

Description

The DMP3028 is the new generation trench P-channel MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high efficiency power management applications

Features

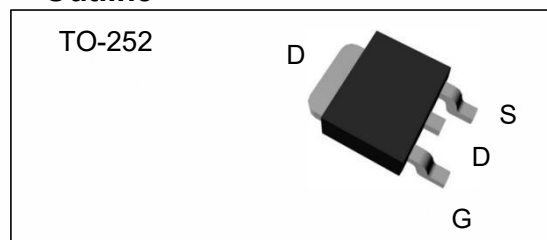
- High - speed switching
- Excellent gate charge x $R_{DS(ON)}$ product (FOM)
- for extremely low $R_{DS(ON)}$
- **100% UIS Tested**
- **100% Avalanche Tested**
- Lead-Free, Halogen-Free; RoHS Compliant

Applications

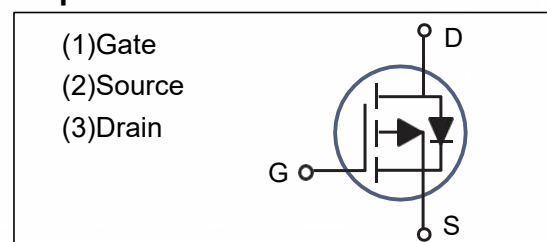
- POL Applications
- Load Switch
- Power Management
- LED Application

V_{DSS}	-30V
I_D	-70A
$R_{DS(ON) Typ}$	5.2mΩ @ $V_{GS} = -10V$

Outline



Equivalent



Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
DMP3028	TO-252-3L		2500

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous ^(Note2)	$T_C = 25^\circ C$	I_D	-70	A
	$T_C = 70^\circ C$		-54.6	A
-Pulsed ^(Note 1- Note 2)		I_{DM}	-280	A
Single Pulse Avalanche Energy ^(Note 3)		E_{AS}	256	mJ
Maximum Power Dissipation	$T_C = 25^\circ C$	P_D	72	W
	$T_C = 70^\circ C$		48	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	62	°C /W
Thermal Resistance Junction-Case		$R_{\theta JC}$	1.7	°C/W

Electrical Characteristics ($T_C=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =-250uA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V , V _{GS} =0V			-1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250uA	-1	-1.5	-2.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V , I _D =-15A		5.2	7.2	mΩ
		V _{GS} =-4.5V , I _D =-10A		8.8	12	mΩ
Forward Transconductance	g _{FS}	V _{GS} =10V , I _D =-10A		13		S
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C _{ISS}	V _{DS} =-15V , V _{GS} =0 V , f =1.0MHz		2200		pF
Output Capacitance	C _{OSS}			410		pF
Reverse Transfer Capacitance	C _{RSS}			340		pF
Total Gate Charge	Q _g	V _{DS} =-15V , I _D =-5A , V _{GS} =-10V		32		nC
Gate-Source Charge	Q _{gs}			9.6		nC
Gate-Drain Charge	Q _{gd}			9.2		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =-15V , I _D =-1A , V _{GS} =-10V , R _{GEN} =6 Ω		22.5		ns
Rise Time	tr			9.5		ns
Turn-Off Delay Time	t _{D(OFF)}			146		ns
Fall Time	tf			48		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =-6A		-0.79	-1	V

Notes:

- 1、Pulse Test Width < 300us,Duty Cycle< 2%
- 2、Drain current limited by maximum junction temperature.
- 3、tating $T_j=25^{\circ}\text{C}$, $L=0.5mH$, $V_{DD}=-15V$. (See Figure11)
- 4、Guaranteed by design, not subject to production testing.

Fig.1 Continuous Drain Current vs. TC

T_C , Case Temperature ($^{\circ}\text{C}$)

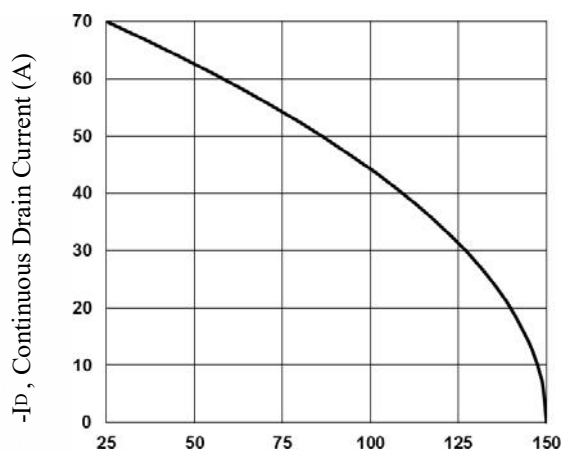


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

T_J , Junction Temperature ($^{\circ}\text{C}$)

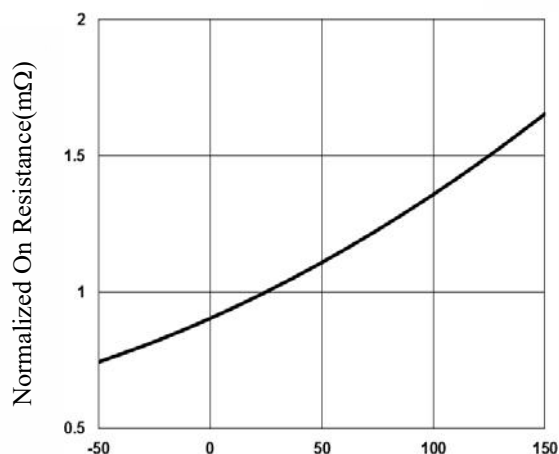


Fig.3 Normalized V_{th} vs. T_J

T_J , Junction Temperature ($^{\circ}\text{C}$)

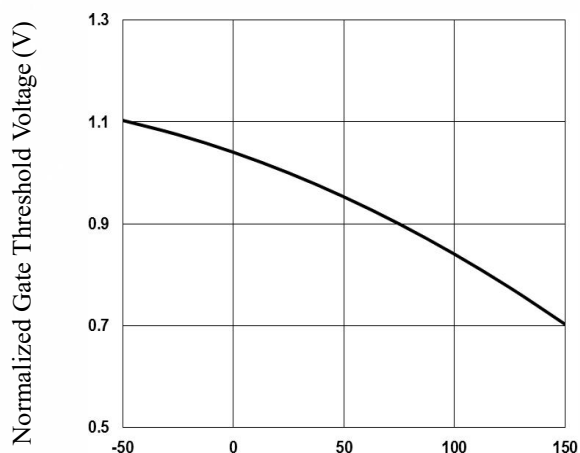


Fig.4 Gate Charge Waveform

Q_g , Gate Charge (nC)

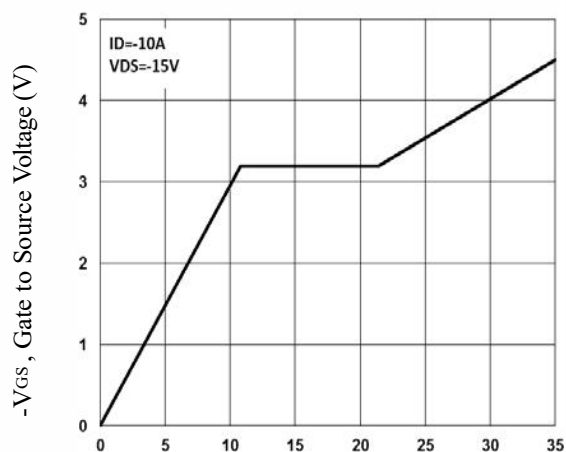


Fig.5 Normalized Transient Impedance

Square Wave Pulse Duration (s)

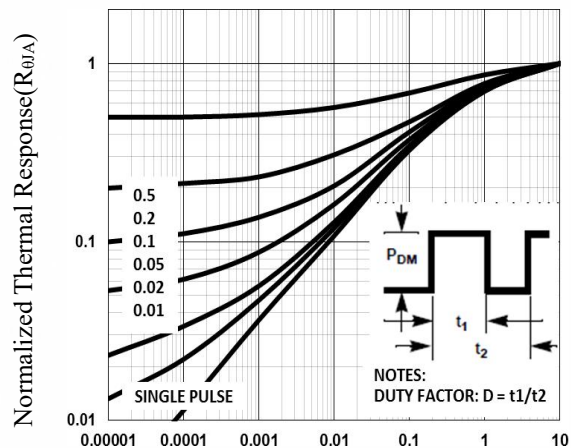


Fig.6 Maximum Safe Operation Area

$-V_{DS}$, Drain to Source Voltage (V)

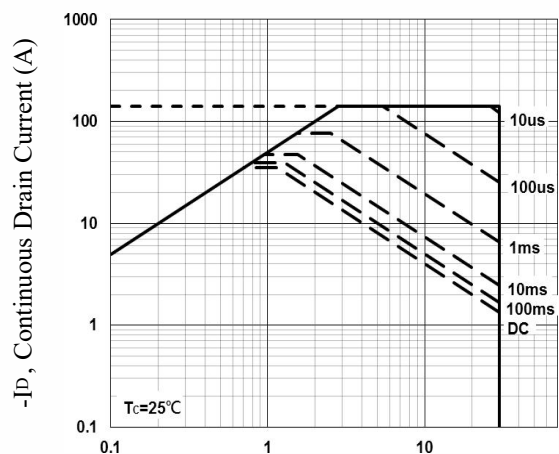


Figure 7a. Switching Test Circuit

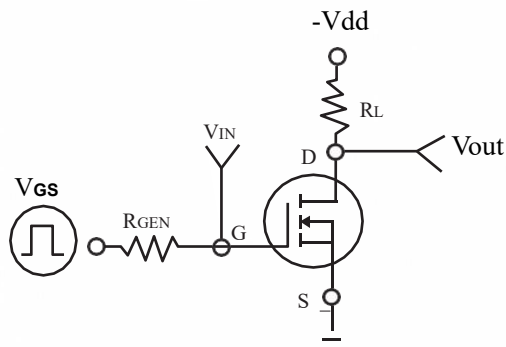


Figure 7b. Switching Waveforms

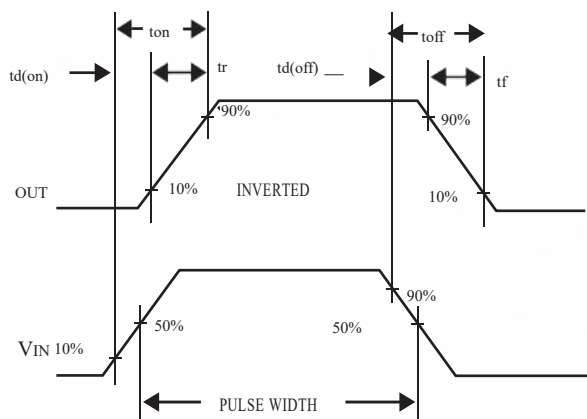


Figure 8a. Unclamped Inductive Test Circuit

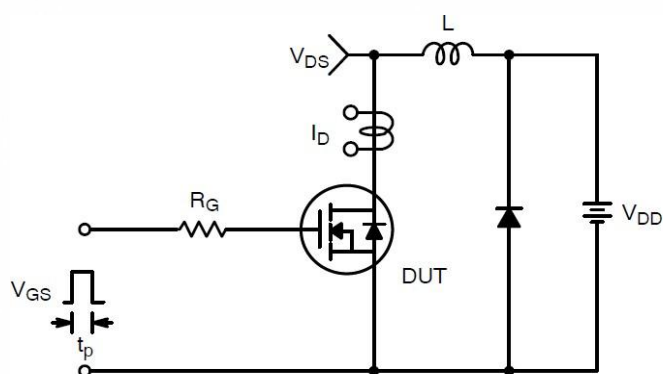
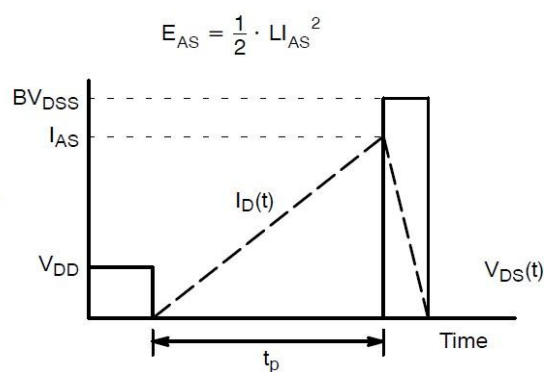


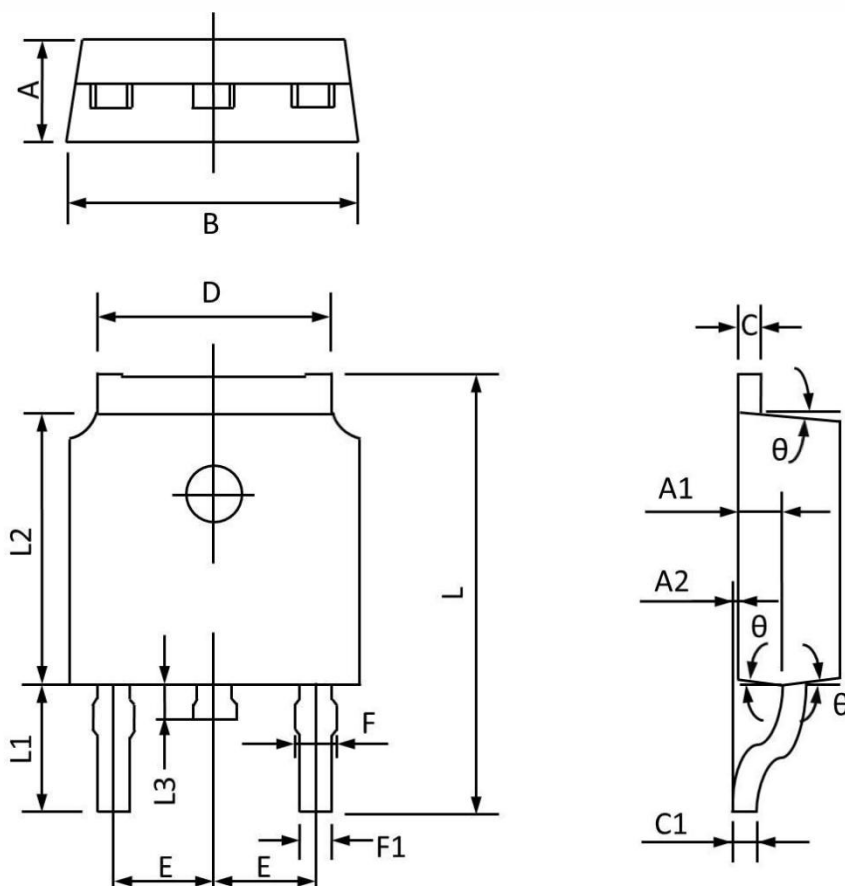
Figure 8b. Unclamped Inductive Waveform



NOTICE

NKGL reserves the to make modifications,enhancements,improvements,corrections or other changes without further notice to any product herein.NKGL does not assume any liability arsing out of the application or use of any product described herein.

TO-252-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.400	0.268	0.252
C	0.580	0.450	0.023	0.018
C1	0.580	0.460	0.023	0.018
D	5.500	5.100	0.217	0.201
E	2.386	2.186	0.094	0.086
F	0.940	0.600	0.037	0.024
F1	0.860	0.500	0.034	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.200	5.400	0.244	0.213
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°