# FGA25S125P
## 1250 V, 25 A Shorted-anode IGBT

### Features

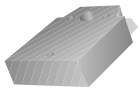
- High Speed Switching
- Low Saturation Voltage: $V_{CE(sat)}$ = 1.8 V @ $I_C$ = 25 A
- High Input Impedance
- RoHS Compliant

### Applications

- Induction Heating, Microwave Oven

### General Description

Using advanced field stop trench and shorted-anode technology, ON Semiconductor's shorted-anode trench IGBTs offer superior con-duction and switching performances for soft switching applications. The device can operate in parallel configuration with exceptional avalanche capability . This device is designed for induction heating and microwave oven.



### Absolute Maximum Ratings

| Symbol | Description | | FGA25S125P-SN00337 | Unit |
|---|---|---|---|---|
| $V_{CES}$ | Collector to Emitter Voltage | | 1250 | V |
| $V_{GES}$ | Gate to Emitter Voltage | | 25 | V |
| $I_C$ | Collector Current | @ $T_C$ = 25°C | 50 | A |
| | Collector Current | @ $T_C$ = 100°C | 25 | A |
| $I_{CM\ (1)}$ | Pulsed Collector Current | | 75 | A |
| $I_F$ | Diode Continuous Forward Current | @ $T_C$ = 25°C | 50 | A |
| | Diode Continuous Forward Current | @ $T_C$ = 100°C | 25 | A |
| $P_D$ | Maximum Power Dissipation | @ T[illegible] | [illegible] | [illegible] |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

### Thermal Characteristics

| | | | | |
|---|---|---|---|---|
| (IGBT) | Thermal Resistance, Junction to Case, Max | - | 0.6 | °C/W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient, Max | - | 40 | °C/W |

**Notes:**

1: Limited by Tjmax


October-2017,Rev. 2

Publication Order Number:
FGA25S125P/D

## Package Marking and Ordering Information

| Device Marking | Device | Package | Reel Size | Tape Width | Quantity |
|---|---|---|---|---|---|
| FGA25S125P | FGA25S125P -SN00337 | TO-3PN | - | - | 30 |

## Electrical Characteristics of the IGBT $T_C$ = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $BV_{CES}$ | Collector to Emitter Breakdown Voltage | $V_{GE}$ = 0 V, $I_C$ = 1 mA | 1250 | - | - | V |
| $\frac{BV_{CES}}{T_J}$ | Temperature Coefficient of Breakdown Voltage | $V_{GE}$ = 0 V, $I_C$ = 1 mA | - | 1.2 | - | V/°C |
| $I_{CES}$ | Collector Cut-Off Current | $V_{CE}$ = 1250V, $V_{GE}$ = 0V | - | - | 1 | mA |
| $I_{GES}$ | G-E Leakage Current | $V_{GE}$ = $V_{GES}$, $V_{CE}$ = 0V | - | - | ±500 | nA |
| **On Characteristics** | | | | | | |
| $V_{GE(th)}$ | G-E Threshold Voltage | $I_C$ = 25mA, $V_{CE}$ = $V_{GE}$ | 4.5 | 6.0 | 7.5 | V |
| $V_{CE(sat)}$ | Collector to Emitter Saturation Voltage | $I_C$ = 25A, $V_{GE}$ = 15V, $T_C$ = 25°C | - | 1.8 | 2.35 | V |
| | | $I_C$ = 25A, $V_{GE}$ = 15V, $T_C$ = 125°C | - | 2.05 | - | V |
| | | $I_C$ = 25A, $V_{GE}$ = 15V, $T_C$ = 175°C | - | 2.16 | - | V |
| $V_{FM}$ | Diode Forward Voltage | $I_F$ = 25A, $T_C$ = 25°C | - | 1.7 | 2.4 | V |
| | | $I_F$ = 25A, $T_C$ = 175°C | - | 2.1 | - | V |
| **Dynamic Characteristics** | | | | | | |
| $C_{ies}$ | Input Capacitance | $V_{CE}$ = 30V, $V_{GE}$ = 0V, f = 1MHz | - | 2150 | - | pF |
| $C_{oes}$ | Output Capacitance | | - | 48 | - | pF |
| $C_{res}$ | Reverse Transfer Capacitance | | - | 36 | - | pF |
| **Switching Characteristics** | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{CC}$ = 600V, $I_C$ = 25A, $R_G$ = 10 , $V_{GE}$ = 15V, Resistive Load, $T_C$ = 25°C | - | 24 | - | ns |
| $t_r$ | Rise Time | | - | 250 | - | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | - | 502 | - | ns |
| $t_f$ | Fall Time | | - | 138 | - | ns |
| $E_{on}$ | Turn-On Switching Loss | | | | | |

## Typical Performance Characteristics

**Figure 1. Typical Output Characteristics**

**Figure 2. Typical Output Characteristics**

**Figure 3. Typical Saturation Voltage Characteristics**

**Figure 4. Transfer Characteristics**

**Figure 5. Saturation Voltage vs. Case**

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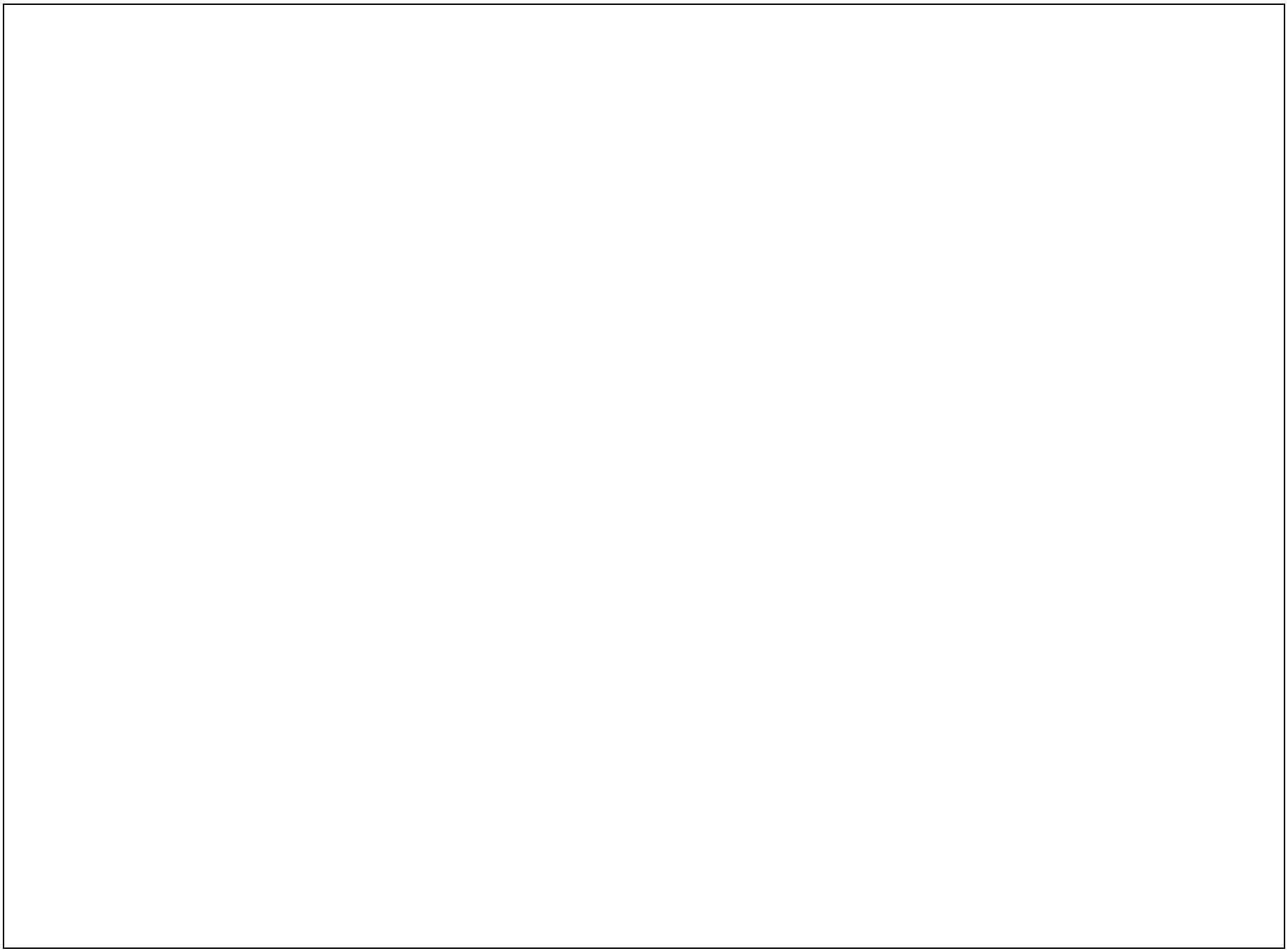

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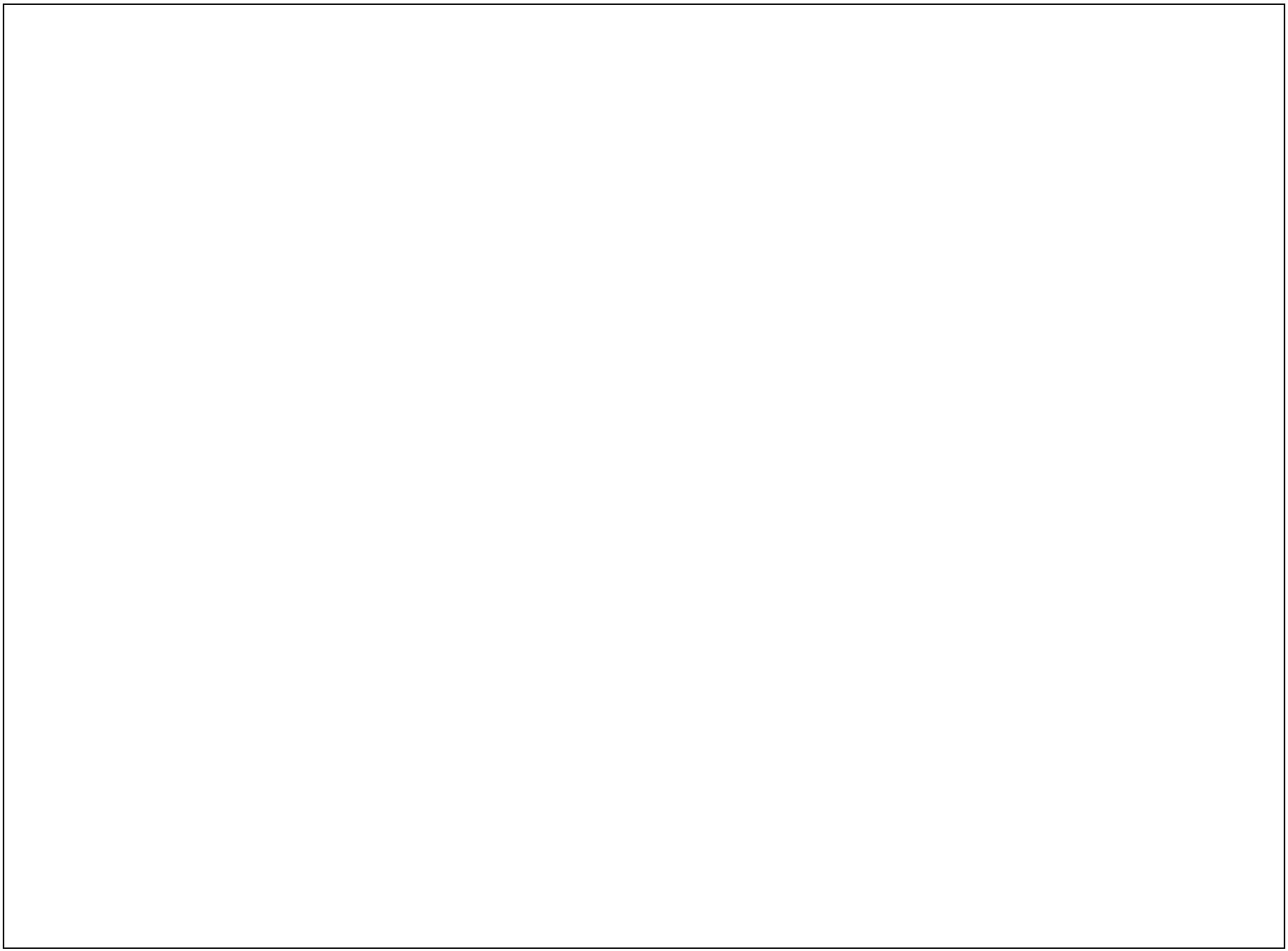

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