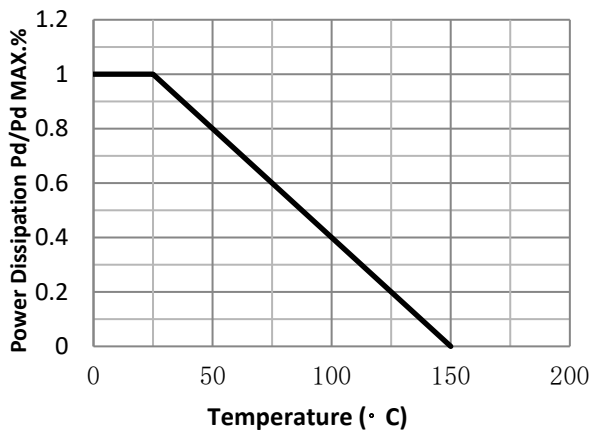


Fig.2 Typical output Characteristics

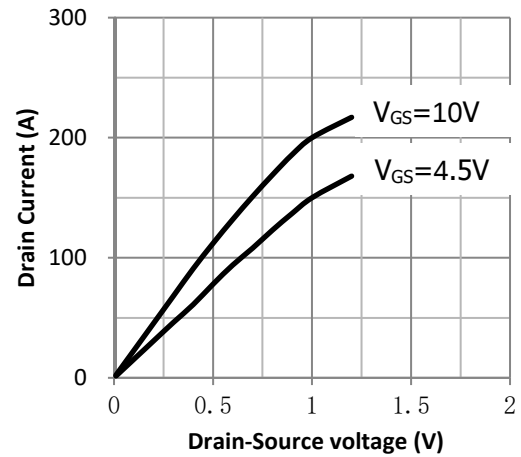


Fig.3 Threshold Voltage V.S Junction Temperature

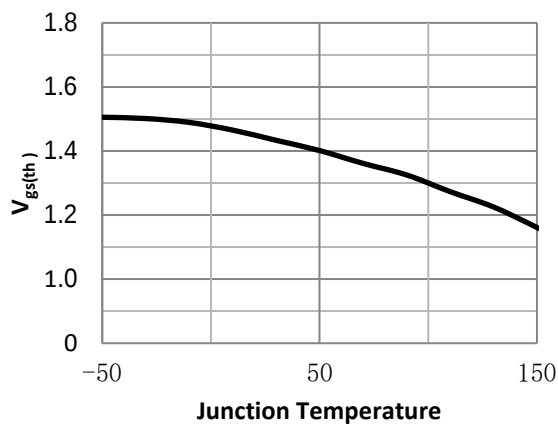


Fig.4 Resistance V.S Drain Current

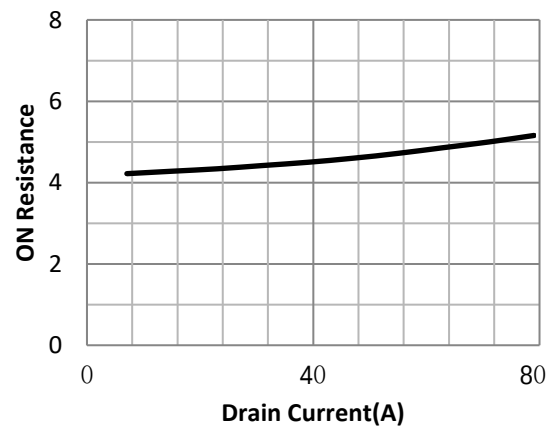


Fig.5 On-Resistance VS Drain Current

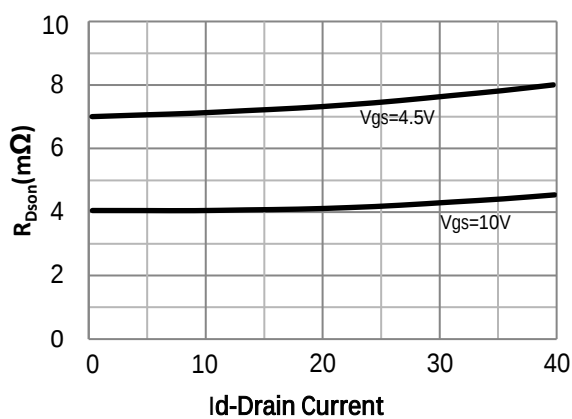


Fig.6 On-Resistance V.S Junction Temperature

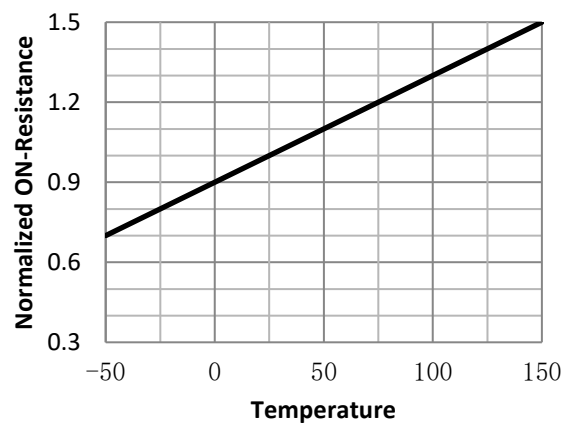


Fig.7 Switching Time Measurement Circuit

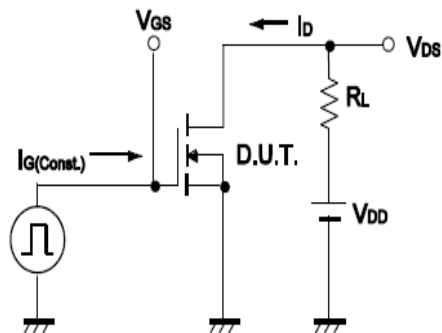


Fig.8 Gate Charge Waveform

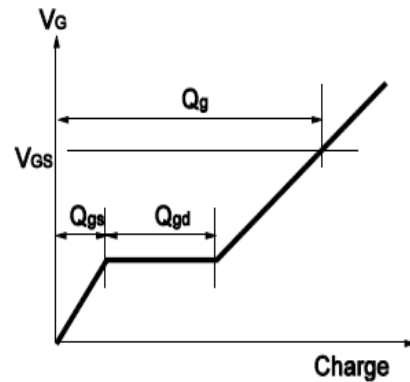


Fig.9 Switching Time Measurement Circuit

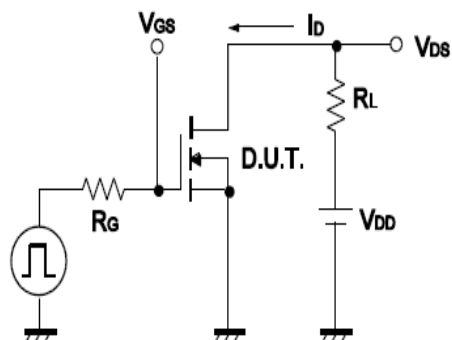


Fig.10 Gate Charge Waveform

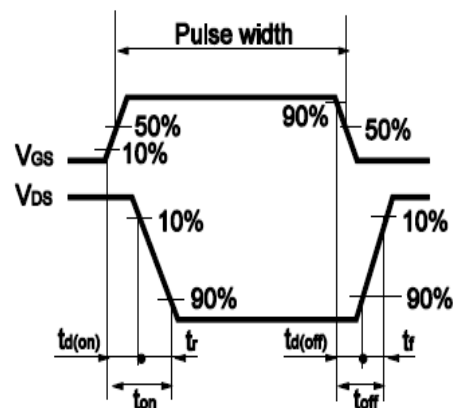


Fig.11 Avalanche Measurement Circuit

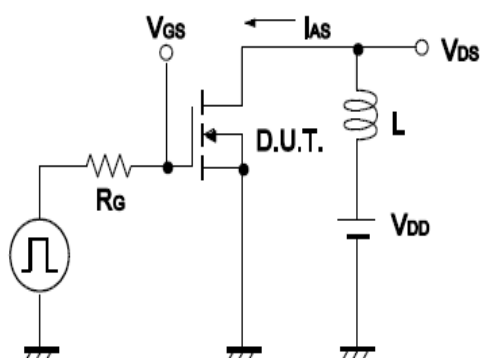
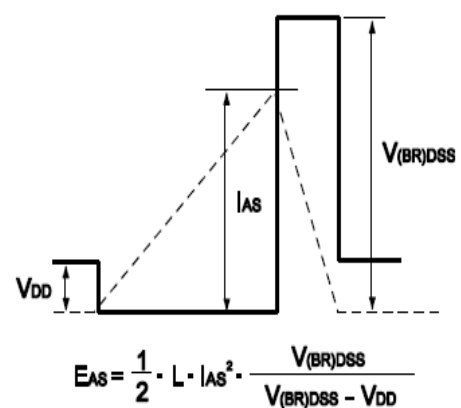
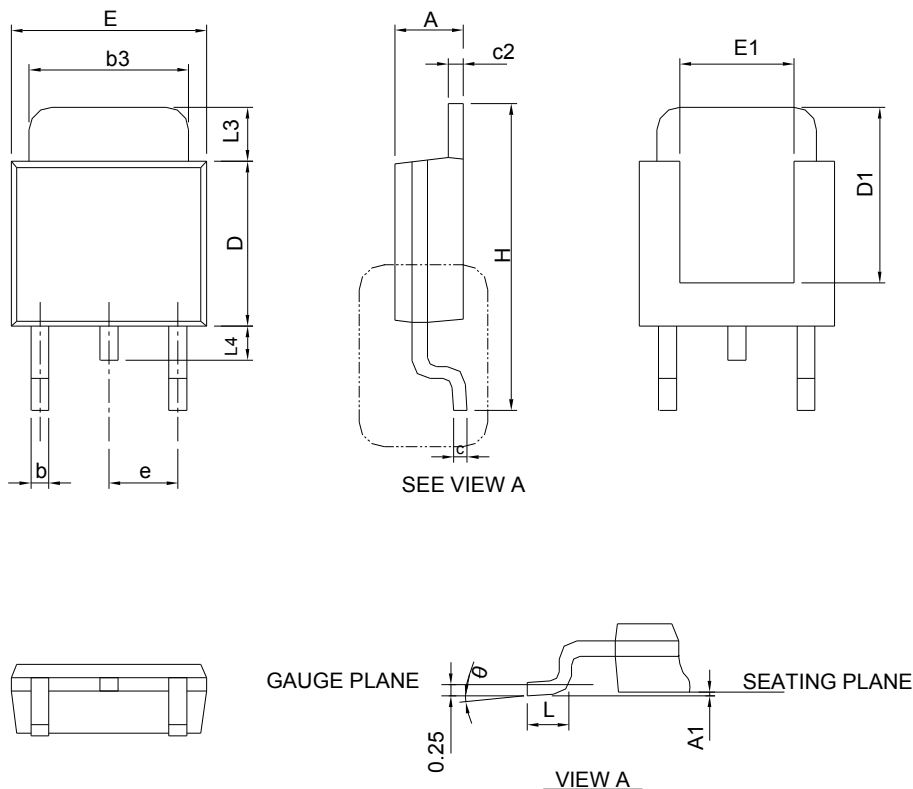


Fig.12 Avalanche Waveform



Package Information

TO-252



	TO-252			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1		0.13		0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4		1.02		0.040
θ	0°	8°	0°	8°

RECOMMENDED LAND PATTERN

