

FGA25S125P

1250 V, 25 A Shorted-anode IGBT

Features

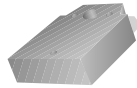
- High Speed Switching
- Low Saturation Voltage: $V_{CE(sat)} = 1.8\text{ V @ } I_C = 25\text{ A}$
- High Input Impedance
- RoHS Compliant

Applications

- Induction Heating, Microwave Oven

General Description

Using advanced field stop trench and shorted-anode technology, the shorted-anode trench IGBTs offer superior conduction 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 @ $T_C = 25^\circ\text{C}$	50	A
	Collector Current @ $T_C = 100^\circ\text{C}$	25	A
$I_{CM(1)}$	Pulsed Collector Current	75	A
I_F	Diode Continuous Forward Current @ $T_C = 25^\circ\text{C}$	50	A
	Diode Continuous Forward Current @ $T_C = 100^\circ\text{C}$	25	A
P_D	Maximum Power Dissipation @ $T_C = 25^\circ\text{C}$	16.5	W
	Maximum Power Dissipation @ $T_C = 100^\circ\text{C}$	8.25	W

Thermal Characteristics

Symbol	Description	Value	Unit
(IGBT)	Thermal Resistance, Junction to Case, Max	0.6	$^\circ\text{C/W}$
R_{JA}	Thermal Resistance, Junction to Ambient, Max	40	$^\circ\text{C/W}$

Notes:

1: Limited by T_{jmax}

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
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
		I _C = 25A, V _{GE} = 15V T _C = 25°C	-	1.8	2.35	V
V _{CE(sat)}	Collector to Emitter Saturation Voltage	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		-	2150	-	pF
C _{oes}	Output Capacitance	V _{CE} = 30V, V _{GE} = 0V, f = 1MHz	-	48	-	pF
C _{res}	Reverse Transfer Capacitance		-	36	-	pF
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time		-	24	-	ns
t _r	Rise Time		-	250	-	ns
t _{d(off)}	Turn-Off Delay Time	V _{CC} = 600V, I _C = 25A,	-	502	-	ns
t _f	Fall Time	R _G = 10 Ω, V _{GE} = 15V, Resistive Load, T _C = 25°C	-	138	-	ns
E _{on}	Turn-On Switching Loss					

Typical Performance Characteristics

Figure 1. Typical Output Characteristics

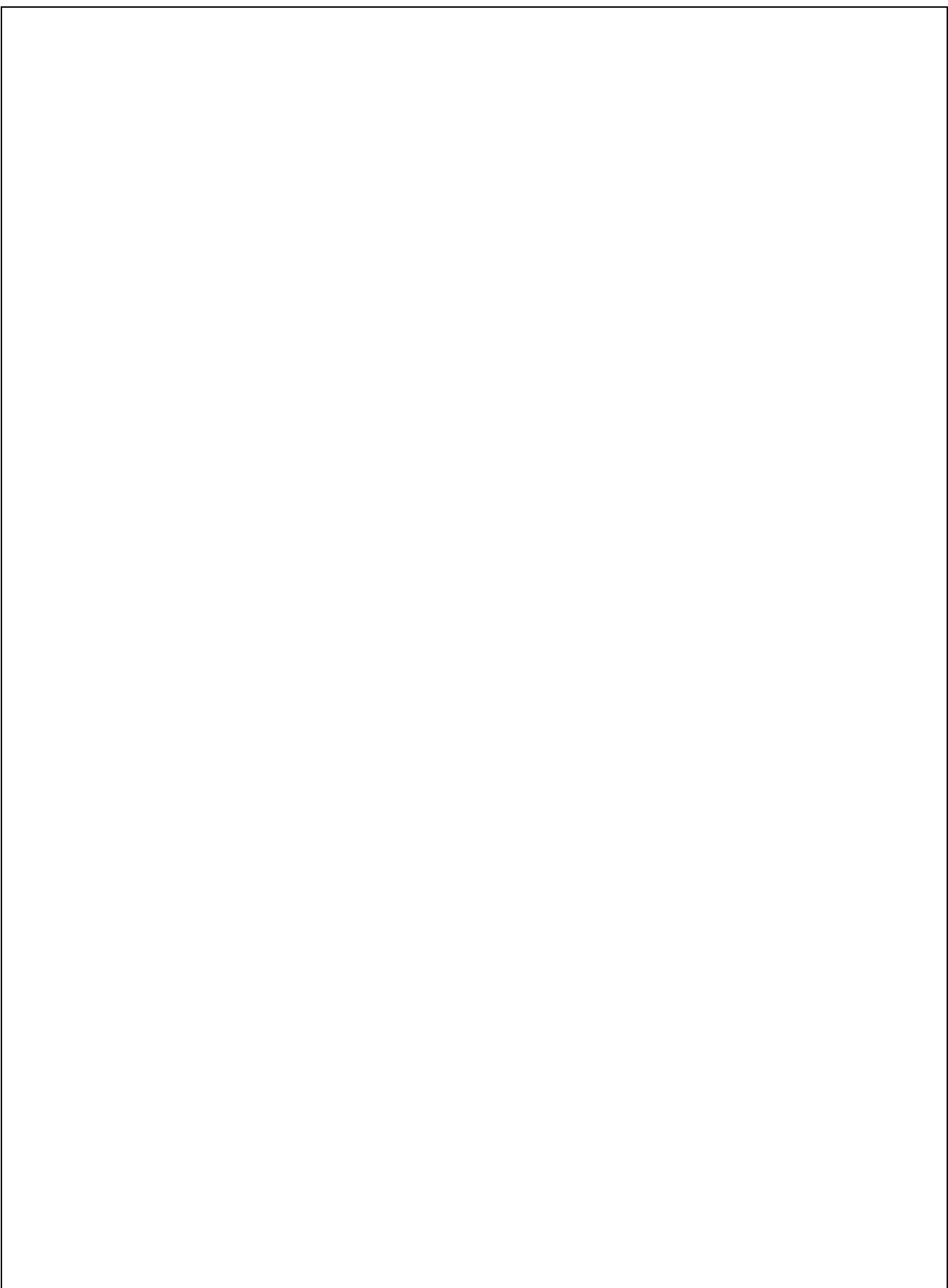
Figure 2. Typical Output Characteristics

Figure 3. Typical Saturation Voltage Characteristics

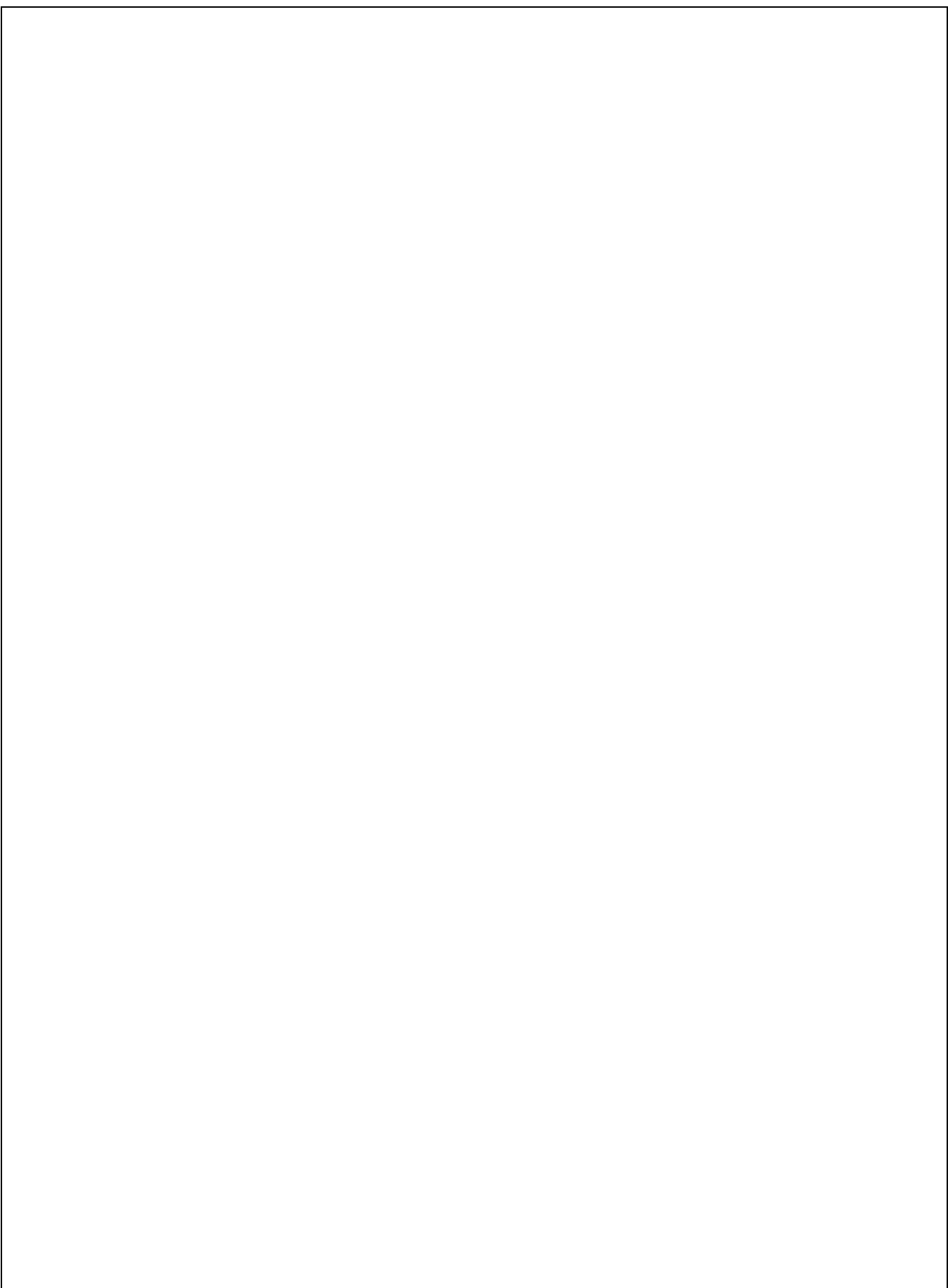
Figure 4. Transfer Characteristics

Figure 5. Saturation Voltage vs. Case

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