

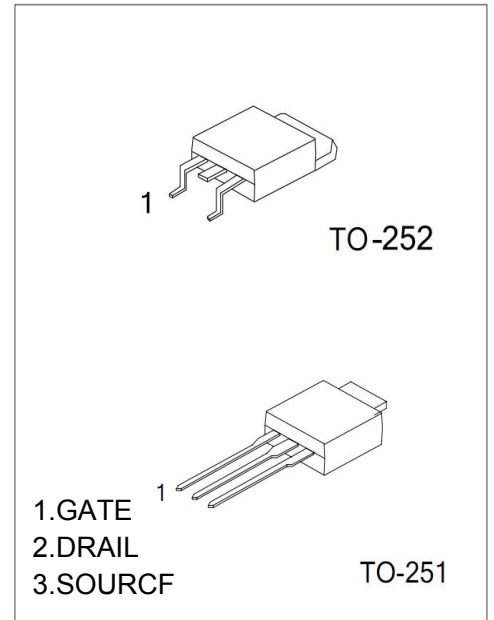


**MK6003N**

**N-Channel 60-V(D-S) Power MOSFET**

V(BR)DSS	RDS(on)MAX	ID
60 V	40mΩ@ 10 V	30A
	45mΩ@ 4.5 V	

**Equivalent Circuit:**



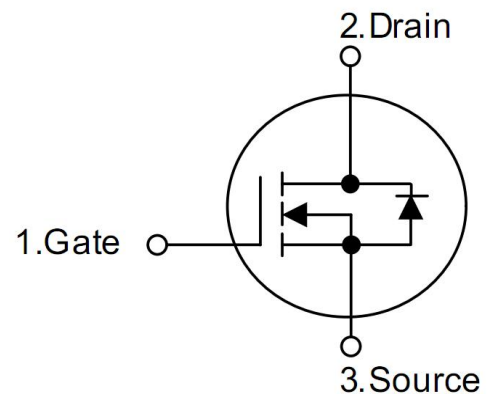
**General Description:**

The high voltage MOSFET uses an advanced termination scheme to provide enhanced voltage-blocking capability without degrading performance over time. In addition , this advanced MOSFET is designed to withstand high energy in avalanche and commutation modes . The new energy efficient design also offers a drain-to-source diode with a fast recovery time. Designed for high voltage, high speed switching applications in power suppliers, converters and PWM motor controls , these devices are particularly well suited for bridge circuits where diode speed and commutating safe operating areas are critical and offer additional and safety margin against unexpected voltage transients.

**FEATURE:**

- ※ Power switching application
- ※ Hard switched and high frequency circuits
- ※ Uninterruptible power supply
- ※ Fully characterized avalanche voltage and current
- ※ Excellent package for good heat dissipation
- ※ Good stability and uniformity with high EAS

**SYMBOL:**



**Maximum ratings ( Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	<b>VDS</b>	60	V
Gate-Source Voltage	<b>VGS</b>	±20	
Continuous Drain Current	<b>ID</b>	30	A
Pulsed Diode Curren	<b>IDM</b>	40	
Power Dissipation	<b>PD</b>	50	W
Thermal Resistance from Junction to Ambient (t≤10s)	<b>RθJA</b>	100	°C/W
Operating Junction	<b>TJ</b>	150	°C
Storage Temperature	<b>TSTG</b>	-55~+150	



MOSFET ELECTRICAL CHARACTERISTICS

Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-source breakdown voltage	<b>V(BR)DSS</b>	VGS = 0V, ID = 250μA	60			V
Gate-source threshold voltage	<b>VGS(th)</b>	VDS =VGS, ID = 250μA	1		3	V
Gate-source leakage	<b>IGSS</b>	VDS =0V, VGS = ±20V			±100	nA
Zero gate voltage drain current	<b>IDSS</b>	VDS = 60V, VGS =0V			1	μA
Drain-source on-state resistancea	<b>RDS(on)</b>	VGS = 10V, ID = 10A		33	40	mΩ
		VGS = 4.5V, ID = 5A		38	45	mΩ
Forward transconductancea	<b>gfs</b>	VDS = 25V, ID = 30A		10		S
Diode forward voltage	<b>VSD</b>	IS= 2A, VGS=0V		0.85	1.5	V
<b>Dynamic</b>						
Input capacitance	<b>Ciss</b>	VDS = 25V,VGS =0V, f=1MHz		500		pF
Output capacitance	<b>Coss</b>			150		pF
Reverse transfer capacitanceb	<b>Crss</b>			82		pF
Total gate charge	<b>Qg</b>	VDS = 30V,VGS = 10V, ID = 20A		31		nC
Gate-source charge	<b>Qgs</b>			10		nC
Gate-drain charge	<b>Qgd</b>			6		nC
<b>Switchingb</b>						
Turn-on delay time	<b>td(on)</b>	VDD= 30V RL= 25Ω, ID = 20A, VGEN= 10V,Rg= 25Ω		10		ns
Rise time	<b>tr</b>			23		ns
Turn-off delay time	<b>td(off)</b>			64		ns
Fall time	<b>tf</b>			31		ns
<b>Drain-Source Diode Characteristics</b>						
Continuous Source-Drain Diode Current	<b>IS</b>				30	A
Pulsed Diode forward Curren	<b>ISM</b>				80	A

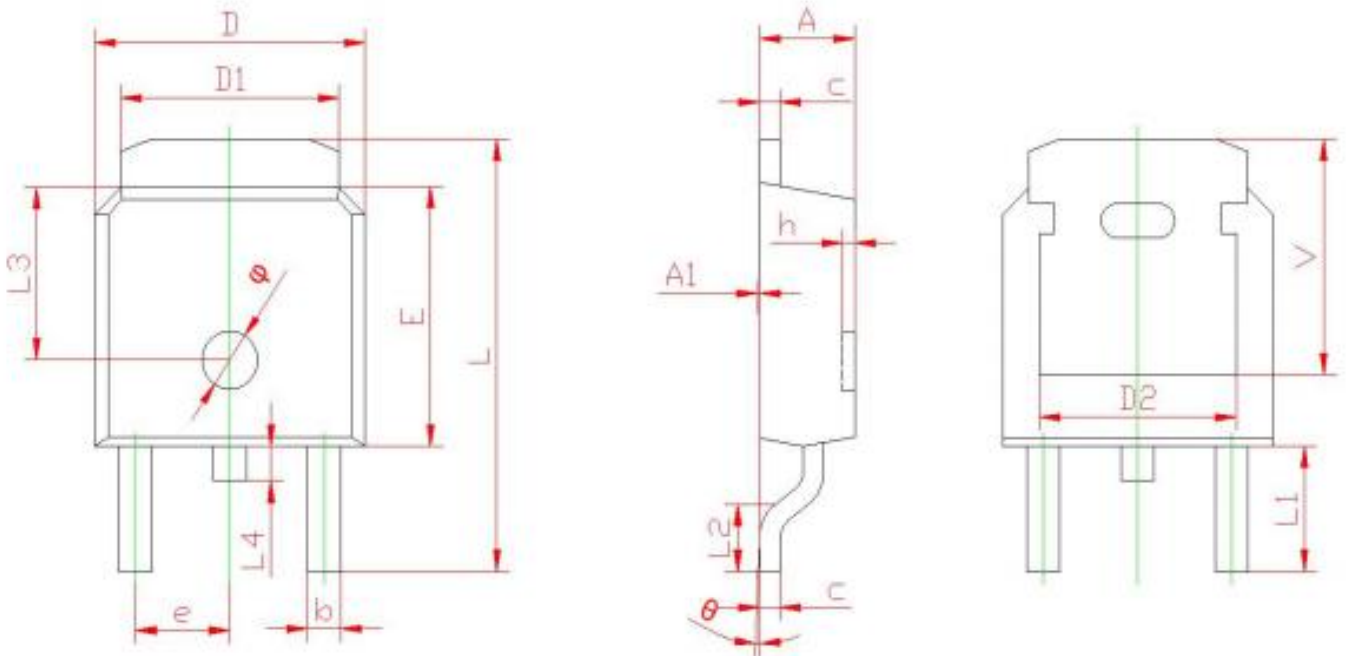
Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 10 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.



PACKAGE OUTLINE DIMENSIONS :

**TO-252 PACKAGE OUTLINE DIMENSIONS**

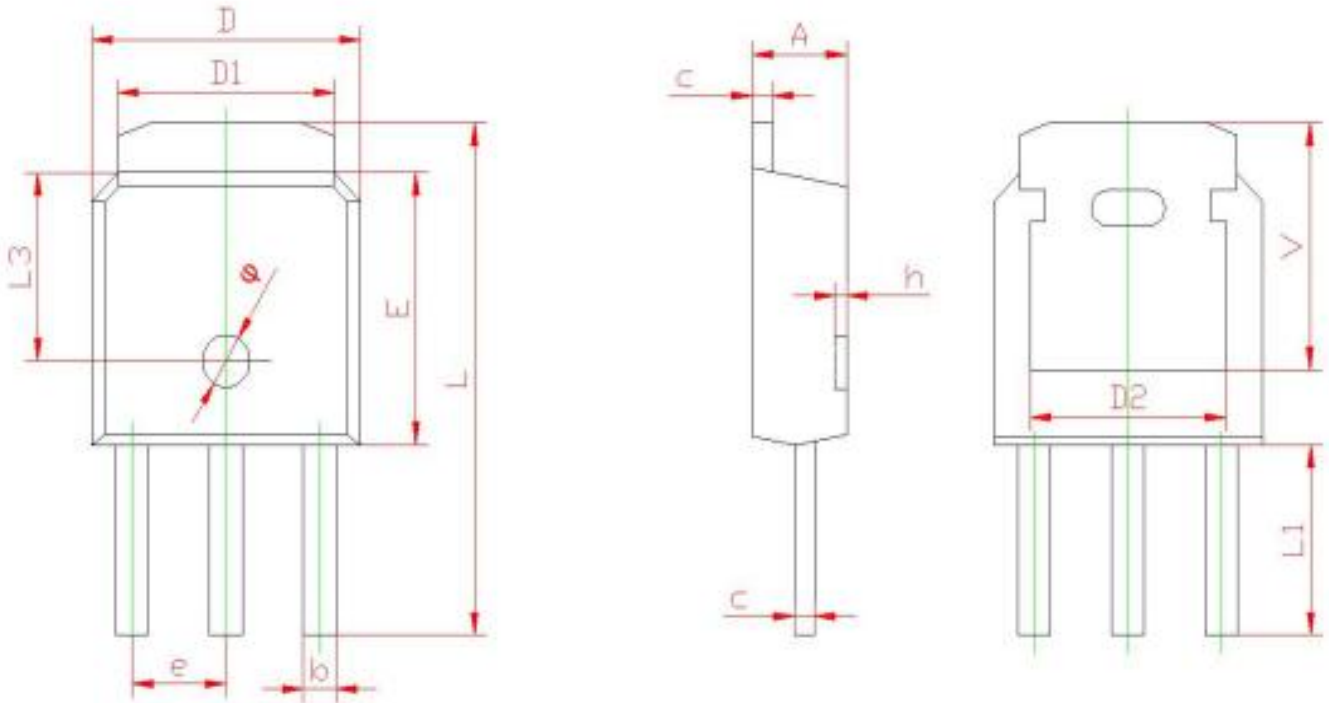


Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.800 REF		0.189 REF	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF		0.114 REF	
L2	1.400	1.700	0.055	0.067
L3	4.00 REF		0.157 REF	
L4	0.600	1.000	0.024	0.039
φ	1.200	1.400	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.500 REF		0.217 REF	



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**TO-251 PACKAGE OUTLINE DIMENSIONS**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
<b>A</b>	<b>2.200</b>	<b>2.400</b>	<b>0.087</b>	<b>0.094</b>
<b>b</b>	<b>0.660</b>	<b>0.860</b>	<b>0.026</b>	<b>0.034</b>
<b>c</b>	<b>0.460</b>	<b>0.580</b>	<b>0.018</b>	<b>0.023</b>
<b>D</b>	<b>6.500</b>	<b>6.700</b>	<b>0.256</b>	<b>0.264</b>
<b>D1</b>	<b>5.100</b>	<b>5.460</b>	<b>0.201</b>	<b>0.215</b>
<b>D2</b>	<b>4.800 REF</b>		<b>0.189 REF</b>	
<b>E</b>	<b>6.000</b>	<b>6.200</b>	<b>0.236</b>	<b>0.244</b>
<b>e</b>	<b>2.186</b>	<b>2.386</b>	<b>0.086</b>	<b>0.094</b>
<b>L</b>	<b>11.100</b>	<b>11.700</b>	<b>0.437</b>	<b>0.461</b>
<b>L1</b>	<b>4.300 REF</b>		<b>0.170 REF</b>	
<b>L3</b>	<b>4.00 REF</b>		<b>0.16 REF</b>	
<b>φ</b>	<b>1.200</b>	<b>1.400</b>	<b>0.043</b>	<b>0.051</b>
<b>h</b>	<b>0.000</b>	<b>0.300</b>	<b>0.000</b>	<b>0.012</b>
<b>V</b>	<b>5.500 REF</b>		<b>0.217 REF</b>	