TN09P30DF

P-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= -30V,I_D= -9A
- $R_{DS(on)}$< 25mΩ @V_{GS}= -10V
- $R_{DS(on)}$< 45mΩ @V_{GS}= -4.5V

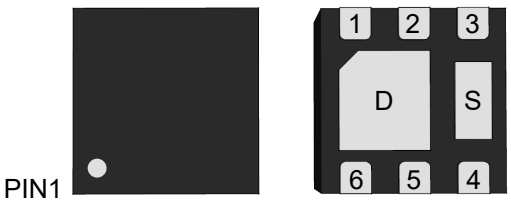
Features

- Advanced Trench Technology
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 1

Application

- Load Switch
- PWM Applications
- Power Management

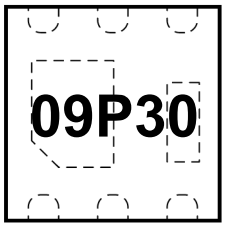
DFN2x2-6L



(Top View) (Bottom View)

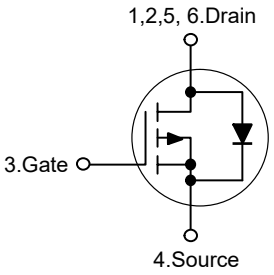
Pin	Description
1,2,5,6	Drain
3	Gate
4	Source

Marking Code



Top View

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25℃ ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	$-I_D$	9	A
Drain Current-Pulsed Note1	$-I_{DM}$	50	A
Single Pulsed Avalanche Energy Note2	E_{AS}	36	mJ
Maximum Power Dissipation	P_D	2	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	62.5	°C/W

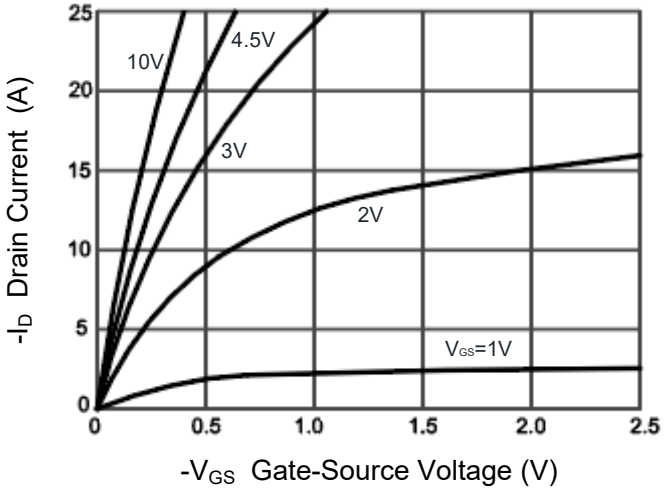
Electrical Characteristics

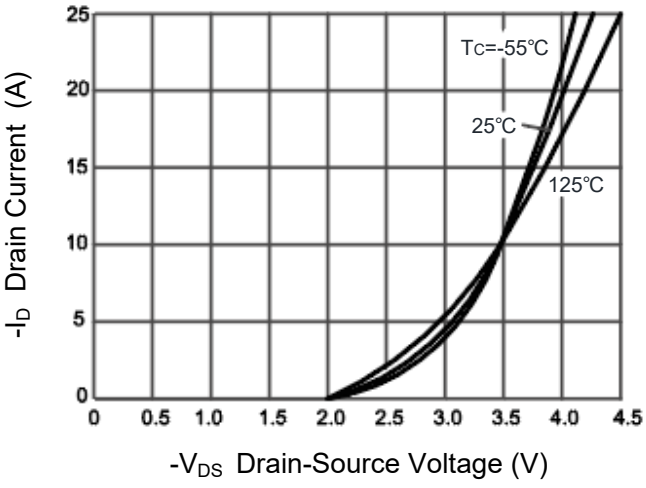
(Ta=25℃ unless otherwise specified)

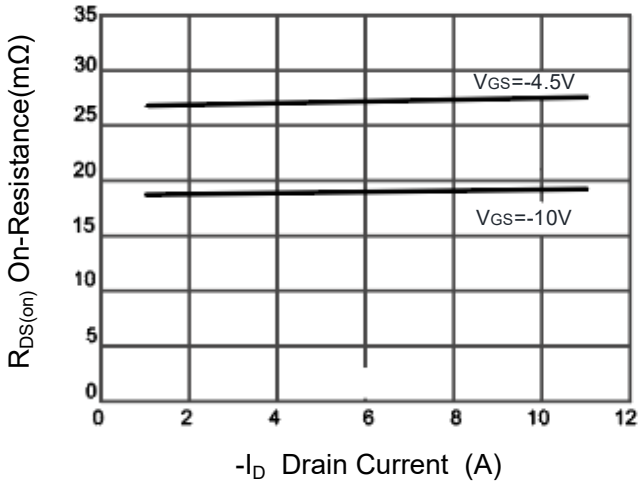
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	V_{GS}=0V,I_D=-250μA	30	--	--	V
Zero Gate Voltage Drain Current	$-I_{DSS}$	V_{DS}=-30V,V_{GS}=0V	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
Gate Threshold Voltage Note3	$-V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	1.0	--	2.5	V
Drain-Source On-Resistance Note3	$R_{DS(on)}$	V_{GS}=-10V,I_D=-6.5A	--	19	25	mΩ
		V_{GS}=-4.5V,I_D=-5A	--	28	45	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1MHz	--	1030	--	pF
Output Capacitance	C_{oss}		--	155	--	pF
Reverse Transfer Capacitance	C_{rss}		--	132	--	pF
Total Gate Charge	Q_g	V_{DS}=-15V,I_D=-8A, V_{GS}=-10V	--	52	--	nC
Gate-Source Charge	Q_{gs}		--	9.8	--	nC
Gate-Drain Charge	Q_{gd}		--	8.3	--	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-15V, I_D=-1A, V_{GS}=-10V, R_{GEN}=6Ω	--	13	--	nS
Turn-on Rise Time	t_r		--	15	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	198	--	nS
Turn-off Fall Time	t_f		--	98	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage Note3	$-V_{SD}$	V_{GS}=0V,I_S=-9A	--	--	1.2	V
Diode Forward Current	$-I_S$		--	--	9	A

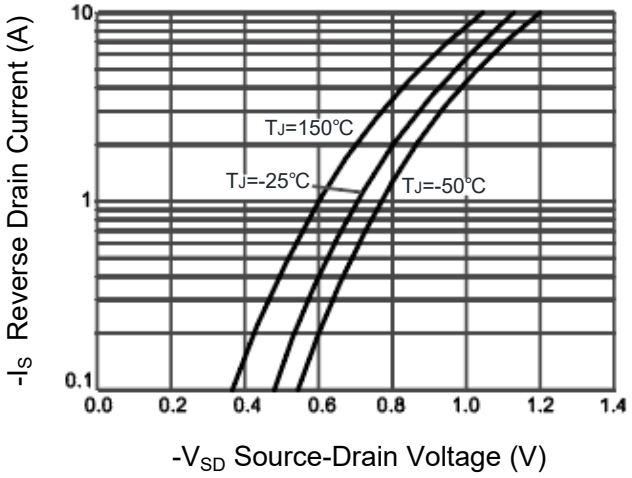
Note: 1. 10μs Pulse, duty cycle=1%
2. The test condition is V_{DD}=-20V,V_{GS}=-10V,L=0.5mH,I_{AS}=-12A, R_G=25Ω,T_J=25℃.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%

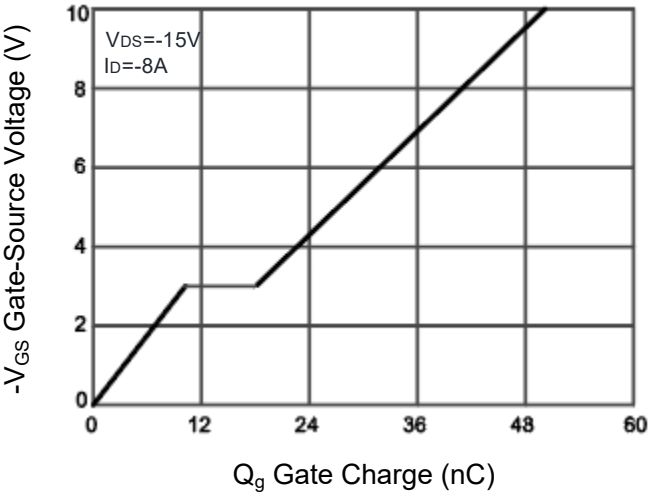
Typical Characteristic Curves

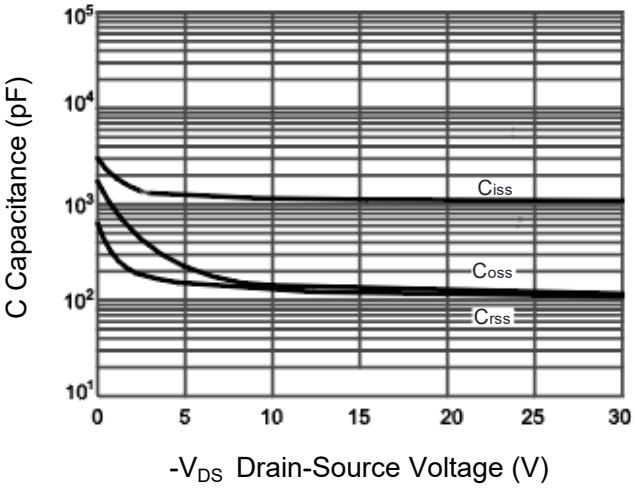


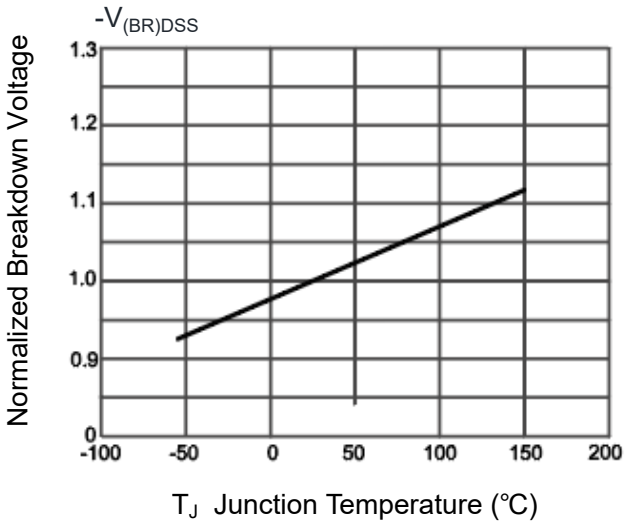


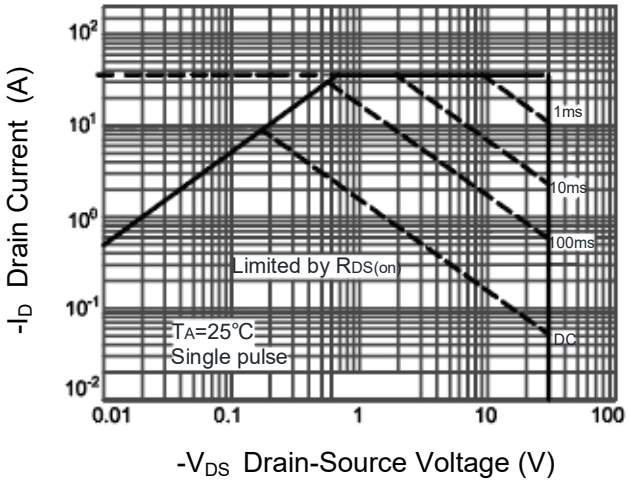






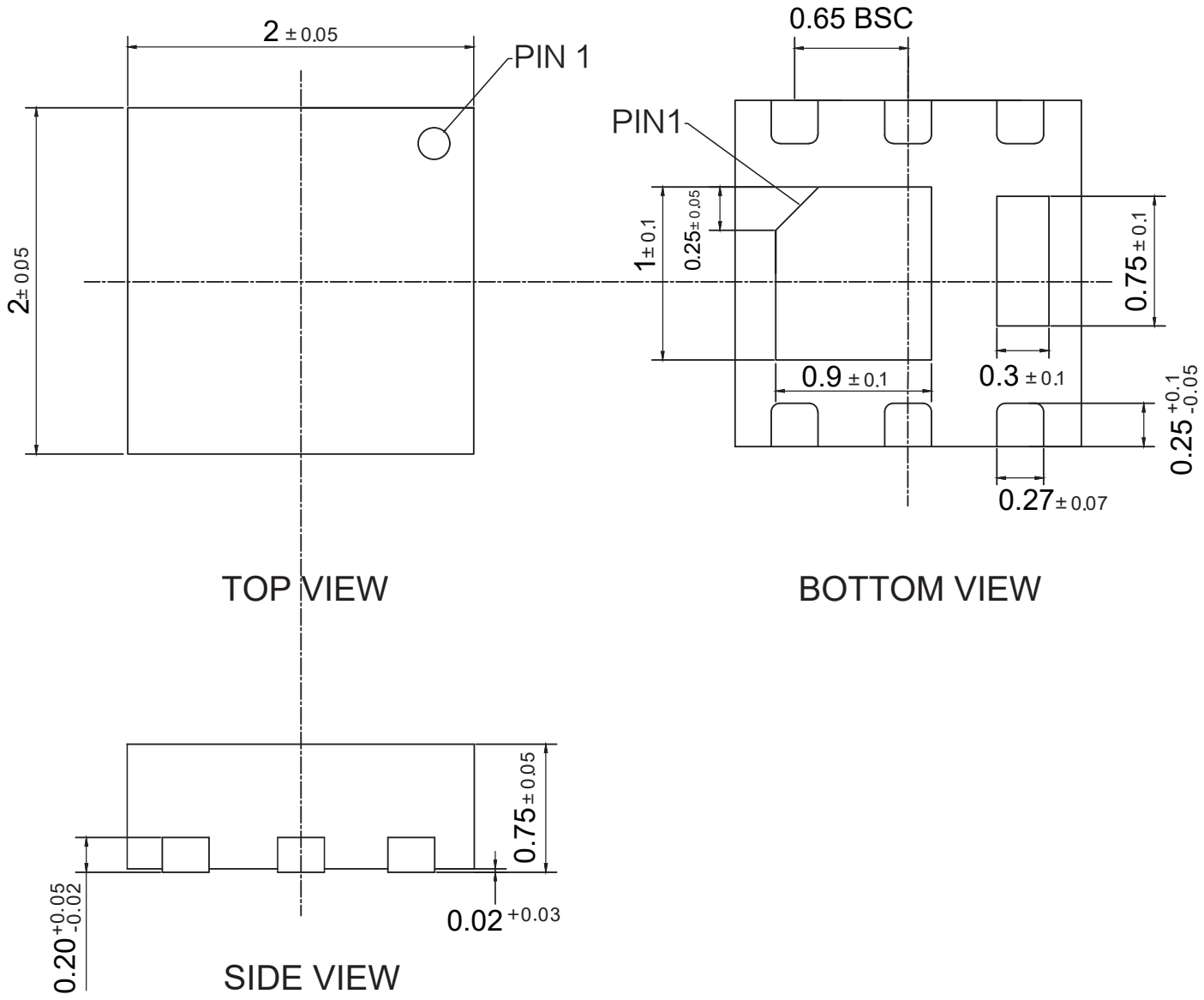






Package Outline

DFN2x2-6L-0001
Dimensions in mm



Ordering Information

Device	Package	Shipping
TN09P30DF	DFN2x2-6L	3,000PCS/Reel&7inches

Contact Information

TANI website: **http://www.tanisemi.com** Email:tani@tanisemi.com

For additional information, please contact your local Sales Representative.

Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

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