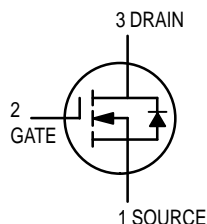


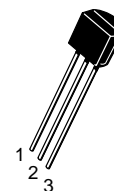
# TMOS FET Transistor

## N-Channel — Enhancement



# VN0300L

Motorola Preferred Device



CASE 29-04, STYLE 22  
TO-92 (TO-226AA)

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	60	V
Drain-Gate Voltage	$V_{DGR}$	60	V
Gate-Source Voltage - Continuous - Non-repetitive ( $t_p \leq 50 \mu s$ )	$V_{GS}$ $V_{GSM}$	$\pm 20$ $\pm 40$	Vdc Vpk
Continuous Drain Current	$I_D$	200	mA
Pulsed Drain Current	$I_{DM}$	500	mA
Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	350 2.8	mW mW/ $^\circ C$
Operating and Storage Temperature	$T_J, T_{stg}$	—	$^\circ C$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	312.5	$^\circ C/W$
Maximum Lead Temperature for Soldering Purposes, 1/16" from case for 10 seconds	$T_L$	300	$^\circ C$

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ C$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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### STATIC CHARACTERISTICS

Drain-Source Breakdown Voltage ( $V_{DS} = 0, I_D = 10 \mu A$ )	$V_{(BR)DSS}$	30	—	V
Zero Gate Voltage Drain Current ( $V_{DS} = 48 V_{dc}, V_{GS} = 0$ ) ( $V_{DS} = 48 V_{dc}, V_{GS} = 0, T_A = 125^\circ C$ )	$I_{DSS}$	— —	10 500	$\mu A$
Gate-Body Leakage ( $V_{DS} = 0, V_{GS} = \pm 30 V$ )	$I_{GSS}$	—	$\pm 100$	nA
Gate Threshold Voltage ( $V_{DS} = V_{GS}, I_D = 1.0 mA$ )	$V_{GS(th)}$	0.8	2.5	V
On-State Drain Current <sup>(1)</sup> ( $V_{DS} = V_{GS}, I_D = 1.0 mA$ )	$I_{D(on)}$	1.0	—	A
Drain-Source On Resistance <sup>(1)</sup> ( $V_{GS} = 5.0 V, I_D = 0.3 A$ ) ( $V_{GS} = 10 V, I_D = 1.0 A$ )	$r_{DS(on)}$	— —	3.3 1.2	$\Omega$
Forward Transconductance <sup>(1)</sup> ( $V_{DS} = 10 V, I_D = 0.5 A$ )	$g_{fs}$	200	—	mS

1. Pulse Test; Pulse Width < 300  $\mu s$ , Duty Cycle  $\leq 2.0\%$ .

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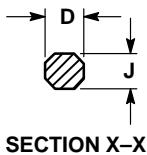
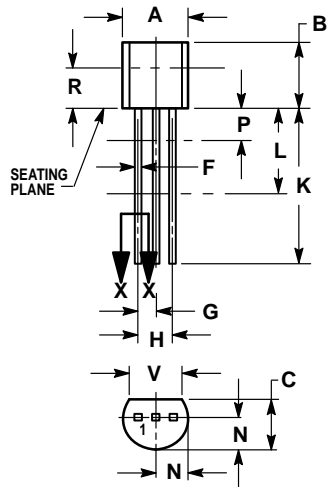
Preferred devices are Motorola recommended choices for future use and best overall value.

REV 1

**VN0300L****ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit	
<b>DYNAMIC CHARACTERISTICS</b>					
Input Capacitance	$(V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz})$	$C_{iss}$	—	100	pF
Output Capacitance		$C_{oss}$	—	95	pF
Reverse Transfer Capacitance		$C_{rss}$	—	25	pF
<b>SWITCHING CHARACTERISTICS</b>					
Turn-On Time	$(V_{DD} = 25 \text{ Vdc}, I_D = 1.0 \text{ A}, R_L = 24 \Omega, R_G = 25 \Omega)$	$t_{on}$	—	30	ns
Turn-Off Time		$t_{off}$	—	30	ns

PACKAGE DIMENSIONS



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K. MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

CASE 029-04  
(TO-226AA)  
ISSUE AD

STYLE 22:  
PIN 1. SOURCE  
2. GATE  
3. DRAIN

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**How to reach us:**

**USA/EUROPE/Locations Not Listed:** Motorola Literature Distribution;  
P.O. Box 5405, Denver, Colorado 80217. 303-675-2140 or 1-800-441-2447

**JAPAN:** Nippon Motorola Ltd.: SPD, Strategic Planning Office, 4-32-1,  
Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan. 81-3-5487-8488

**Mfax™:** RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609  
– US & Canada ONLY 1-800-774-1848

**ASIA/PACIFIC:** Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,  
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

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