



POWER-MOS FET

FIELD EFFECT POWER TRANSISTOR

VN35AK Series
1.2 AMPERES 35-90 VOLTS R_{DS(ON)} = 2.5-4.5 Ω

This series of N-Channel Enhancement-mode Power MOSFETs utilizes GE's advanced Power DMOS technology to achieve low on-resistance with excellent device ruggedness and reliability.

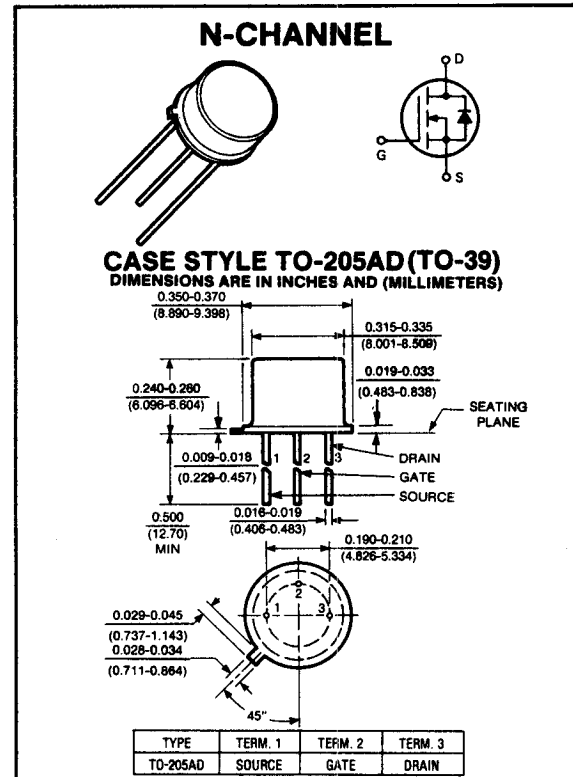
This design has been optimized to give superior performance in most switching applications including: switching power supplies, inverters, converters and solenoid/relay drivers. Also, the extended safe operating area with good linear transfer characteristics makes it well suited for many linear applications such as audio amplifiers and servo motors.

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	VN98AK/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 ⁽¹⁾	I_{DM}	3.0	3.0	3.0	A
Gate-Source Voltage	V_{GS}	± 30	± 30	± 30	Volts
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	6.25 50	6.25 50	6.25 50	Watts $\text{mW}/^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	-55 to 150	$^\circ\text{C}$

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	20	20	20	$^\circ\text{C}/\text{W}$
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.

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 ($V_{GS} = 0\text{V}$, $I_D = 10\ \mu\text{A}$)	VN35AK VN66/67AK VN98/99AK	BV_{DSS}	35 60 90	— — —	— — —	Volts
Zero Gate Voltage Drain Current ($V_{DS} = \text{Max Rating}$, $V_{GS} = 0\text{V}$) ($V_{DS} = \text{Max Rating}$, $\times 0.8$, $V_{GS} = 0\text{V}$, $T_A = 125^\circ\text{C}$)		I_{DSS}	— —	— —	10 500	μA
Gate-Source Leakage Current ($V_{GS} = 15\text{V}$, $V_{DS} = 0\text{V}$) ($V_{GS} = 15\text{V}$, $V_{DS} = 0\text{V}$ - $T_A = 125^\circ\text{C}$)		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 ($V_{GS} = 10\text{V}$, $I_D = 1.0\text{A}$)	VN66AK VN98AK	$V_{DS(ON)}$	— —	— —	3.0 4.0	Volts
Drain-Source Saturation Voltage ($V_{GS} = 10\text{V}$, $I_D = 1.0\text{A}$)	VN35AK VN67AK VN99AK	$V_{DS(ON)}$	— — —	— — —	2.5 3.5 4.5	Volts
On-State Drain Current ($V_{DS} = 25\text{V}$, $V_{GS} = 10\text{V}$)		$I_{D(ON)}$	1.0	—	—	Amps
Forward Transconductance ($V_{DS} = 24\text{V}$, $I_D = 0.5\text{A}$)		g_{fs}	.170	—	—	mhos

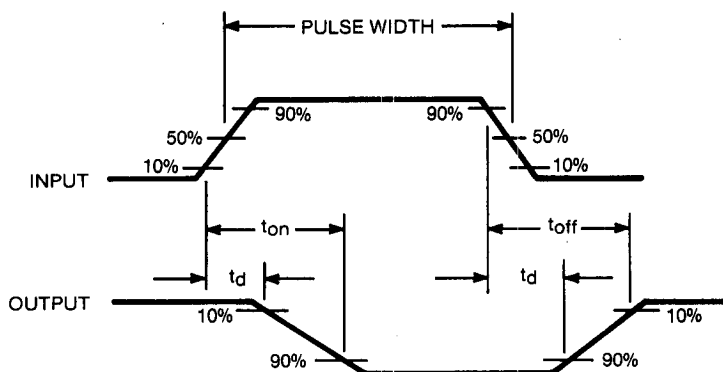
dynamic characteristics

Input Capacitance	$V_{GS} = 0\text{V}$	C_{iss}	—	—	50	pF
Output Capacitance	$V_{DS} = 24\text{V}$	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 $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$



SWITCHING TIME TEST WAVEFORMS