



# POWER-MOS FET

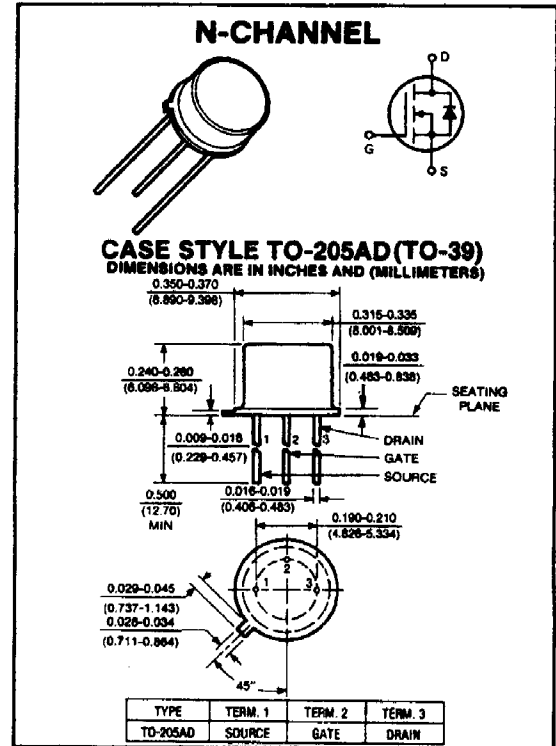
## FIELD EFFECT POWER TRANSISTOR

### Applications

- High current analog switches
- RF power amplifiers
- Laser diode pulsers
- Line drivers
- Logic buffers
- Pulse amplifiers

### Features

- High speed, high current switching
- High gain-bandwidth product
- Inherently temperature stable
- Extended safe operating area
- Simple DC biasing
- Requires almost zero current drive



maximum ratings ( $T_A = 25^\circ\text{C}$ ) (unless otherwise specified)

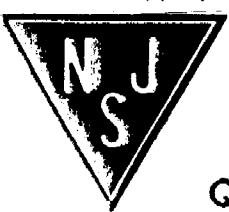
RATING	SYMBOL	VN35AK	VN66AK/67AK	VN88AK/99AK	UNITS
Drain-Source Voltage	$V_{DSS}$	35	60	90	Volts
Drain-Gate Voltage, $R_{GS} = 1M\Omega$	$V_{DGR}$	35	60	90	Volts
Continuous Drain Current @ $T_A = 25^\circ\text{C}$	$I_D$	1.2	1.2	1.2	A
Peak Drain Current <sup>(1)</sup>	$I_{DM}$	3.0	3.0	3.0	A
Gate-Source Voltage	$V_{GS}$	$\pm 30$	$\pm 30$	$\pm 30$	Volts
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	6.25 50	6.25 50	6.25 50	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-55 to 150	-55 to 150	-55 to 150	$^\circ\text{C}$

### thermal characteristics

Parameter	Symbol	VN35AK	VN66AK/67AK	VN88AK/99AK	Units
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	20	20	20	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: 1/16" from Case for 10 Seconds	$T_L$	300	300	300	$^\circ\text{C}$

(1) Repetitive Rating: Pulse width limited by max. junction temperature.

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electrical characteristics ( $T_A = 25^\circ\text{C}$ ) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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off characteristics

Drain-Source Breakdown Voltage ( $V_{GS} = 0V, I_D = 10 \mu A$ )	VN35AK VN66/67AK VN98/99AK	$BV_{DSS}$	35 60 90	— — —	— — —	Volts
Zero Gate Voltage Drain Current ( $V_{DS} = \text{Max Rating}, V_{GS} = 0V$ ) ( $V_{DS} = \text{Max Rating} \times 0.8, V_{GS} = 0V, T_A = 125^\circ\text{C}$ )		$I_{DSS}$	— —	— —	10 500	$\mu A$
Gate-Source Leakage Current ( $V_{GS} = 15V, V_{DS} = 0V$ ) ( $V_{GS} = 15V, V_{DS} = 0V - T_A = 125^\circ\text{C}$ )		$I_{GSS}$	— —	— —	100 500	nA nA

on characteristics\*

Gate Threshold Voltage ( $V_{DS} = V_{GS}, I_D = 1 \text{ mA}$ )		$V_{GS(TH)}$	0.8	—	2.0	Volts
Drain-Source Saturation Voltage ( $V_{GS} = 10V, I_D = 1.0A$ )	VN66AK VN98AK	$V_{DS(ON)}$	— —	— —	3.0 4.0	Volts
Drain-Source Saturation Voltage ( $V_{GS} = 10V, I_D = 1.0A$ )	VN35AK VN67AK VN99AK	$V_{DS(ON)}$	— — —	— — —	2.5 3.5 4.5	Volts
On-State Drain Current ( $V_{DS} = 25V, V_{GS} = 10V$ )		$I_{D(ON)}$	1.0	—	—	Amps
Forward Transconductance ( $V_{DS} = 24V, I_D = 0.5A$ )		$g_{fs}$	.170	—	—	mhos

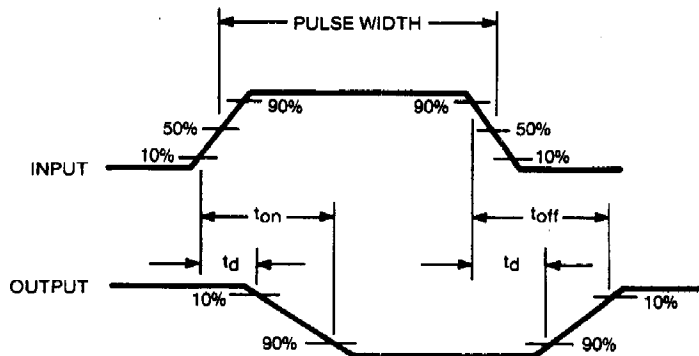
dynamic characteristics

Input Capacitance	$V_{GS} = 0V$	$C_{iss}$	—	—	50	pF
Output Capacitance	$V_{DS} = 24V$	$C_{oss}$	—	—	40	pF
Reverse Transfer Capacitance	$f = 1 \text{ MHz}$	$C_{rss}$	—	—	10	pF

switching characteristics\*

Turn-on Delay Time	See switching times waveform below	$t_{d(on)}$	—	3	8	ns
Turn-off Delay Time		$t_{d(off)}$	—	3	8	ns

\*Pulse Test: Pulse width  $\leq 300 \mu s$ , duty cycle  $\leq 2\%$



SWITCHING TIME TEST WAVEFORMS