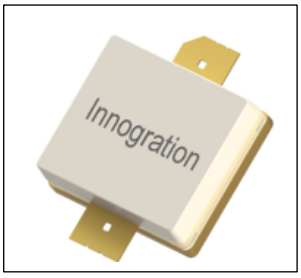
# 2.4-2.5GHz, 75W, High Power RF LDMOS FETs




## Description

The ITEH25075A2C is a single-ended 75W, internally matched LDMOS FETs, designed for multiple use especially RF Energy application including cooking, heating and medical with frequencies from 2400 to 2500MHz.

- Typical CW Performance (on Innogration fixture with device soldered)

**Vds=28V, Vgs=2.2V**

| Freq (MHz) | P1dB (dBm) | P1dB (W) | P1dB Eff(%) | P1dB Gain(dB) | P3dB (dBm) | P3dB (W) | P3dB Eff(%) |
|---|---|---|---|---|---|---|---|
| 2400 | 48.8 | 75.9 | 52.2 | 14.36 | 49.65 | 92 | 55.2 |
| 2450 | 48.51 | 70.9 | 53.7 | 14.45 | 49.32 | 85 | 55.5 |
| 2500 | 47.83 | 60.7 | 53.8 | 13.98 | 48.69 | 75 | 55.6 |

Recommended driver: ITEH38007P3

## Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Internally Matched for Ease of Use
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Excellent thermal stability, low HCI drift
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

**Table 1. Maximum Ratings**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Drain--Source Voltage | $V_{DSS}$ | 65 | Vdc |
| Gate--Source Voltage | $V_{GS}$ | -10 to +10 | Vdc |
| Operating Voltage | $V_{DD}$ | +32 | Vdc |
| Storage Temperature Range | Tstg | -65 to +150 | °C |
| Case Operating Temperature | $T_C$ | +150 | °C |
| Operating Junction Temperature | $T_J$ | +225 | °C |

**Table 2. Thermal Characteristics**

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Case<br>Tcase= 85°C, Tj= 200°C, DC Power supply | $R_{\theta JC}$ | 0.7 | °C/W |

**Table 3. ESD Protection Characteristics**

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

**Table 4. Electrical Characteristics** (TA = 25 C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **DC Characteristics** | | | | | |
| Drain-Source Breakdown Voltage<br>($V_{GS}$=0V; $I_D$=100uA) | $V_{DSS}$ | 65 | —— | —— | V |
| Zero Gate Voltage Drain Leakage Current | $I_{DSS}$ | —— | —— | 10 | μA |

| | | | | | |
|---|---|---|---|---|---|
| ($V_{DS}$ = 28 V, $V_{GS}$ = 0 V) | | | | | |
| Gate--Source Leakage Current<br>($V_{GS}$ = 6 V, $V_{DS}$ = 0 V) | $I_{GSS}$ | —— | —— | 1 | μA |
| Gate Threshold Voltage<br>($V_{DS}$ = 28V, $I_D$ = 600 uA) | $V_{GS(th)}$ | —— | 1.75 | —— | V |
| Gate Quiescent Voltage<br>($V_{DD}$ = 28V, $I_{DQ}$ = 400 mA, Measured in Functional Test) | $V_{GS(Q)}$ | | 2.66 | | V |

**Load Mismatch (In Innogration Test Fixture, 50 ohm system):** $V_{DD}$ = 28 Vdc, $I_{DQ}$ =5 mA, f = 2450MHz

| | |
|---|---|
| VSWR 10:1 at 75W pulse CW Output Power | No Device Degradation |

**Figure 2 Efficiency and power gain as function of Pout**

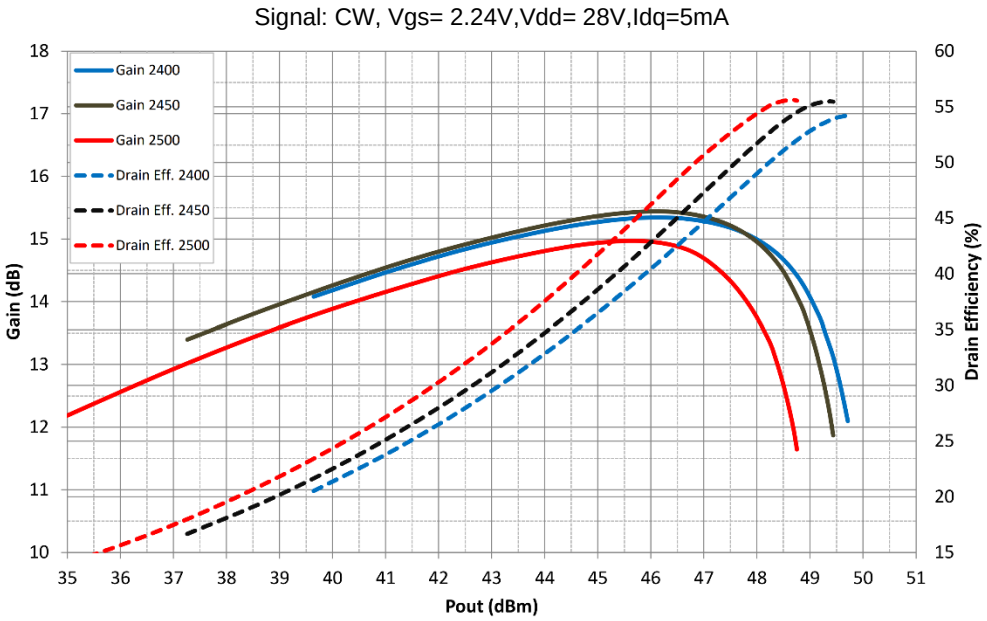



**Figure 3: Network analyzer output, S11 and S21**

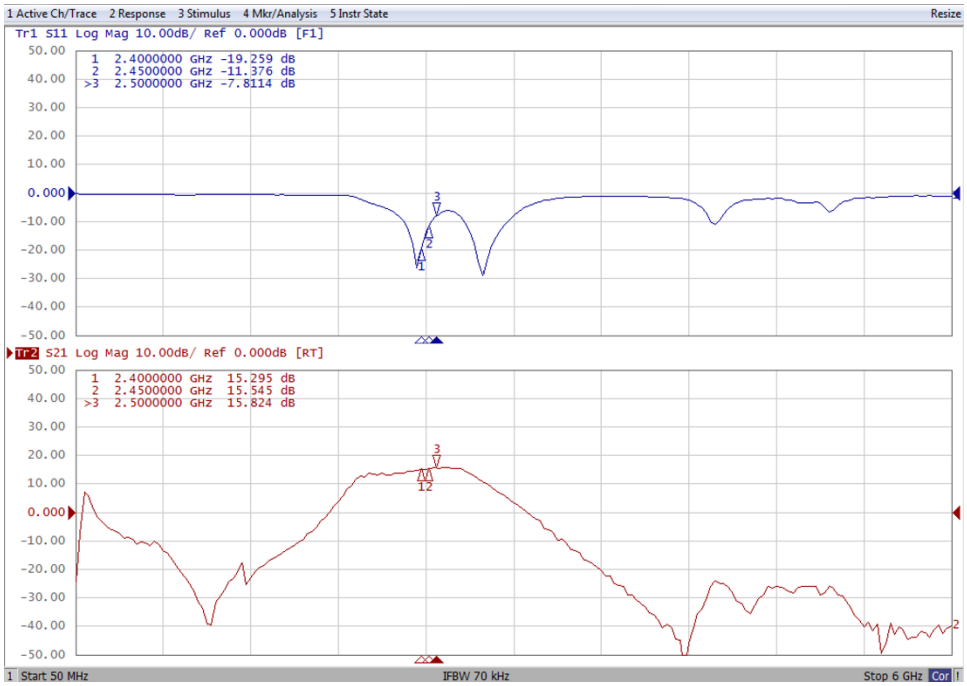


**Figure 4: Layout picture (original Gerber file upon request)**

**Board material: Ro 4350B, Er = 3.48, thickness 20 mils, 1oz copper, unit mm ,**

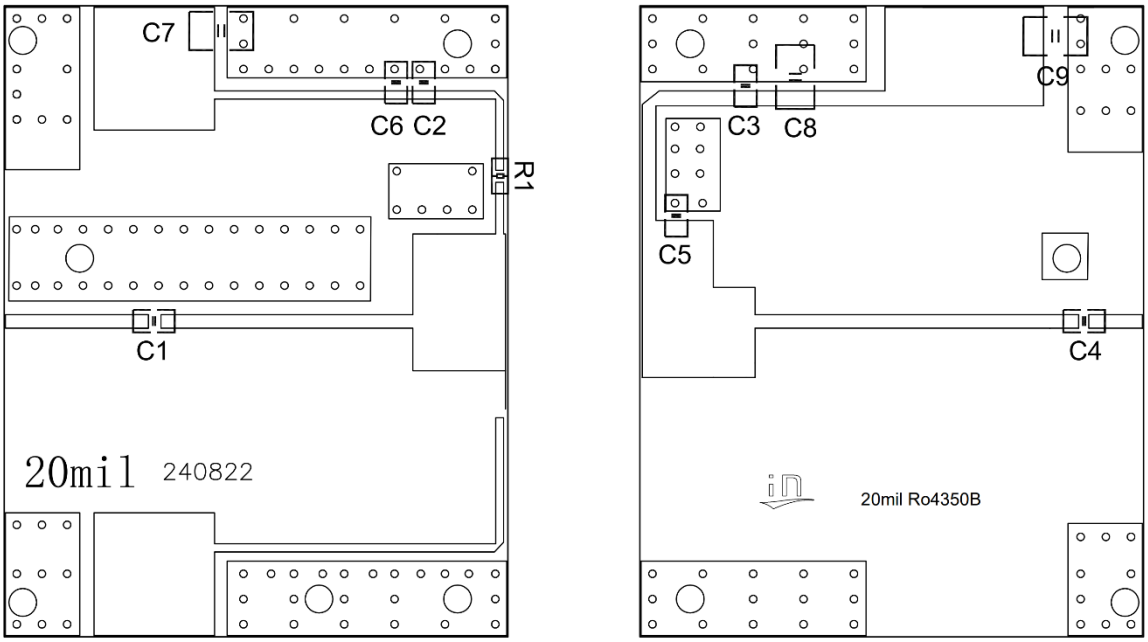
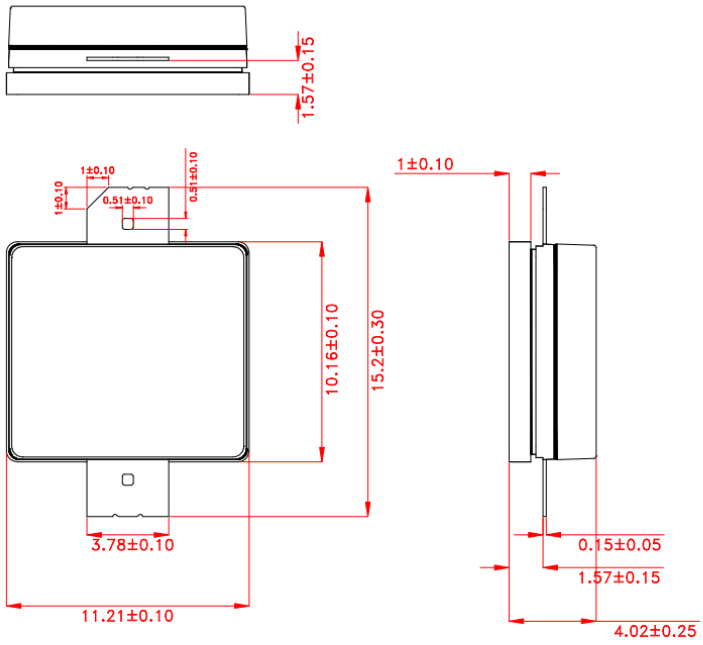
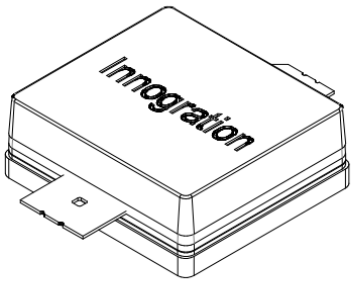



**Table 5. List of components**

| Reference | Footprint | Value | Quantity |
|---|---|---|---|
| C1, C2, C3, C4 | 0805 | 12pF/250V | 4 |
| C5 | 0805 | 0.3pF/250V | 1 |
| C6 | 0805 | 10nF/50V | 1 |
| C7, C8, C9 | 1210 | 10uF/100V | 3 |
| R1 | 0603 | 10R | 1 |
| / | A2C | ITEH25075A2C | 1 |

## Package Dimensions （Unit:mm）




Unit:mm

Tolerance ±0.10mm,Except as Noted.

## Revision history

**Table 5. Document revision history**

| Date | Revision | Datasheet Status |
|---|---|---|
| 2024/9/25 | V1 | Preliminary Datasheet Creation based on Path A 50W data |
| | | |

**Application data based on ZBB-24-41**

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