

Product Summary

- $V_{DS} = -20V, I_D = -2A$
- $R_{DS(on)} < 120m\Omega @ V_{GS} = -4.5V$
- $R_{DS(on)} < 160m\Omega @ V_{GS} = -2.5V$

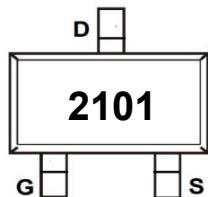
Features

- Advanced Trench Technology
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Application

- Battery Operated Systems
- Direct Logic-level Interface:TTL/CMOS
- Solid-State Relays

Marking Code



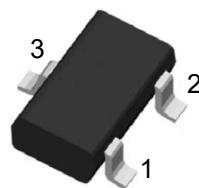
Absolute Maximum Ratings

(Ta=25°C unless otherwise specified)

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	V_{DS}	-20	V
Gate-source Voltage	V_{GS}	± 10	V
Drain Current <small>T_A=25°C @ Steady State</small>	I_D	-2.0	A
		-1.6	
Pulsed Drain Current ^A	I_{DM}	-8	A
Total Power Dissipation @ T _A =25°C	P_D	0.45	W
Thermal Resistance Junction-to-Ambient ^B	$R_{\theta JA}$	278	°C / W
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	°C

P-Channel Enhancement Mode Power MOSFET

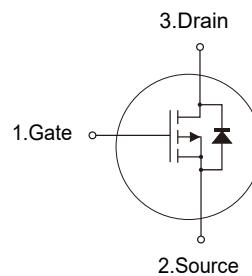
SOT-323



(Top View)

Pin	Description
1	Gate
2	Source
3	Drain

Schematic Diagram



Electrical Characteristics

(T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V, T _C =25°C			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D =-1.5A		100	130	mΩ
		V _{GS} = -2.5V, I _D =-1.2A		130	170	
		V _{GS} = -1.8V, I _D =-1.0A		165	250	
Diode Forward Voltage	V _{SD}	I _S =-2.0A, V _{GS} =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I _S				-2.0	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHZ		290		pF
Output Capacitance	C _{oss}			47		
Reverse Transfer Capacitance	C _{rss}			29		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-1.0A		3.9		nC
Gate Source Charge	Q _{gs}			0.7		
Gate Drain Charge	Q _{gd}			0.9		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V, V _{DD} =-10V, I _D =-1A, R _{GEN} =2.5Ω		12		ns
Turn-on Rise Time	t _r			54		
Turn-off Delay Time	t _{D(off)}			15		
Turn-off Fall Time	t _f			9		

A. A.Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Characteristic Curves

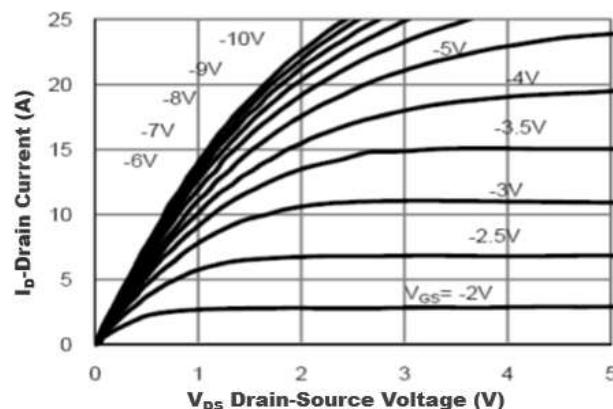


Figure1. Output Characteristics

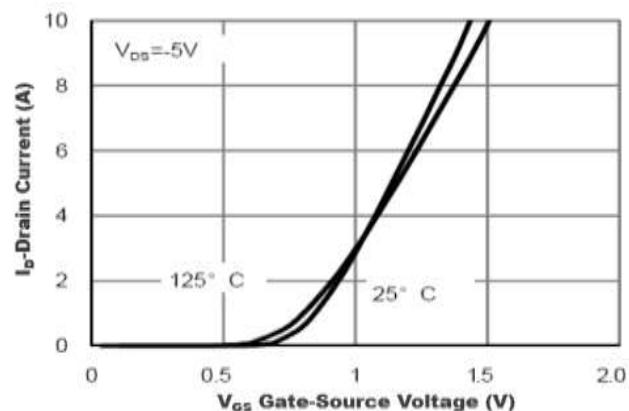


Figure2. Transfer Characteristics

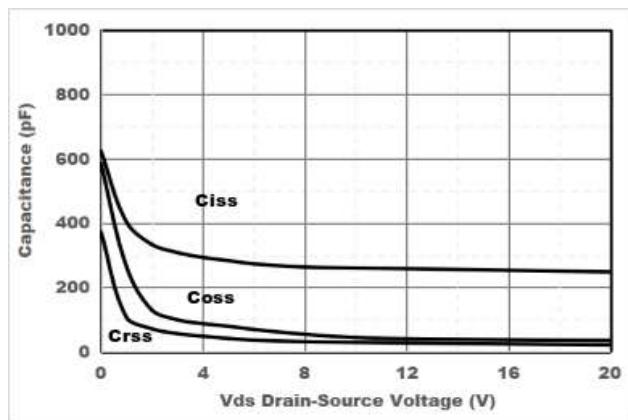


Figure3. Capacitance Characteristics

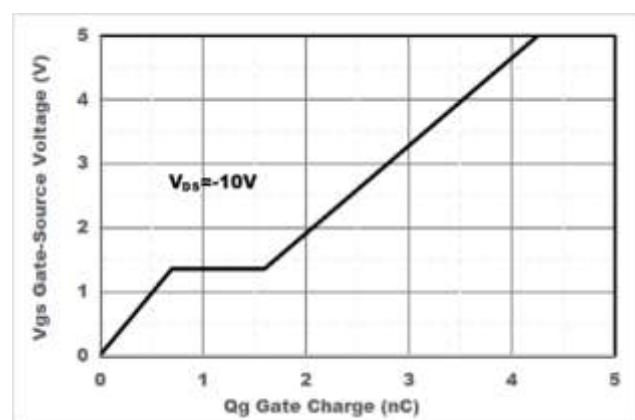


Figure4. Gate Charge

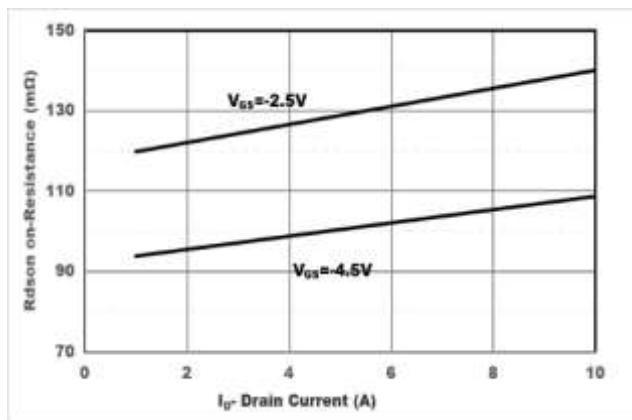


Figure5. Drain-Source on Resistance

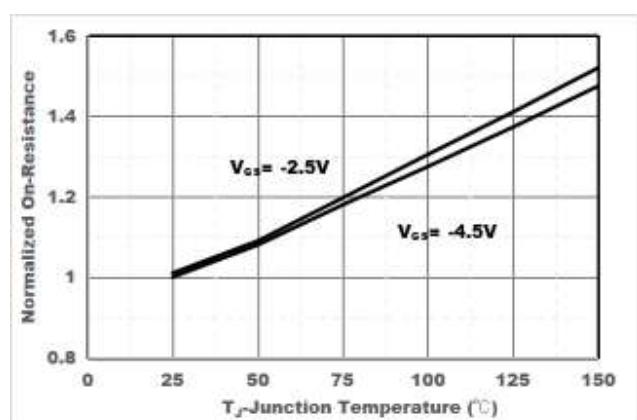


Figure6. Drain-Source on Resistance

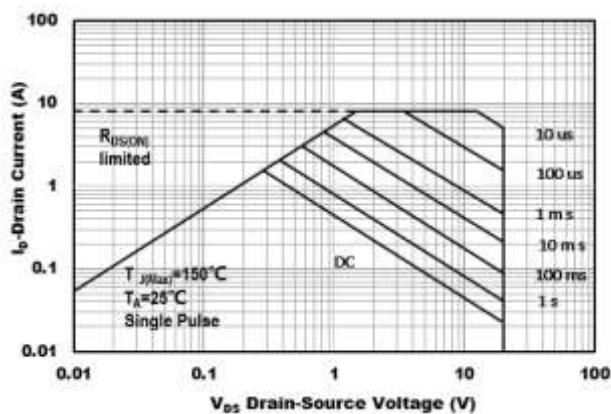


Figure7. Safe Operation Area

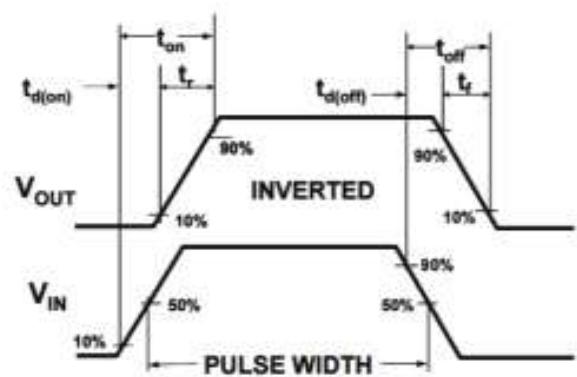
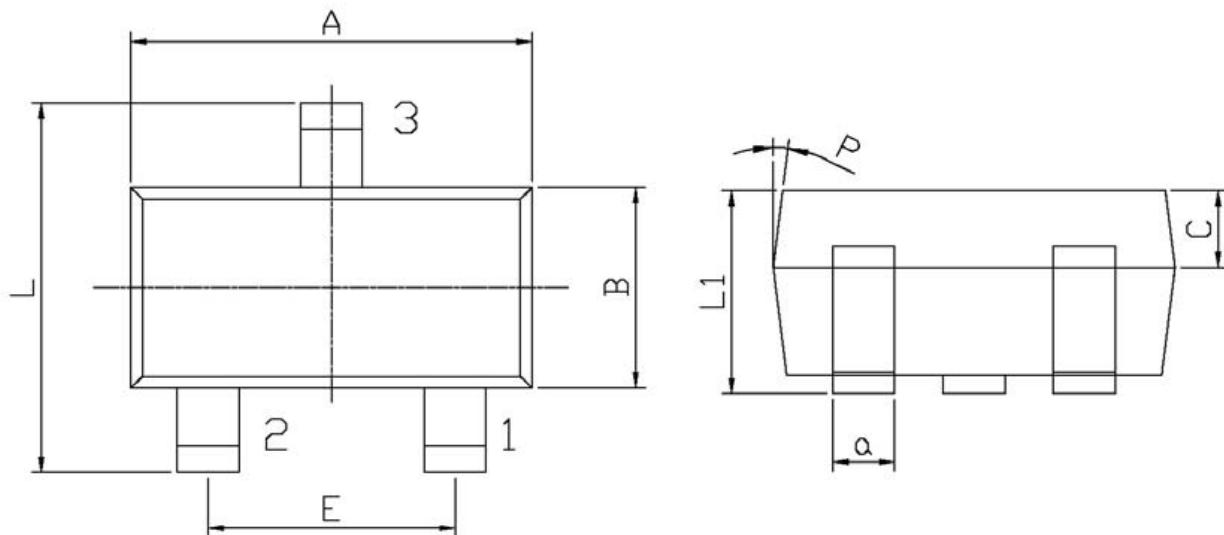


Figure8. Switching wave

Package Outline

SOT-323

Dimensions in mm



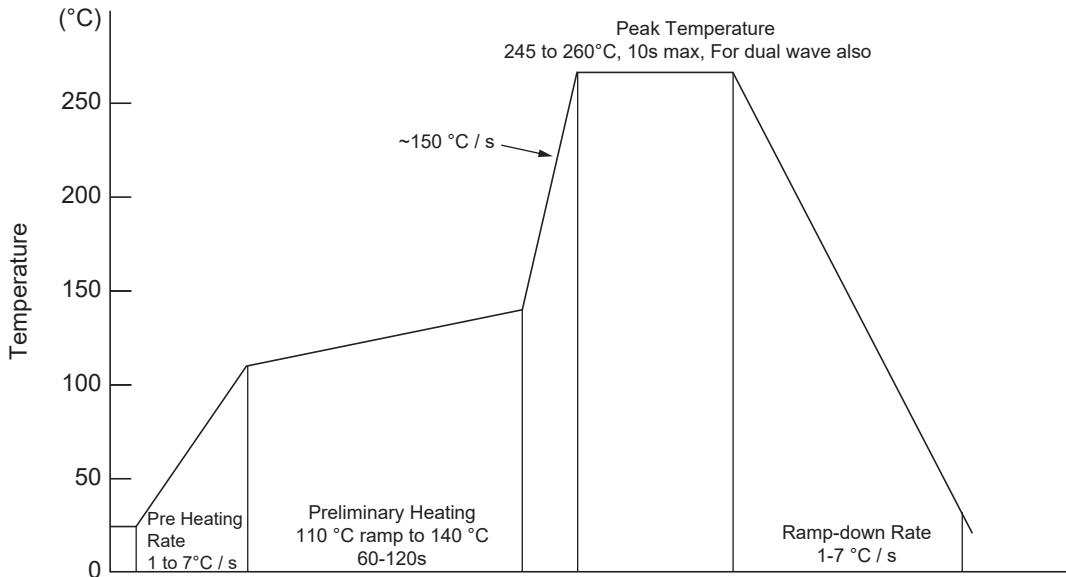
Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	1.95	2.35	C	0.30	0.50
L	2.00	2.20	L1	0.85	1.15
E	1.20	1.40	a	0.20	0.40
B	1.15	1.35	P	7°	

Ordering Information

Device	Package	Shipping
TN2101PSI	SOT-323	3,000PCS/Reel&7inches

Conditions of Soldering and Storage

◆ Wave Soldering



◆ Conditions of hand soldering

- Temperature: 360°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

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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Product Specification Statement

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The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications. TANI reserves the right to revise or update the product specification and the products at any time without prior notice, and the user's continued use of the product specification is considered an acceptance of these revisions and updates. Prior to purchasing and using the product, users should verify the above information with TANI to ensure that the product specification is the most current, effective, and complete. If users are particularly concerned about product parameters, please consult TANI in detail or request relevant product test reports. Any data not explicitly mentioned in the product specification shall be subject to separate agreement.

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