

### FEATURES

- **HIGH POWER GAIN:**  
Gs = 5.0 dB TYP at f = 12 GHz
- **GATE LENGTH:** LG = 0.8  $\mu\text{m}$  (recessed gate)
- **GATE WIDTH:** WG = 400  $\mu\text{m}$
- **4 PIN SUPER MINI MOLD**
- **TAPE & REEL PACKAGING**

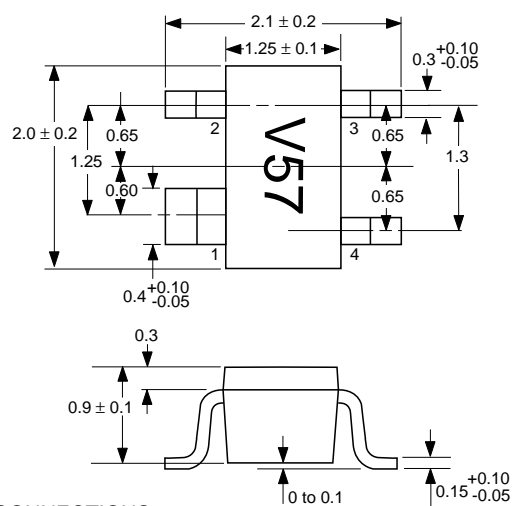
### DESCRIPTION

The NE72218 is a low cost GaAs MESFET suitable for both amplifier and oscillator applications through X-band. The device features a 0.8 micron recessed gate, triple epitaxial technology and is fabricated using ion implantation for improved RF and DC performance, reliability and uniformity. The NE72218 is housed in a 4 pin super mini mold package, making it ideal for high density design.

NEC's stringent quality assurance and test procedures ensure the highest reliability performance.

### PACKAGE DIMENSIONS (Units in mm)

PACKAGE OUTLINE 18



#### PIN CONNECTIONS

1. Source
2. Gate
3. Source
4. Drain

### ELECTRICAL CHARACTERISTICS (TA = 25°C)

PART NUMBER PACKAGE OUTLINE			NE72218 18		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
Gs	Power Gain at Vds = 3 V, Id = 30 mA, f = 12 GHz	dB		5.0	
P1dB	Output Power at 1 dB Gain Compression Point at Vds = 3 V, Id = 30 mA, f = 12 GHz	dBm		15.0	
PN	Phase Noise at Vds = 3 V, Id = 30 mA, f = 11 GHz, 100 KHz offset	dBc/Hz		-110	
	Phase Noise at Vds = 3 V, Id = 30 mA, f = 11 GHz, 10 KHz offset	dBc/Hz		-90	
gm	Transconductance at Vds = 3 V, Id = 30 mA	mS	20	45	
Idss	Saturated Drain Current at Vds = 3 V, Vgs = 0 V	mA	30	60	120
VGS (OFF)	Gate to Source Cut Off Voltage at Vds = 3 V, Id = 100 $\mu\text{A}$	V	-0.5	-2.0	-4.0
IGSO	Gate to Source Leakage Current at Vgs = -5 V	$\mu\text{A}$		1.0	10

**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>** ( $T_A = 25^\circ\text{C}$ )

SYMBOLS	PARAMETERS	UNITS	RATINGS
$V_{DS}$	Drain to Source Voltage	V	5.0
$V_{GS}$	Gate to Source Voltage	V	-5.0
$V_{GD}$	Gate to Drain Voltage	V	-6.0
$I_D$	Drain Current	Idss	mA
$T_{CH}$	Channel Temperature	$^\circ\text{C}$	125
$T_{STG}$	Storage Temperature	$^\circ\text{C}$	-65 to +125
$P_T$	Total Power Dissipation	mW	250

Notes:

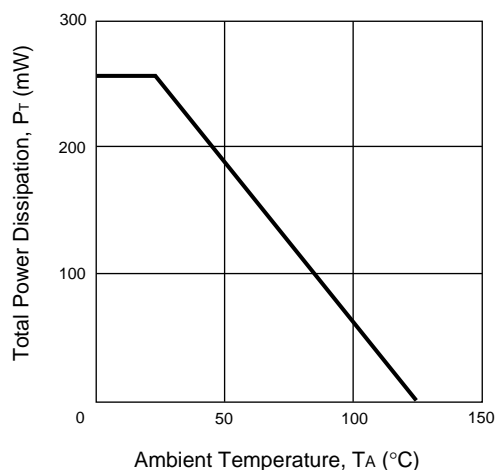
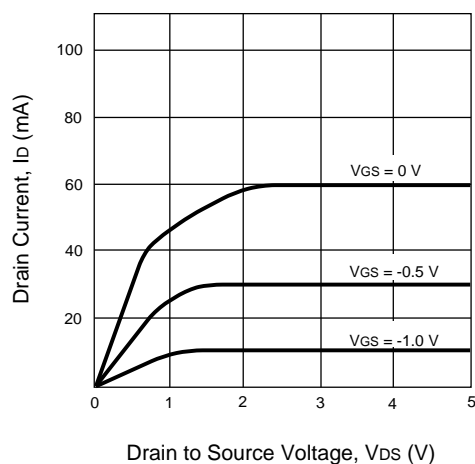
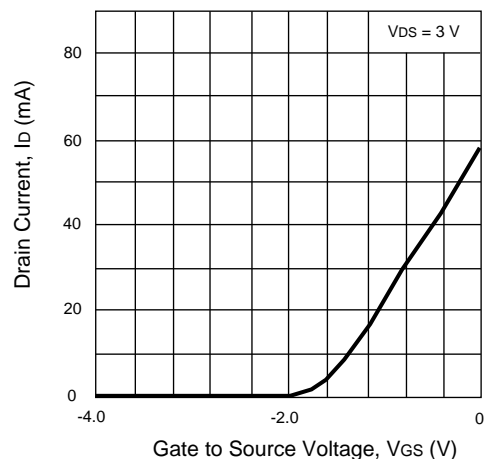
1. Operation in excess of any one of these parameters may result in permanent damage.

**ORDERING INFORMATION**

PART NUMBER	QUANTITY	PACKAGE STYLE
NE72218-T1	3 Kpcs/Reel	8-mm wide embossed tape, pin 3 (Source), pin 4 (Drain) face perforated side of tape.
NE72218-T2	3 Kpcs/Reel	8-mm wide embossed tape, pin 1 (Source), pin 2 (Gate) face perforated side of tape.

**IDSS CLASSIFICATION**

RANK	Idss (mA)	MARKING
57	30 to 120	V57
58	65 to 120	V58
59	30 to 75	V59

**TYPICAL PERFORMANCE CURVES** ( $T_A = 25^\circ\text{C}$ )**TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE****DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE****DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE**EXCLUSIVE NORTH AMERICAN AGENT FOR **NEC** RF, MICROWAVE & OPTOELECTRONIC SEMICONDUCTORS

**CEL** CALIFORNIA EASTERN LABORATORIES • Headquarters • 4590 Patrick Henry Drive • Santa Clara, CA 95054-1817 • (408) 988-3500 • Telex 34-6393 • FAX (408) 988-0279  
 24-Hour Fax-On-Demand: 800-390-3232 (U.S. and Canada only) • Internet: <http://WWW.CEL.COM>

DATA SUBJECT TO CHANGE WITHOUT NOTICE

PRINTED IN USA ON RECYCLED PAPER -4/98