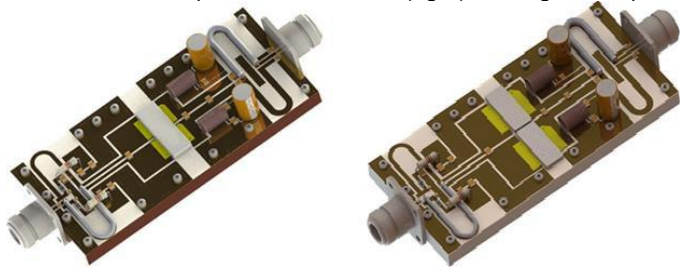


## 1400-1500W, 50V High Power RF LDMOS FETs

### Description

The YC0575VXS itself is a 750-watt capable, high performance, unmatched single ended LDMOS FET, It is recommended to use paired YC0575VXS to enable 1600-1700W designed for commercial and industrial applications with frequencies HF to 500MHz. Compared to similar power level but in single dual-path packaged device, it offers better thermal management and easier maintenance.

Demonstration of paired YC0575VXS(right) Vs single dual-path device(left) at 250MHz.



- Typical performance(on 88-108MHz wideband test board with **YC0575VXS\*2** devices soldered)

$V_{DS}=50V, I_{DQ}=230mA, CW,$

| Freq(MHz) | $P_{out}(W)$ | Pin(dBm) | Gain(dB) | $\eta(\%)$ |
|-----------|--------------|----------|----------|------------|
| 88        | 1439         | 43.2     | 18.38    | 80         |
| 98        | 1517         | 43.2     | 18.61    | 79         |
| 108       | 1439         | 42.9     | 18.68    | 76         |

### Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Excellent thermal stability, low HCI drift
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Pb-free, RoHS-compliant

### Suitable Applications

- 30-88MHz (Ground communication)
- 54-88MHz (TV VHF I)
- 88-108MHz (FM)
- 160-230MHz (TV VHF III)
- 136-174MHz (Commercial ground communication)
- Laser Exciter
- Synchrotron
- MRI
- Plasma generator
- Weather Radar

**Table 1. Maximum Ratings**

| Rating                         | Symbol    | Value       | Unit |
|--------------------------------|-----------|-------------|------|
| Drain--Source Voltage          | $V_{DSS}$ | +135        | Vdc  |
| Gate--Source Voltage           | $V_{GS}$  | -10 to +10  | Vdc  |
| Operating Voltage              | $V_{DD}$  | +55         | Vdc  |
| Storage Temperature Range      | $T_{stg}$ | -65 to +150 | °C   |
| Case Operating Temperature     | $T_c$     | +150        | °C   |
| Operating Junction Temperature | $T_j$     | +225        | °C   |

# YC0575VXS\*2 LDMOS TRANSISTORS

Document Number: MX0575VXS  
Preliminary Datasheet V1.2

**Table 2. Thermal Characteristics**

| Characteristic  | Symbol          | Value | Unit               |
|---|-----------------|-------|--------------------|
| Thermal Resistance, Junction to Case<br>$T_C = 85^\circ\text{C}$ , 1400W CW output, 108MHz, 2 pcs of YC0575VXS combined | $R_{\theta JC}$ | 0.08  | $^\circ\text{C/W}$ |

**Table 3. ESD Protection Characteristics**

| Test Methodology                    | Class   |
|-------------------------------------|---------|
| Human Body Model (per JESD22--A114) | Class 2 |

**Table 4. Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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

## DC Characteristics (per half section)

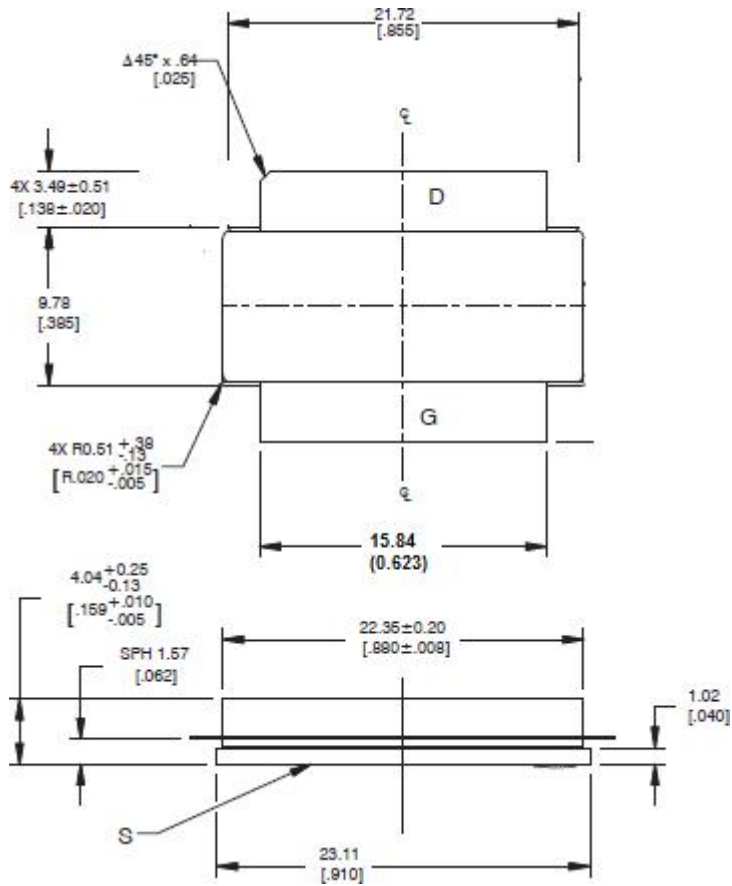
|   |               |     |      |     |               |
|---|---------------|-----|------|-----|---------------|
| Drain-Source Voltage<br>$V_{GS} = 0$ , $I_{DS} = 1.0\text{mA}$  | $V_{(BR)DSS}$ |     | 125  |     | V             |
| Zero Gate Voltage Drain Leakage Current<br>( $V_{DS} = 75\text{V}$ , $V_{GS} = 0\text{V}$ )             | $I_{DSS}$     | --- | ---  | 1   | $\mu\text{A}$ |
| Zero Gate Voltage Drain Leakage Current<br>( $V_{DS} = 50\text{V}$ , $V_{GS} = 0\text{V}$ )             | $I_{DSS}$     | --- | ---  | 1   | $\mu\text{A}$ |
| Gate--Source Leakage Current<br>( $V_{GS} = 10\text{V}$ , $V_{DS} = 0\text{V}$ )                        | $I_{GSS}$     | --- | ---  | 1   | $\mu\text{A}$ |
| Gate Threshold Voltage<br>( $V_{DS} = 50\text{V}$ , $I_D = 600\mu\text{A}$ )                            | $V_{GS(th)}$  | --- | 2.0  | --- | V             |
| Gate Quiescent Voltage<br>( $V_{DD} = 50\text{V}$ , $I_D = 230\text{mA}$ , Measured in Functional Test) | $V_{GS(Q)}$   | --- | 2.62 | --- | V             |

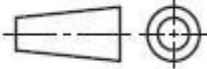
**Load Mismatch (InYingtron Test Fixture, 50 ohm system):**  $V_{DD} = 50\text{Vdc}$ ,  $I_{DQ} = 230\text{mA}$ ,  $f = 108\text{MHz}$ , pulse width: 100us, duty cycle: 10%, 2 piece of YC0575VXS combined

|   |                       |
|---|-----------------------|
| Open and short, at 1400W Pulsed CW Output Power | No Device Degradation |
|---|-----------------------|

## Package Outline

Flangeless ceramic package;



| OUTLINE<br>VERSION | REFERENCE |       |       | EUROPEAN<br>PROJECTION   | ISSUE DATE |
|--------------------|-----------|-------|-------|--|------------|
|                    | IEC       | JEDEC | JEITA |  |            |
| PKG-C2             |           |       |       |  | 09/27/2018 |

## Revision history

Table 5. Document revision history

| Date       | Revision | Datasheet Status                    |
|------------|----------|-------------------------------------|
| 2018/9/27  | Rev 1.0  | Preliminary datasheet               |
| 2019/12/25 | Rev 1.1  | Update the frequency upper limit    |
| 2019/12/27 | Rev 1.2  | Add the comparison of C2*2 Vs D4(E) |

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