

IGBT Die

NGTD23T120F2

Trench Field Stop II IGBT Die for motor drive and inverter applications.

Features

- Extremely Efficient Trench with Field Stop Technology
- Low V_{CE(sat)} Loss Reduces System Power Dissipation

Typical Applications

- Industrial Motor Drives
- Solar Inverters
- UPS Systems
- Welding

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage, T _J = 25°C	V_{CE}	1200	٧
DC Collector Current, limited by $T_{J(max)}$	I _C	(Note 1)	Α
Pulsed Collector Current (Note 2)	I _{C, pulse}	120	Α
Gate-Emitter Voltage	V_{GE}	±20	٧
Maximum Junction Temperature	T_J	-55 to +175	°C
Short Circuit Withstand Time, $V_{GE} = 15 \text{ V}, V_{CE} = 500 \text{V}, T_J \le 150^{\circ}\text{C}$	T _{SC}	10	μs

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Depending on thermal properties of assembly.

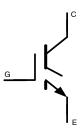
- 2. T_{pulse} limited by T_{jmax} , 10 μs pulse, V_{GE} = 15 V.

MECHANICAL DATA

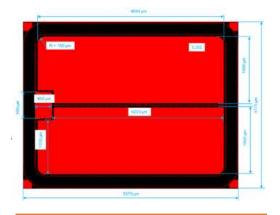
Parameter	Value	Unit	
Die Size	5375 x 4175	μm²	
Emitter Pad Size	See die layout	μm²	
Gate Pad Size	405 x 660	μm²	
Die Thickness	5	mils	
Wafer Size	150	mm	
Top Metal	5 μm AlSi		
Back Metal	2 μm TiNiAg		
Max Possible Chips per Wafer	546		
Passivation Frontside	Oxide-Nitride		
Reject Ink Dot Size	25 mils		
Recommended Storage Environment: In original container, in dry nitrogen, or temperature of 18–28°C, 30–65%RH	Type: Bare Wafer in Jar Storage time: < 36 months	Type: Die on tape in ring-pack Storage time: < 3 months	

$V_{RCE} = 1200 V$ I_C = Limited by $T_{J(max)}$

IGBT DIE



DIE OUTLINE



ORDERING INFORMATION

Device	Inking?	Shipping
NGTD23T120F2WP	Yes	Bare Wafer in Jar
NGTD23T120F2SWK	Yes	Sawn Wafer on Tape

NGTD23T120F2

ELECTRICAL CHARACTERISTICS (T_J = 25°C, unless otherwise specified)

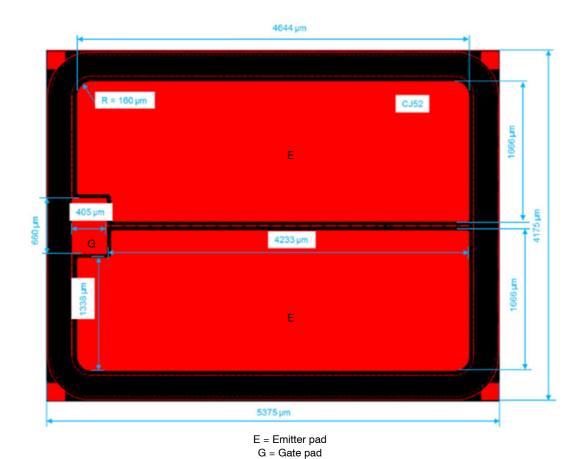
Parameter	Test Conditions	Symbol	Min	Тур	Max	Units
STATIC CHARACTERISTICS	<u>.</u>					•
Collector-Emitter Breakdown Voltage	$V_{GE} = 0 \text{ V}, I_{C} = 500 \mu A$	V _{(BR)CES}	1200			٧
Collector-Emitter Saturation Voltage	V _{GE} = 15 V, I _C = 25 A	V _{CE(sat)}		1.9	2.2	V
Gate-Emitter Threshold Voltage	$V_{GE} = V_{CE}$, $I_C = 400 \mu A$	V _{GE(TH)}	4.5	5.5	6.5	V
Collector-Emitter Cutoff Current	V _{GE} = 0 V, V _{CE} = 1200 V	I _{CES}			1.0	mA
Gate Leakage Current	V _{GE} = 20 V, V _{CE} = 0 V	I _{GES}			200	nA

DYNAMIC CHARACTERISTICS

Input Capacitance	V _{CE} = 20 V, V _{GE} = 0 V,	C _{ies}	5250	pF
Output Capacitance	f = 1 MHz	C _{oes}	170	pF
Reverse Transfer Capacitance		C _{res}	100	рF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

DIE LAYOUT



Further Electrical Characteristic

Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

All dimensions in μm

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