

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## NTS4001NT1G

Product specification

## Features

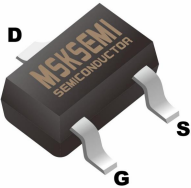
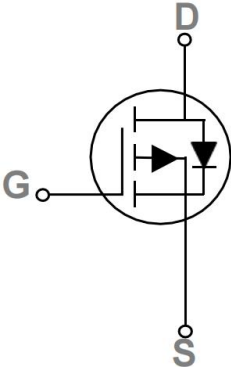

- 30V,300mA,  $R_{DS(ON)} = 1\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

## Application

- Notebook
- Load Switch
- Battery Protection
- Hand-held Instruments

BVDSS	RDSON	ID
30V	1Ω	300mA

## Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
		
SOT-323		

## Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain- Source Voltage	30	V
$V_{GS}$	Gate- Source Voltage	±20	V
$I_D$	Drain Current – Continuous ( $T_A=25^\circ\text{C}$ )	300	mA
	Drain Current – Continuous ( $T_A=70^\circ\text{C}$ )	220	mA
$I_{DM}$	Drain Current – Pulsed <sup>1</sup>	1.0	A
$P_D$	Power Dissipation ( $T_C=25^\circ\text{C}$ )	313	W
	Power Dissipation – Derate above 25 °C	2.5	Mw/°C
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$T_J$	Operating Junction Temperature Range	-55 to 150	°C

## Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	400	$^{\circ}\text{C} / \text{W}$

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

### Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain- Source Breakdown Voltage	$V_{GS}=0V$ , $I_D=250\mu\text{A}$	30	---	---	V
$\Delta BV_{DSS} / \Delta T_J$	$BV_{DSS}$ Temperature Coefficient	Reference to $25^{\circ}\text{C}$ , $I_D=1\text{mA}$	---	0.05	---	V/ $^{\circ}\text{C}$
$I_{DSS}$	Drain- Source Leakage Current	$V_{DS}=30V$ , $V_{GS}=0V$ , $T_J=50^{\circ}\text{C}$	---	---	200	A
		$V_{DS}=30V$ , $V_{GS}=0V$ , $T_J=85^{\circ}\text{C}$	---	---	400	A
$I_{GSS}$	Gate- Source Leakage Current	$V_{GS}=\pm 20V$ , $V_{DS}=0V$	---	---	$\pm 6$	A

### On Characteristics

$R_{DS(ON)}$	Static Drain- Source On- Resistance	$V_{GS}=10V$ , $I_D=0.3A$	---	1.0	1.5	$\Omega$
		$V_{GS}=4.5V$ , $I_D=0.2A$	---	1.3	2.3	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$ , $I_D=250\mu\text{A}$	0.8	1.1	1.6	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3	---	$\text{mV}/^{\circ}\text{C}$

### Dynamic and switching Characteristics

$C_{iss}$	Input Capacitance	$V_{DS}=30V$ , $V_{GS}=0V$ , $F=1\text{MHz}$	---	23	---	pF
$C_{oss}$	Output Capacitance		---	16	---	
$C_{riss}$	Reverse Transfer Capacitance		---	10	---	

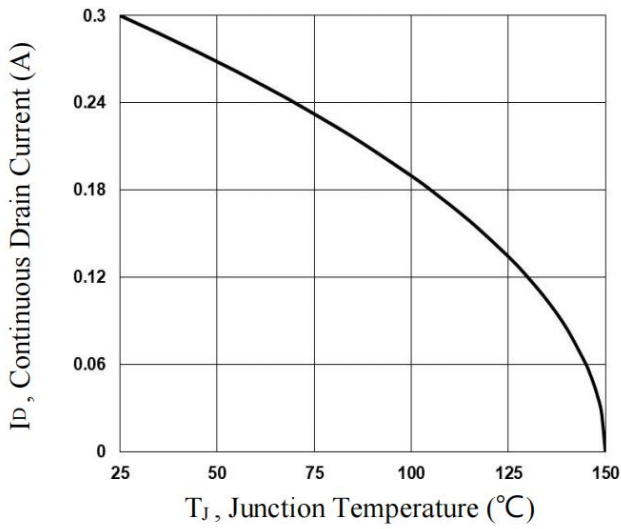
### Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	300	mA
$I_{SM}$	Pulsed Source Current		---	---	600	mA
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V$ , $I_S=0.2A$ , $T_J=25^{\circ}\text{C}$	---	---	1.3	V

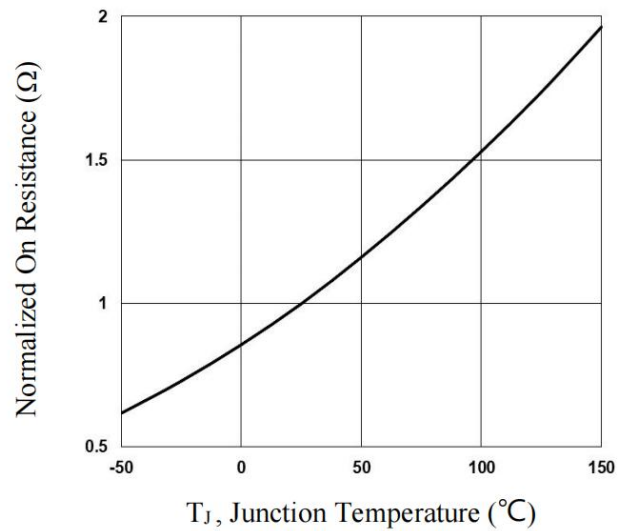
#### Note :

- 1.Repetitive Rating : Pulsed width limited by maximum junction temperature.
- 2 . The data tested by pulsed , pulse width  $\leq 300\mu\text{s}$  , duty cycle  $\leq 2\%$  .
3. Essentially independent of operating temperature.

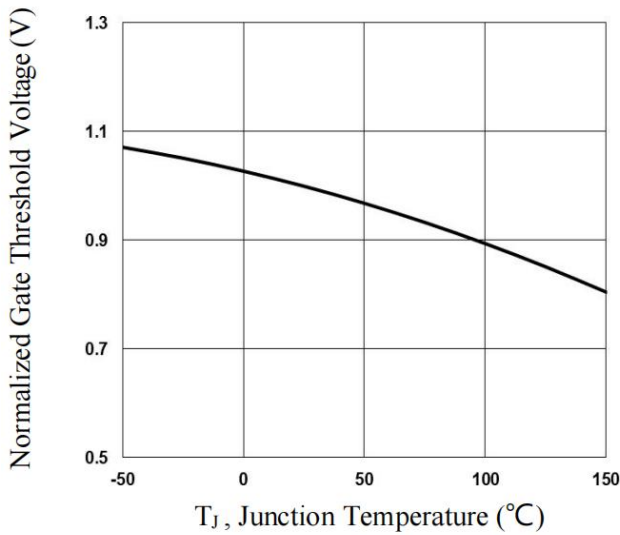
**ELECTRICAL CHARACTERISTICS CURVE**



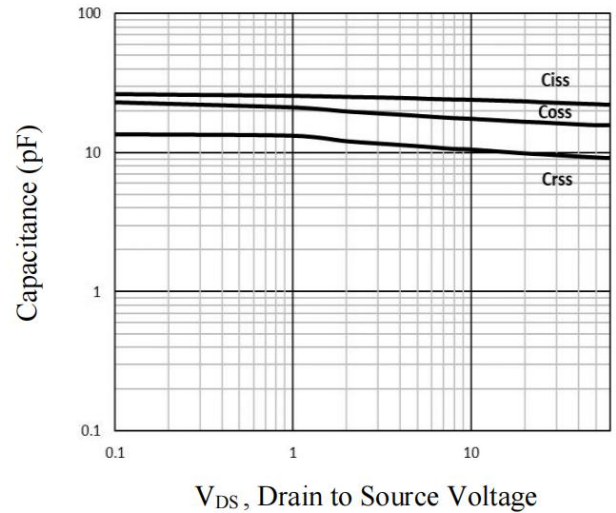
**Fig.1 Continuous Drain Current vs.  $T_c$**



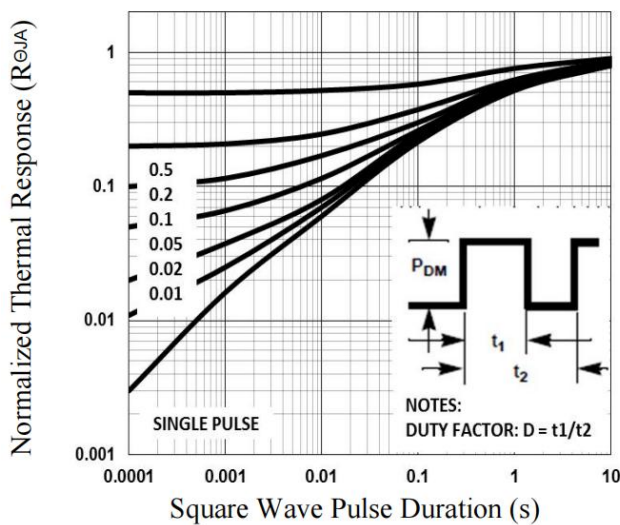
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_J$**



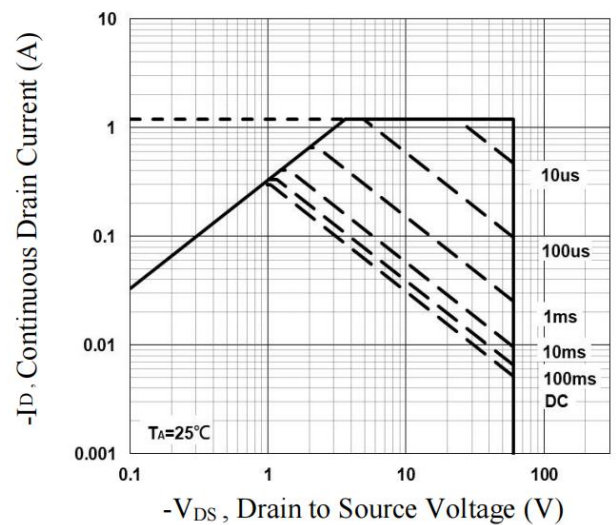
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



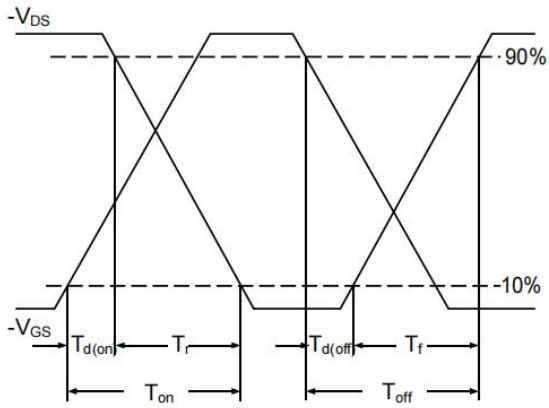
**Fig.4 Capacitance Characteristics**



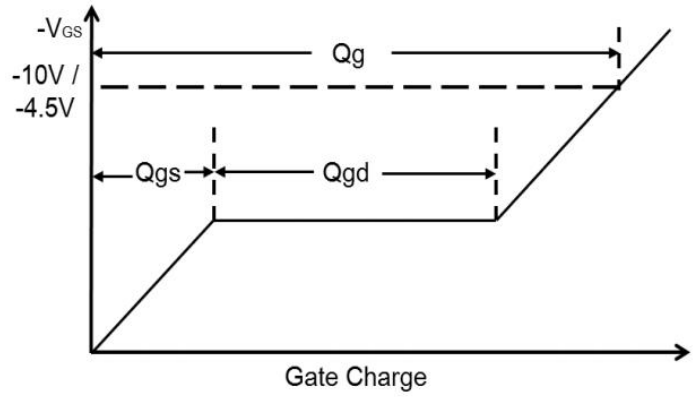
**Fig.5 Normalized Transient Response**



**Fig.6 Maximum Safe Operation Area**

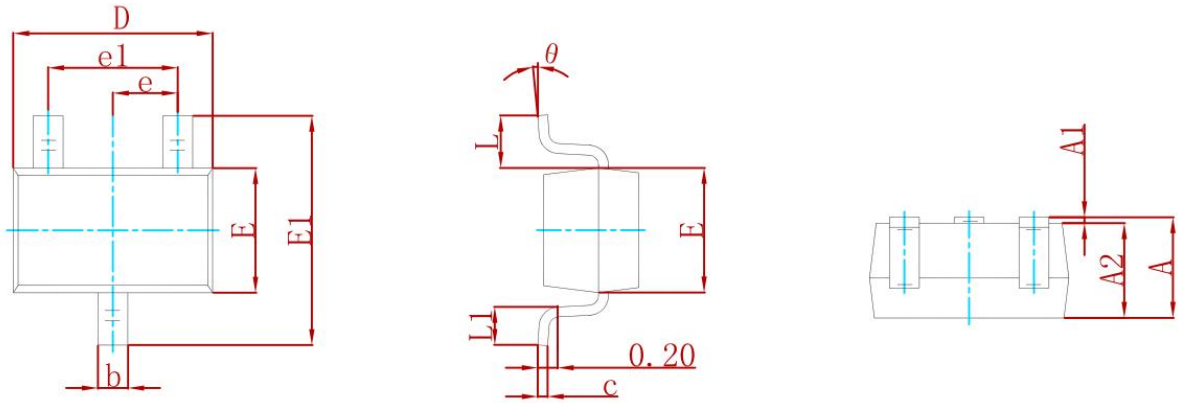


**Fig.7 Switching Time Waveform**



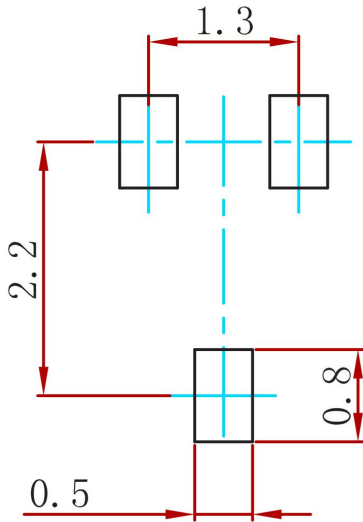
**Fig.8 Gate Charge Waveform**

**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
g	0°	8°	0°	8°

**Suggested Pad Layout**



Note:

- 1.Controlling dimension:in millimeters.
- 2.General tolerance:±0.05mm.
- 3.The pad layout is for reference purposes only.

**REEL SPECIFICATION**

P/N	PKG	QTY
NTS4001NT1G	SOT-323	3000

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