

# VCR2N N-Channel Voltage Controlled Resistor JFET

## Features

- InterFET [N0072L Geometry](#)
- Low Leakage: 10pA Typical
- Low Input Capacitance: 1.5pF Maximum
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

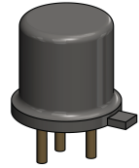
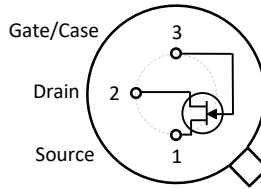
## Applications

- Small Signal Attenuators
- Filters
- Amplifier Gain Control
- Oscillator Amplitude Control

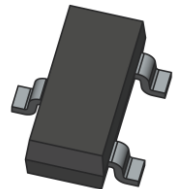
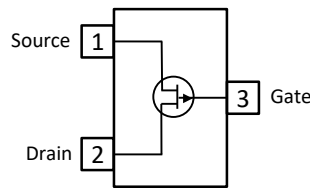
## Description

The -15V InterFET VCR2N Voltage Controlled Resistor JFET are targeted for ultra high input impedance applications. Gate leakages are less than 10pA at room temperatures. The resistance range of the VCR2N is 20 Ohms to 60 Ohms. The TO-18 package is hermetically sealed and suitable for military applications.

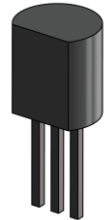
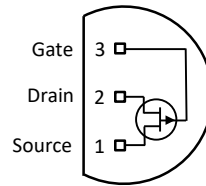
TO-18 Bottom View



SOT23 Top View



TO-92 Bottom View



## Product Summary

Parameters	VCR2N Min	Unit
$BV_{GSS}$ Gate to Source Breakdown Voltage	-15	V
$V_{GS(off)}$ Gate to Source Cutoff Voltage	-1	V
$r_{ds(on)}$ Drain to Source ON Resistance	20	$\Omega$

## Ordering Information Custom Part and Binning Options Available

Part Number	Description	Case	Packaging
VCR2N	Through-Hole	TO-18	Bulk
PNVCR2N	Through-Hole	TO-92	Bulk
SMPVCR2N	Surface Mount	SOT23	Bulk
SMPVCR2NTR	7" Tape and Reel: Max 3,000 Pieces 13" Tape and Reel: Max 9,000 Pieces	SOT23	Minimum 1,000 Pieces Tape and Reel
VCR2NCOT	Chip Orientated Tray (COT Waffle Pack)	COT	400/Waffle Pack
VCR2NCFT	Chip Face-up Tray (CFT Waffle Pack)	CFT	400/Waffle Pack



**Disclaimer:** It is the Buyers responsibility for designing, validating and testing the end application under all field use cases and extreme use conditions. Guaranteeing the application meets required standards, regulatory compliance, and all safety and security requirements is the responsibility of the Buyer. These resources are subject to change without notice.

## Electrical Characteristics

### Maximum Ratings (@ $T_A = 25^\circ\text{C}$ , Unless otherwise specified)

Parameters	Value	Unit
$V_{RGS}$ Reverse Gate Source and Gate Drain Voltage	-15	V
$I_{FG}$ Continuous Forward Gate Current	10	mA
$P_D$ Continuous Device Power Dissipation	300	mW
$P$ Power Derating	2.4	mW/ $^\circ\text{C}$
$T_J$ Operating Junction Temperature	-55 to 125	$^\circ\text{C}$
$T_{STG}$ Storage Temperature	-65 to 150	$^\circ\text{C}$

### Static Characteristics (@ $T_A = 25^\circ\text{C}$ , Unless otherwise specified)

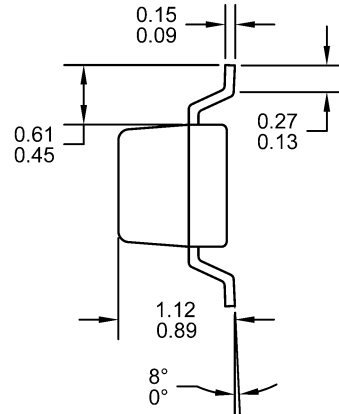
Parameters	Conditions	VCR2N		Unit
		Min	Max	
$V_{(BR)GSS}$ Gate to Source Breakdown Voltage	$I_G = -1\mu\text{A}, V_{DS} = 0\text{V}$	-15		V
$I_{GSS}$ Gate to Source Reverse Current	$V_{GS} = -15\text{V}, V_{DS} = 0\text{V}$		-5	nA
$V_{GS(OFF)}$ Gate to Source Cutoff Voltage	$V_{DS} = 10\text{V}, I_D = -1\mu\text{A}$	-1	-3.5	V

### Dynamic Characteristics (@ $T_A = 25^\circ\text{C}$ , Unless otherwise specified)

Parameters	Conditions	VCR2N		Unit
		Min	Max	
$r_{ds(on)}$ Drain to Source ON Resistance	$I_D = 0\text{A}, V_{GS} = 0\text{V}, f = 1\text{kHz}$	20	60	$\Omega$
$C_{dg}$ Drain Gate Capacitance	$V_{DG} = 10\text{V}, I_S = 0\text{A}, f = 1\text{MHz}$		7.5	pF
$C_{sg}$ Source Gate Capacitance	$V_{GS} = 10\text{V}, I_D = 0\text{A}, f = 1\text{MHz}$		7.5	pF

## SOT23 (TO-236AB) Mechanical and Layout Data

### Package Outline Data



1. All linear dimensions are in millimeters.
2. Package weight approximately 0.12 grams
3. Molded plastic case UL 94V-0 rated
4. For Tape and Reel specifications refer to InterFET CTC-021 Tape and Reel Specification, Document number: IF39002
5. Bulk product is shipped in standard ESD shipping material
6. Refer to JEDEC standards for additional information.

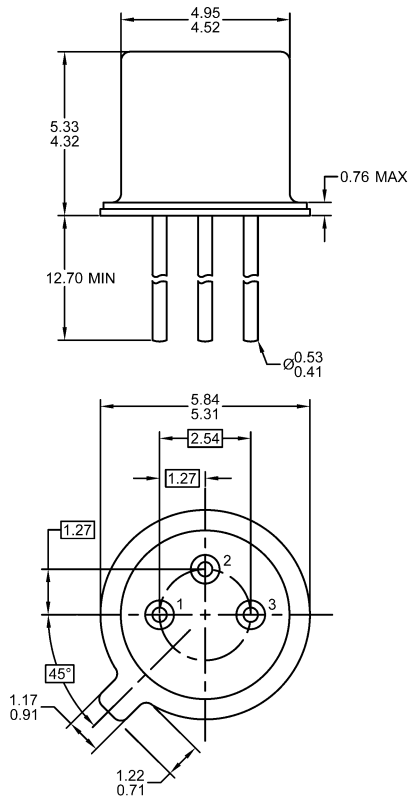
### Suggested Pad Layout



1. All linear dimensions are in millimeters.
2. The suggested land pattern dimensions have been provided for reference only. A more robust pattern may be desired for wave soldering.

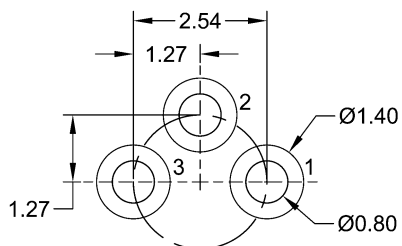
## TO-18 Mechanical and Layout Data

### Package Outline Data



1. All linear dimensions are in millimeters.
2. Package weight approximately 0.29 grams
3. Bulk product is shipped in standard ESD shipping material
4. Refer to JEDEC standards for additional information.

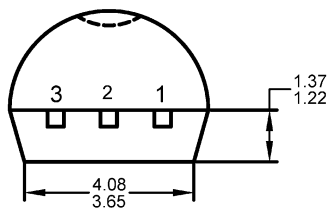
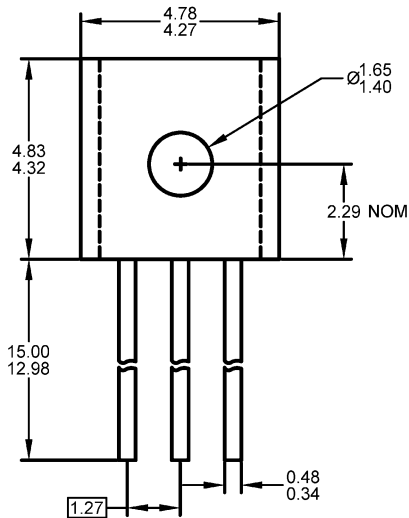
### Suggested Through-Hole Layout



1. All linear dimensions are in millimeters.
2. The suggested land pattern dimensions have been provided as a straight lead reference only. A more robust pattern may be desired for wave soldering and/or bent lead configurations.

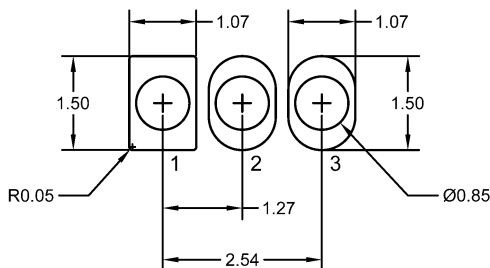
## TO-92 Mechanical and Layout Data

### Package Outline Data



1. All linear dimensions are in millimeters.
2. Package weight approximately 0.19 grams
3. Molded plastic case UL 94V-0 rated
4. Bulk product is shipped in standard ESD shipping material
5. Refer to JEDEC standards for additional information.

### Suggested Through-Hole Layout



1. All linear dimensions are in millimeters.
2. The suggested land pattern dimensions have been provided as a straight lead reference only. A more robust pattern may be desired for wave soldering and/or bent lead configurations.

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