

VN0300L

Preferred Device

Small Signal MOSFET 200 mAmps, 60 Volts N-Channel TO-92

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} | ± 20 ± 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 | $^\circ C$ |

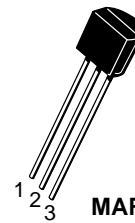
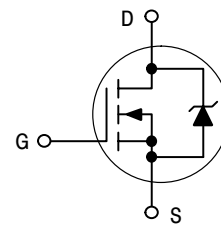


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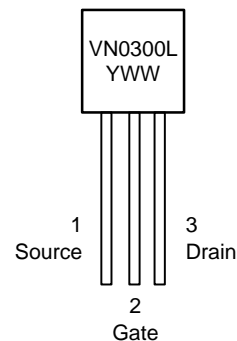
200 mAmps
60 VOLTS
 $R_{DS(on)} = 1.2 \Omega$

N-Channel



TO-92
CASE 29
Style 22

MARKING DIAGRAM & PIN ASSIGNMENT



Y = Year
WW = Work Week

ORDERING INFORMATION

| Device | Package | Shipping |
|-------------|---------|------------------|
| VN0300L | TO-92 | 1000 Units/Box |
| VN0300LRLRA | TO-92 | 2000 Tape & Reel |
| VN0300LRLRE | TO-92 | 2000 Tape & Reel |

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

VN0300L

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

STATIC CHARACTERISTICS

| | | | | |
|---|----------------------|--------|------------|----|
| Drain–Source Breakdown Voltage (V _{DS} = 0, I _D = 10 μA) | V _{(BR)DSS} | 30 | – | V |
| Zero Gate Voltage Drain Current (V _{DS} = 48 Vdc, V _{GS} = 0) (V _{DS} = 48 Vdc, V _{GS} = 0, T _A = 125°C) | I _{DSS} | – – | 10 500 | μA |
| Gate–Body Leakage (V _{DS} = 0, V _{GS} = ±30 V) | I _{GSS} | – | ±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 (Note 1.) (V _{DS} = V _{GS} , I _D = 1.0 mA) | I _{D(on)} | 1.0 | – | A |
| Drain–Source On Resistance (Note 1.) (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 | Ω |
| Forward Transconductance (Note 1.) (V _{DS} = 10 V, I _D = 0.5 A) | g _{fs} | 200 | – | mS |

DYNAMIC CHARACTERISTICS

| | | | | | |
|------------------------------|---|------------------|---|-----|----|
| Input Capacitance | (V _{DS} = 15 Vdc, V _{GS} = 0, f = 1.0 MHz) | C _{iss} | – | 100 | pF |
| Output Capacitance | | C _{oss} | – | 95 | pF |
| Reverse Transfer Capacitance | | C _{rss} | – | 25 | pF |

SWITCHING CHARACTERISTICS

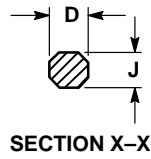
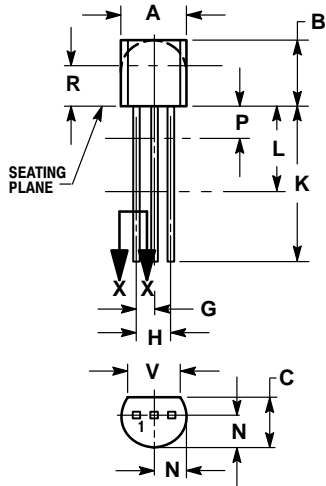
| | | | | | |
|---------------|---|------------------|---|----|----|
| Turn–On Time | (V _{DD} = 25 Vdc, I _D = 1.0 A, R _L = 24 Ω, R _G = 25 Ω) | t _{on} | – | 30 | ns |
| Turn–Off Time | | t _{off} | – | 30 | ns |

1. Pulse Test; Pulse Width < 300 μs, Duty Cycle ≤ 2.0%.

VN0300L

PACKAGE DIMENSIONS

TO-92
CASE 29-11
ISSUE AL



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
 4. 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 | 0.021 | 0.407 | 0.533 |
| 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 | --- |

- STYLE 22:
- PIN 1. SOURCE
 - GATE
 - DRAIN

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