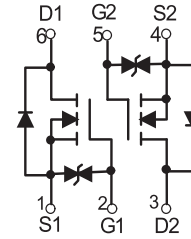


### Features

- $V_{DS} = 30V$   $I_D = 0.25A$
- $R_{DS(ON)} < 2\Omega$  @  $V_{GS} = 10V$
- High density cell design for Low  $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected

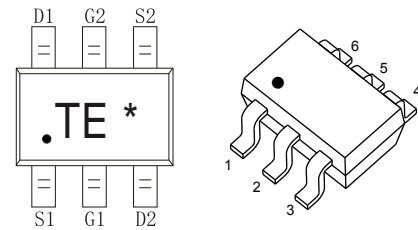
### Inner Equivalent Principium Chart



### Applications

- Load Switch for Portable Devices
- DC/DC Converter

### Marking and Pin Assignment



### Package Marking and Ordering Information

Marking	Part Number	Package	Packing	Qty.
TE	LM4001N	SOT-363	Reel	3000 Pcs

### Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	0.25	A
$P_D$	Power Dissipation	0.2	W
$T_J, T_{stg}$	Operation Junction and Storage Temperature Range	-55-150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	625	$^{\circ}C/W$

## Electrical Characteristic ( $T_C = 25\text{ }^\circ\text{C}$ , unless otherwise specified)

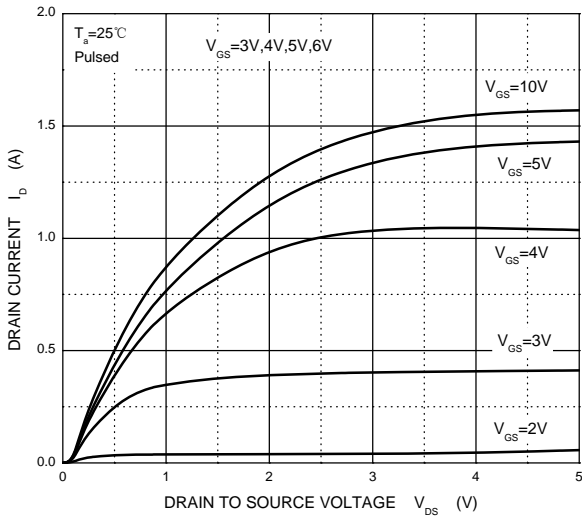
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate-body leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 50V, V_{GS} = 0V$			0.5	$\mu A$
		$V_{DS} = 30V, V_{GS} = 0V$			100	nA
<b>On characteristics</b>						
Gate-threshold voltage (note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1mA$	0.6	1.1	1.50	V
Static drain-source on-resistance (note 1)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.22A$		1.5	2	$\Omega$
		$V_{GS} = 4.5V, I_D = 0.22A$		2	3	
Forward transconductance (note 1)	$g_{FS}$	$V_{DS} = 10V, I_D = 0.22A$	0.12			S
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		27		pF
Output capacitance	$C_{oss}$			13		
Reverse transfer capacitance	$C_{rss}$			6		
<b>Switching characteristics</b>						
Turn-on delay time (note 1,2)	$t_{d(on)}$	$V_{DD} = 30V, V_{DS} = 10V, I_D = 0.29A, R_{GEN} = 6\Omega$			5	ns
Rise time (note 1,2)	$t_r$				18	
Turn-off delay time (note 1,2)	$t_{d(off)}$				36	
Fall time (note 1,2)	$t_f$				14	
<b>Drain-source body diode characteristics</b>						
Body diode forward voltage (note 1)	$V_{SD}$	$I_S = 0.44A, V_{GS} = 0V$			1.4	V

### Notes:

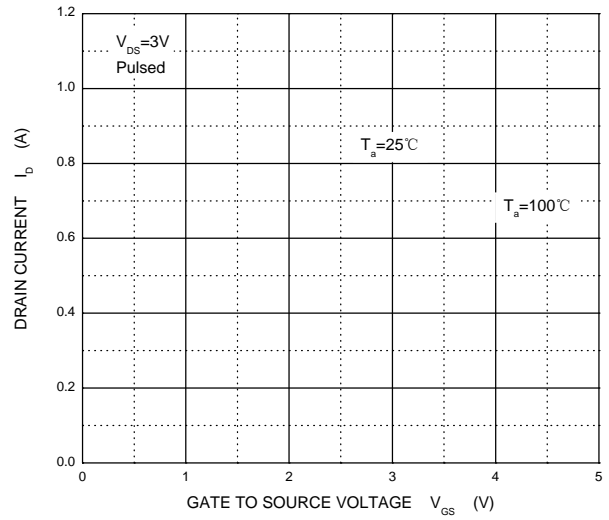
1. Pulse Test ; Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
2. These parameters have no way to verify.

## Characteristics Curve

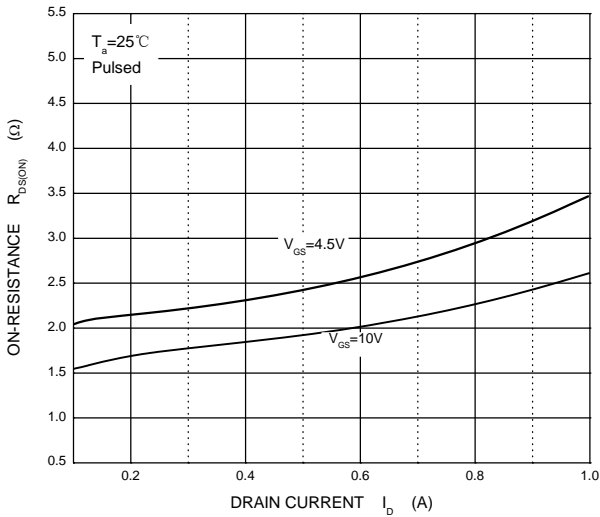
### Output Characteristics



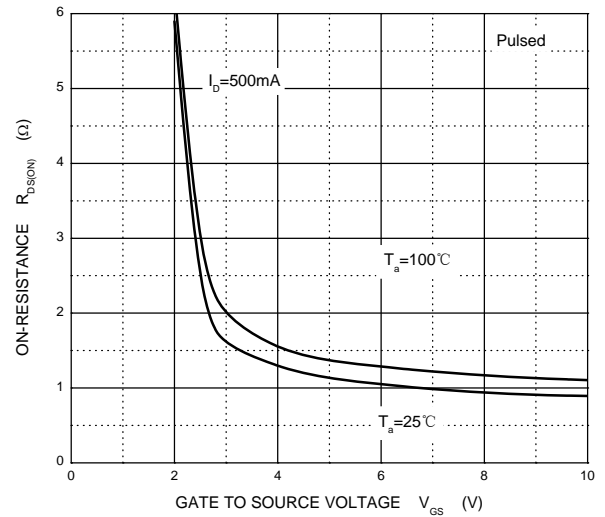
### Transfer Characteristics



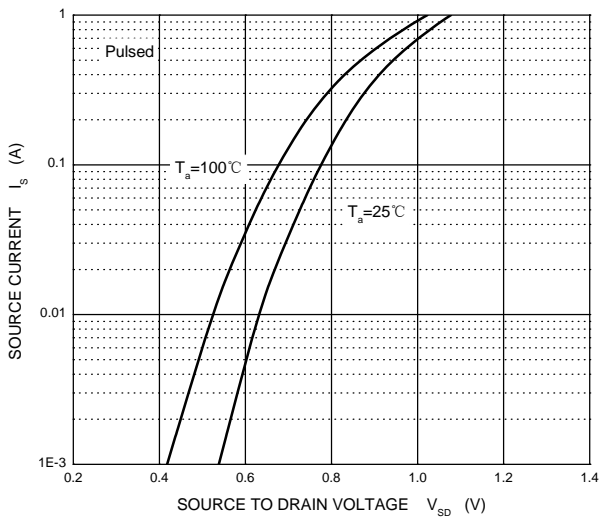
### $R_{DS(ON)}$ — $I_D$



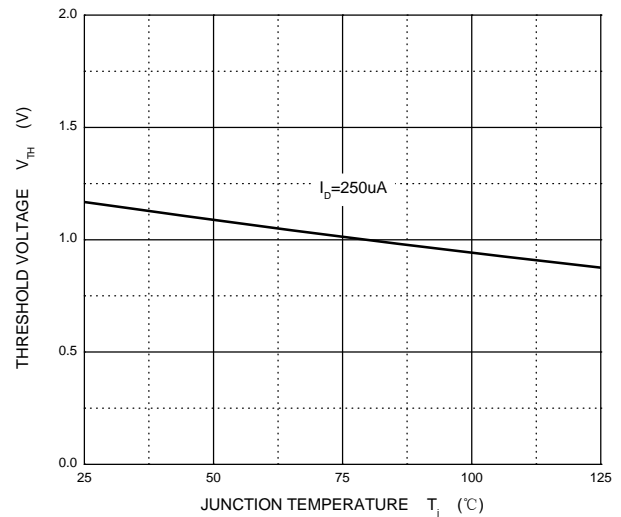
### $R_{DS(ON)}$ — $V_{GS}$



### $I_S$ — $V_{SD}$



### Threshold Voltage



Test Circuit & Waveform

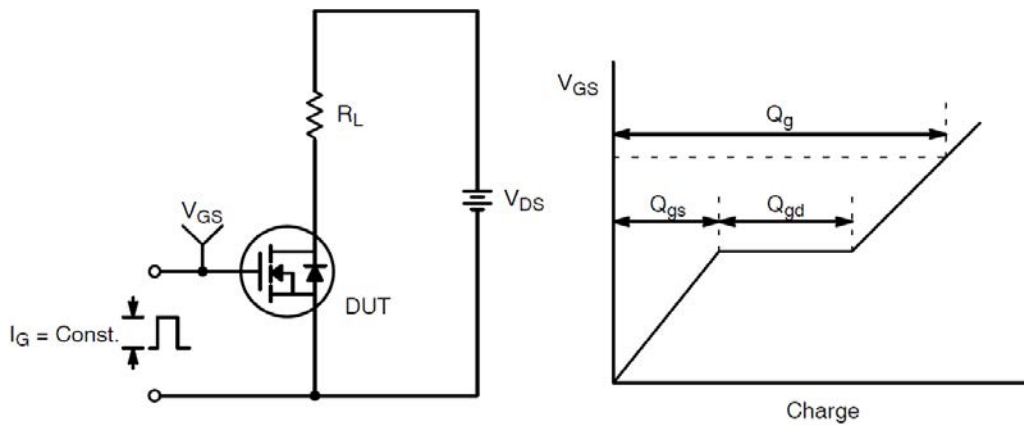


Figure 14: Gate Charge Test Circuit & Waveform

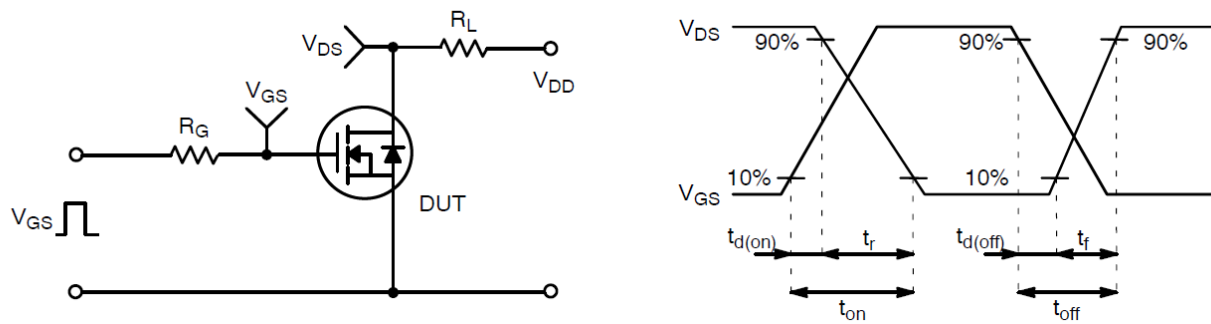


Figure 15: Resistive Switching Test Circuit & Waveforms

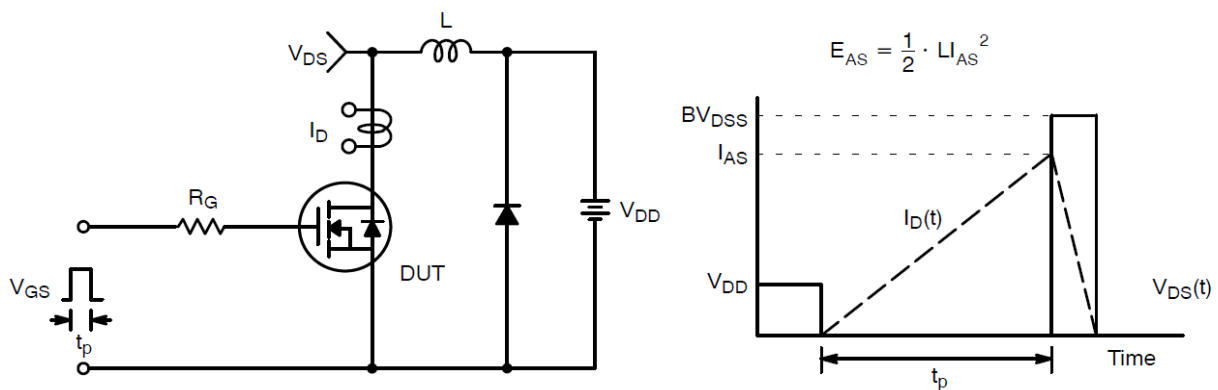
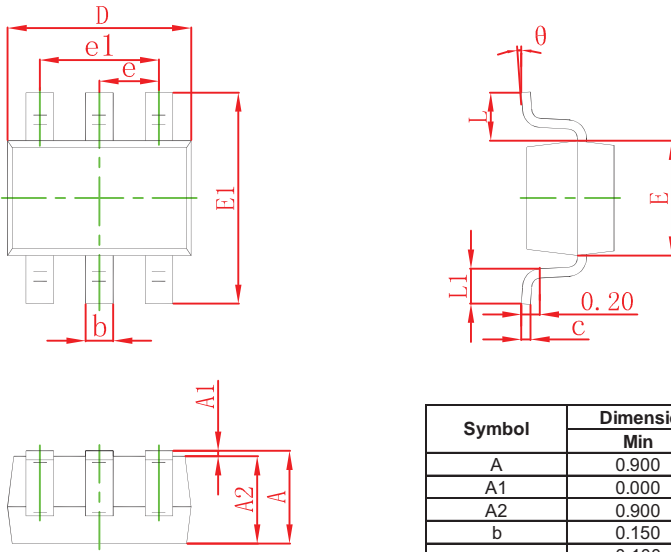


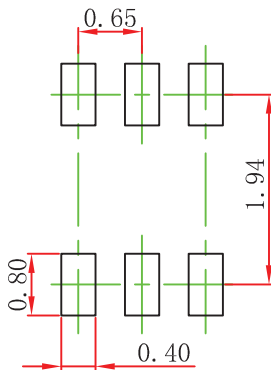
Figure 16: Unclamped Inductive Switching Test Circuit & Waveforms

## SOT-363 Package Outline Dimensions



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	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
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
theta	0°	8°	0°	8°

## SOT-363 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.

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