TN09P30PA
P- Enhancement Field Effect Transistor

Features

- $R_{DS(on)}$ = 16mΩ(Typ.) @ V_{GS}=-10V
- High power and current handing capability
- Surface mount package

Applications

- Battery Switch
- Load switch
- Power management

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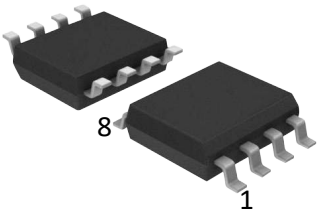
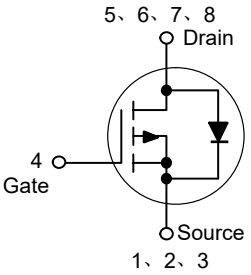


Schematic Diagram



Absolute Maximum Ratings

Ratings at T_C =25℃ unless otherwise specified.

Parameter	Symbol	Value	Units
Drain-Source Voltage	$-V_{DS}$	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$-I_D$	9.1	A
Pulsed Drain Current Note1	$-I_{DM}$	50	A
Power Dissipation	P_D	3.1	W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Thermal Characteristics			
Parameter	**Symbol**	**Typ.**	**Units**
Maximum Junction-to- Ambient Note2	$R_{\theta JA}$	40	°C/W

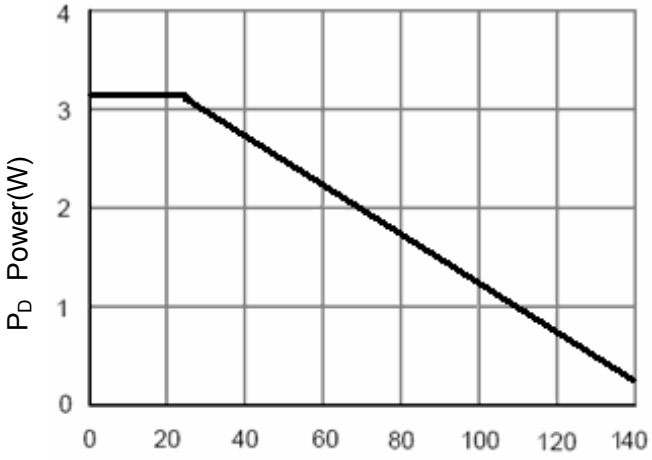
Electrical Characteristics (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	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	1.5	3	V
Drain-source on-resistance Note3	$R_{DS(on)}$	$-V_{GS}$ =10V, $-I_D$ =9.1A		20	30	mΩ
		$-V_{GS}$ =4.5V, $-I_D$ =6.9A		25	40	mΩ
Dynamic characteristics						
Forward tranconductance Note3	g_{FS}	$-V_{DS}$ =15V, $-I_D$ =9.1A	10			S
Input capacitance	C_{iss}	$-V_{DS}$ =15V, V_{GS} =0V, f =1MHz		1600		pF
Output capacitance	C_{oss}			350		
Reverse transfer capacitance	C_{rss}			300		
Switching Characteristics						
Total gate charge	Q_g	$-V_{DS}$ =15V, $-V_{GS}$ =10V, $-I_D$ =9.1A		30		nC
Gate-source charge	Q_{gs}			5.5		
Gate-drain charge	Q_{gd}			8		
Turn-on delay time	$t_{d(on)}$	$-V_{DD}$=15V, $-V_{GS}$=10V, R_{GEN}=6Ω, $-I_D$=1A		10		ns
Turn-on rise time	t_r			15		
Turn-off delay time	$t_{d(off)}$			110		
Turn-off fall time	t_f			70		
Diode Characteristics						
Diode Forward Voltage Note3	$-V_{SD}$	V_{GS}=0V, $-I_S$=9.1A			1.2	V

Notes:

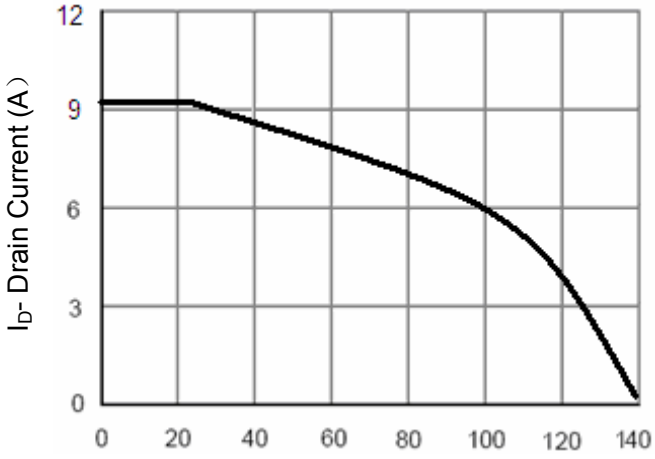
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

Typical Electrical and Thermal Characteristics



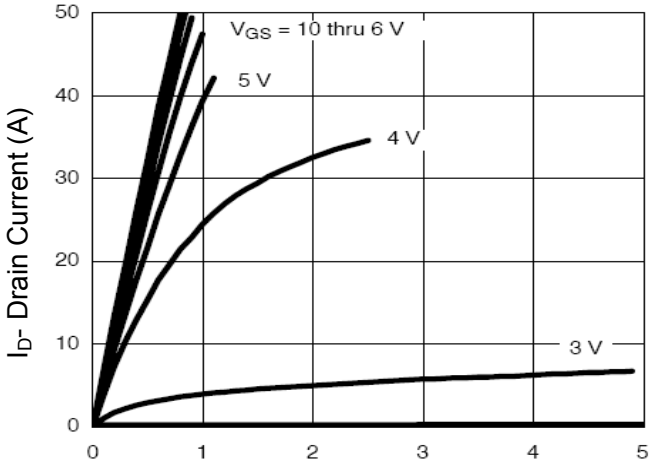
T_J-Junction Temperature(℃)

Power Dissipation



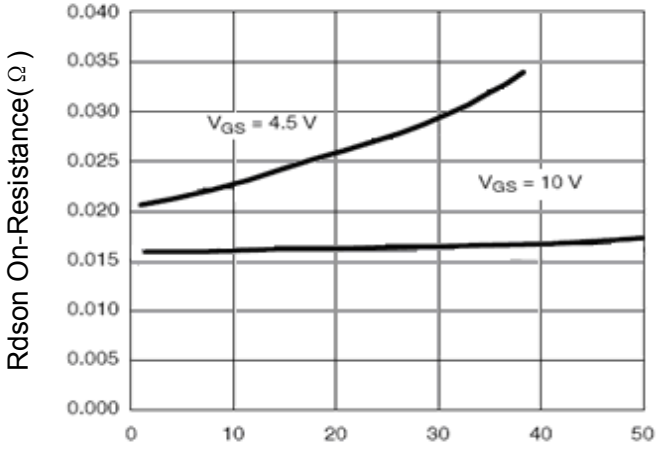
T_J-Junction Temperature(℃)

Drain Current



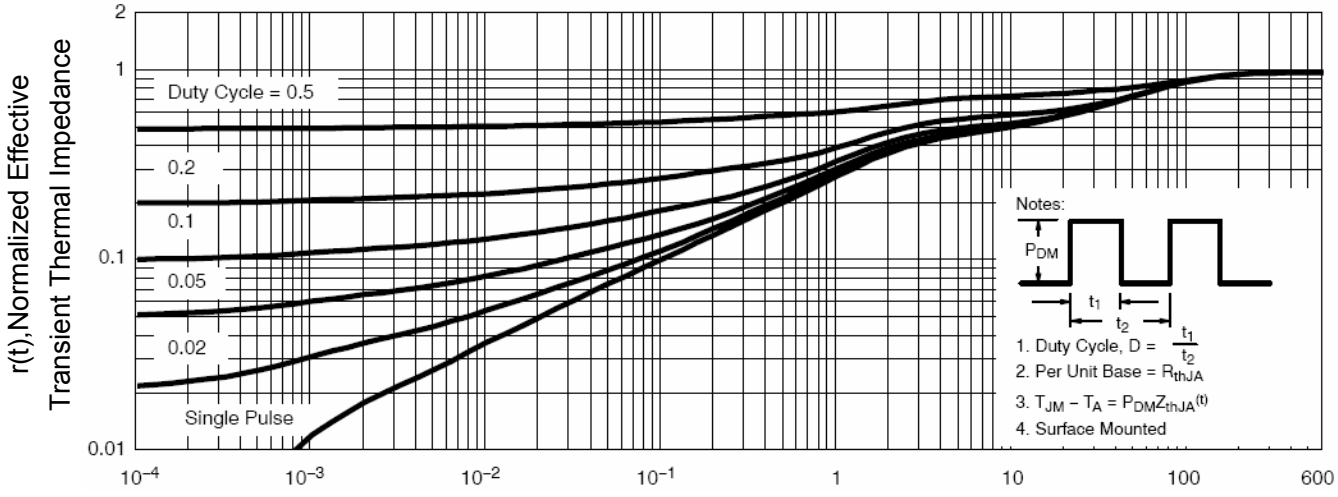
Vds Drain-Source Voltage (V)

Output Characteristics



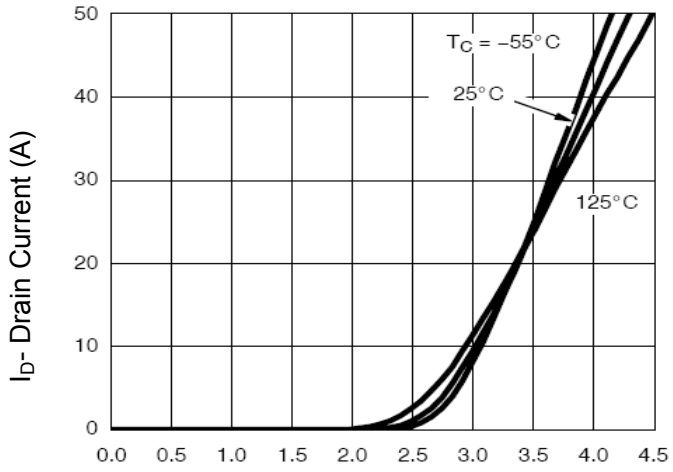
I_D- Drain Current (A)

Drain-Source On-Resistance

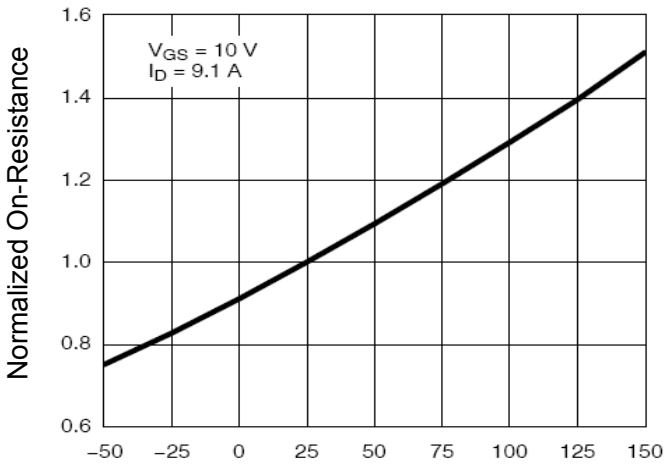


Square Wave Pluse Duration(sec)

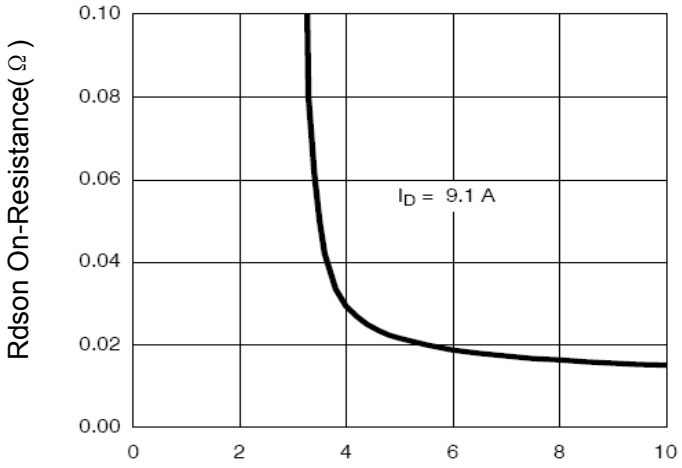
Normalized Maximum Transient Thermal Impedance



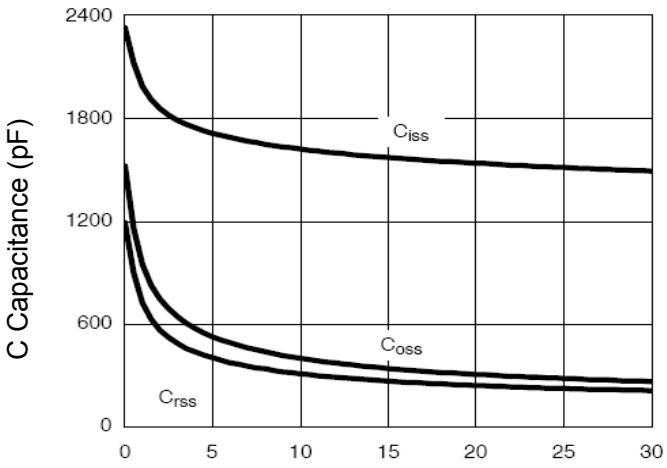
Transfer Characteristics



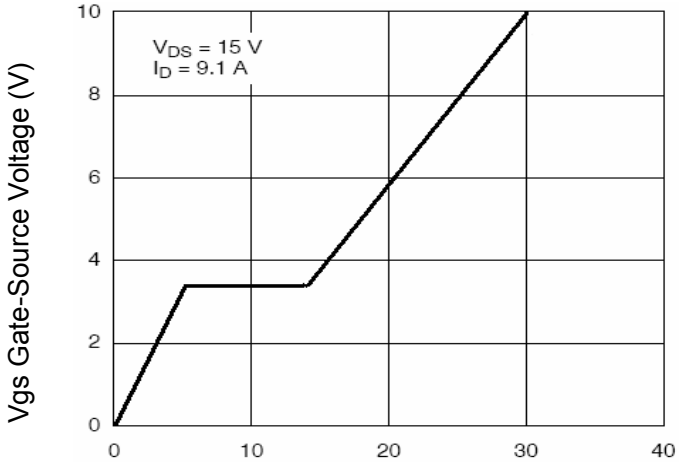
Drain-Source On-Resistance



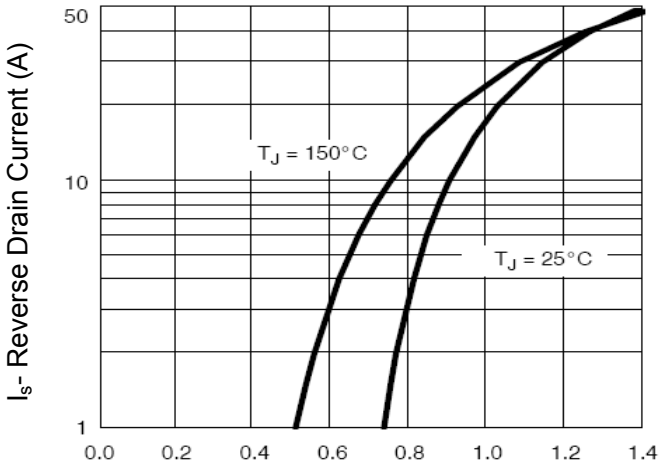
Rdson vs Vgs



Capacitance vs Vds



Gate Charge



Source- Drain Diode Forward

Package Outline

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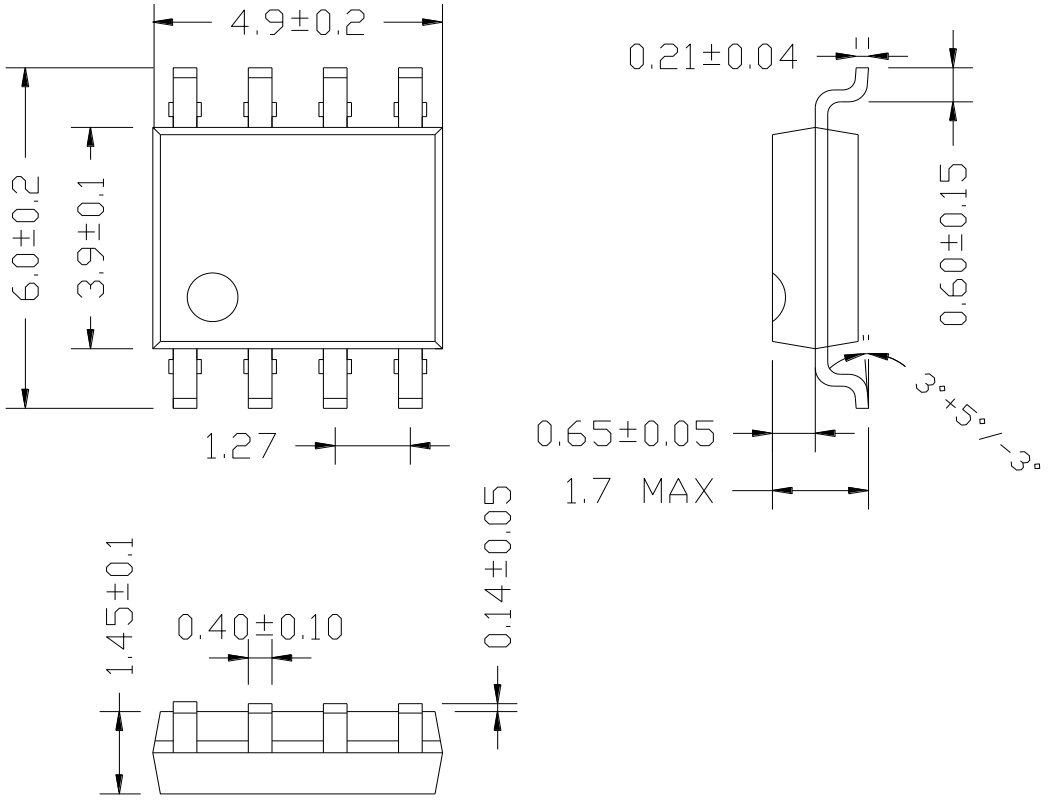
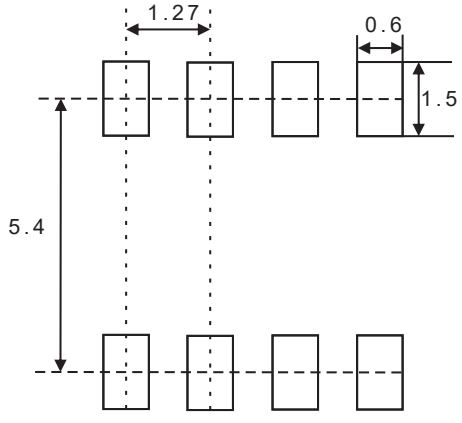
unit: mm



Recommended soldering pad



unit: mm

Contact Information

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

For additional information, please contact your local Sales Representative.

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