

# VN0605T

## N-Channel Enhancement-Mode MOS Transistor



### VN0605T

#### FEATURES

- Low  $r_{DS(on)}$   $<5\Omega$
- Low cost

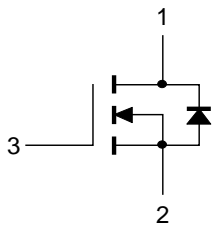
#### APPLICATIONS

- Switching
- Amplification

#### ORDERING INFORMATION

Part	Package	Temperature Range
VN0605T	Surface Mount SOT-23	-55°C to +150°C
For sorted chips in carriers see 2N7000		

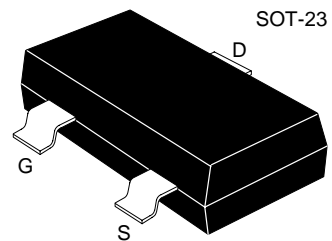
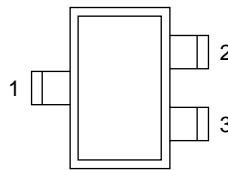
#### PIN CONNECTIONS



1 DRAIN  
2 SOURCE  
3 GATE

CD5

#### TOP VIEW



#### PRODUCT MARKING

VN0605T	V05
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#### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETERS/TEST CONDITIONS	LIMITS	UNITS	
$V_{DS}$	Drain-Source Voltage	60	V	
$V_{GS}$	Gate-Source Voltage	$\pm 30$		
$I_D$	Continuous Drain Current	$T_A = 25^\circ\text{C}$	A	
		$T_A = 100^\circ\text{C}$		0.11
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	0.72	°C	
$P_D$	Power Dissipation	$T_A = 25^\circ\text{C}$		0.36
		$T_A = 100^\circ\text{C}$		0.14
$T_J$	Operating Junction Temperature Range	-55 to 150		
$T_{stg}$	Storage Temperature Range	-55 to 150		
$T_L$	Lead Temperature (1/16" from case for 10 sec.)	300		

#### THERMAL RESISTANCE RATINGS

SYMBOL	THERMAL RESISTANCE	LIMITS	UNITS
$R_{thJA}$	Junction-to-Ambient	350	K/W

<sup>1</sup>Pulse width limited by maximum junction temperature.

SPECIFICATIONS <sup>a</sup>		LIMITS				
SYMBOL	PARAMETER	TYP <sup>b</sup>	MIN	MAX	UNIT	TEST CONDITIONS
<b>STATIC</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	70	60		V	I <sub>D</sub> = 10μA, V <sub>GS</sub> = 0V
V <sub>GS(th)</sub>	Gate-Threshold Voltage	2.3	0.8	3.0		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA
I <sub>GSS</sub>	Gate-Body Leakage			±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V T <sub>J</sub> = 125°C
				±500		
I <sub>DSS</sub>	Zero Gate Voltage Drain Current			1	μA	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V T <sub>J</sub> = 125°C
				500		
I <sub>D(ON)</sub>	On-State Drain Current <sup>c</sup>	700	500		mA	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 10V
r <sub>DS(ON)</sub>	Drain-Source On-Resistance <sup>c</sup>	4.5		7.5	Ω	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 50mA
		3		5		V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5A
		5.5		10		T <sub>J</sub> = 125°C
g <sub>FS</sub>	Forward Transconductance <sup>c</sup>	180	80		mS	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.2A
g <sub>OS</sub>	Common Source Output Conductance <sup>c</sup>	500			μS	V <sub>DS</sub> = 50V, I <sub>D</sub> = 50mA
<b>DYNAMIC</b>						
C <sub>iss</sub>	Input Capacitance	16		60	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz
C <sub>oss</sub>	Output Capacitance	11		25		
C <sub>rss</sub>	Reverse Transfer Capacitance	2		5		
<b>SWITCHING</b>						
t <sub>ON</sub>	Turn-On Time	7		20	ns	V <sub>DD</sub> = 30V, R <sub>L</sub> = 150Ω, I <sub>D</sub> = 0.2A V <sub>GEN</sub> = 10V, R <sub>G</sub> = 25Ω
t <sub>OFF</sub>	Turn-Off Time	11		20		(Switching time is essentially independent of operating temperature)

**Notes:**

- T<sub>A</sub> = 25°C unless otherwise noted.
- For design aid only, not subject to production testing.
- Pulse test; PW = ≤300μS, duty cycle ≤2%.