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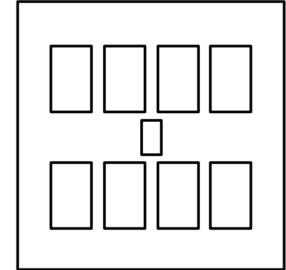
Non-Punch-Through (NPT) IGBT Chip

MYX63N330

3300V, 62.5A, $V_{CE(sat)}$ = 2.2V

Part	V_{CES}	I_{Cn}	$V_{CE\ (sat)\ Typ}$	Die Size
MYX63N330	3300V	62.5A	2.2V	13.5 x 13.5 mm^2
See page 2 for ordering part numbers & supply formats				



Applications

- AC & DC Motor Controls
- High Power Modules

Features

- Short Circuit Rated
- Large Bondable Emitter Area
- Positive Temperature Co-efficient

Maximum Ratings

Symbol	Parameter	conditions	Ratings	Units
V_{CES}	Collector to Emitter Voltage	V_{GE} =0V, T_J = 25°C	3300	V
V_{GES}	Gate to Emitter Voltage		±20	V
I_C	Drain Current[1]	Continuous (T_C = 25°C)	62.5	A
I_{CM}	Pulsed Collector Current		125	A
t_{PSC}	IGBT short circuit SOA	V_{CC} =2500V, V_{CEM} CHIP ≤3300V V_{GE} ≤15V, T_J ≤150°C	10	µS
T_J, T_{STG}	Operation Junction & Storage Temperature		-40 to 150	°C

Static Characteristics, T_J = 25° unless otherwise noted

Symbol	Parameter	Test Conditions		Min	Typ	Max	Units
BV_{CES}	Collector to Emitter Breakdown Voltage	V_{GE}=0V,I_C =10µA,T_J= 25 °C		-	-	3300	V
I_{CES}	Collector Cut-Off Current	V_{CE} = 3300V V_{GE} = 0V	T_J = 25°C	-	-	10	µA
			T_J = 150°C			3	mA
I_{GES}	G-E Leakage Current	V_{CE} = 0 V, T_J = 25°C V_{GE} = ±30V		-	-	50	nA

Notes:

1. Performance will vary based on assembly technique and substrate choice
2. Defined by chip design, not subject to 100% production test at wafer level
3. Specified in discrete package for indicative purposes only, bare die performance will vary depending on module design.

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On Characteristics, T_J = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{GE(th)}$	G-E Threshold Voltage	I_C =20 mA, V_{CE} = V_{GE} T_J = 25 °C	5.5	5.9	6.5	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	I_C = 62.5A, V_{GE} = 15V	-	2.2	-	V
		I_C = 62.5A, V_{GE} = 15V @ 150°C	-	3.0	-	V

Dynamic Characteristics[2], T_J = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
C_{ies}	Input Capacitance	V_{CE} = 25V, V_{GE} = 0V f = 1MHz	-	11	-	nF
C_{res}	Reverse Transfer Capacitance			0.25	-	nF
Q_{ge}	Gate to Emitter Charge	I_C = 62.5A, V_{CE} =1800V V_{GE} = ±15V	-	0.63	-	µC

Switching Characteristics[3], T_J = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions		Min	Typ	Max	Units
$t_{d(on)}$	Turn-On Delay Time	V_{CE} =1800V, I_C = 62.5A, R_G = 39Ω V_{GE} = ±15V, C_{GE}= 15nF	T_J = 25 °C	-	1000	-	ns
			T_J = 150 °C		1030	-	
t_r	Rise Time		T_J = 25 °C	-	400	-	ns
			T_J = 150 °C		430	-	
$t_{d(off)}$	Turn-Off Delay Time		T_J = 25 °C	-	2700	-	ns
			T_J = 150 °C		2800	-	
t_f	Fall Time		T_J = 25 °C	-	520	-	ns
			T_J = 150 °C		550	-	
E_{on}	Turn-On Switching Loss		T_J = 25 °C	-	80	-	mJ
			T_J = 150 °C		115	-	
E_{off}	Turn-Off Switching Loss		T_J = 25 °C	-	120	-	mJ
			T_J = 150 °C		145	-	
I_{SC}	Short circuit current	t_{PSC} ≤ 10 µs, V_{GE} ≤15V, V_{CC} =2500V, V_{CEM} CHIP ≤3300V	T_J = 150 °C	-	230	-	A

Notes:

1. Performance will vary based on assembly technique and substrate choice
2. Defined by chip design, not subject to 100% production test at wafer level
3. Specified in discrete package for indicative purposes only, bare die performance will vary depending on module design

Ordering Guide

Part Number	Format	Detail / Drawing
MYX63N330MW	Un-sawn wafer, electrical rejects inked	Page 3
MYX63N330MF	Sawn wafer on film-frame	Page 4
MYX63N330MD	Singulated die / chips in waffle pack	Page 4
Note: Singulated Die / Chips can also be supplied in Pocket Tape or SurfTape® on request		

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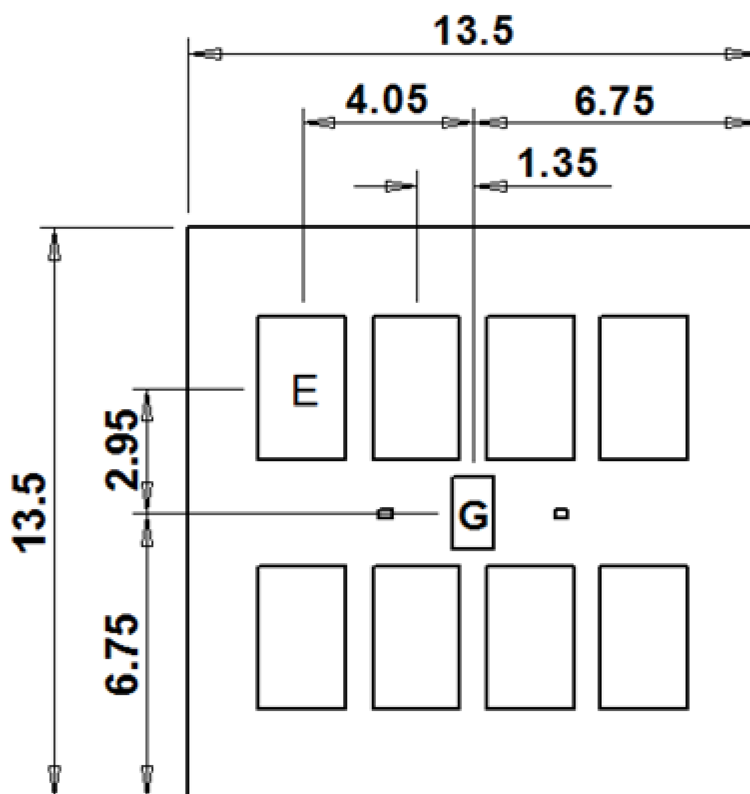
Die Drawing –Dimensions (mm)



Mechanical Data

Parameter			Units
Chip Dimensions Un-sawn	13500 x 13500		µm
Chip Thickness (Nominal)	514		µm
Gate Pad Size	960 x 1717		µm
Emitter Pad Size	2070 x 3375		µm
Wafer Diameter	150 (subject to change)		mm
Saw Street	80 (subject to change)		µm
Wafer orientation on frame	Wafer notch parallel with frame flat		
Topside Metallisation & Thickness	Al / Si	5	µm
Backside Metallisation & Thickness	Ti 0.06µm / Ni 0.75µm / Ag 0.25µm		
Recommended Die Attach Material	Soft Solder or Conductive Epoxy		
Recommended Wire Bond - Gate	Al 150µm X1		
Recommended Wire Bond – Emitter	Al, ≤500µm		

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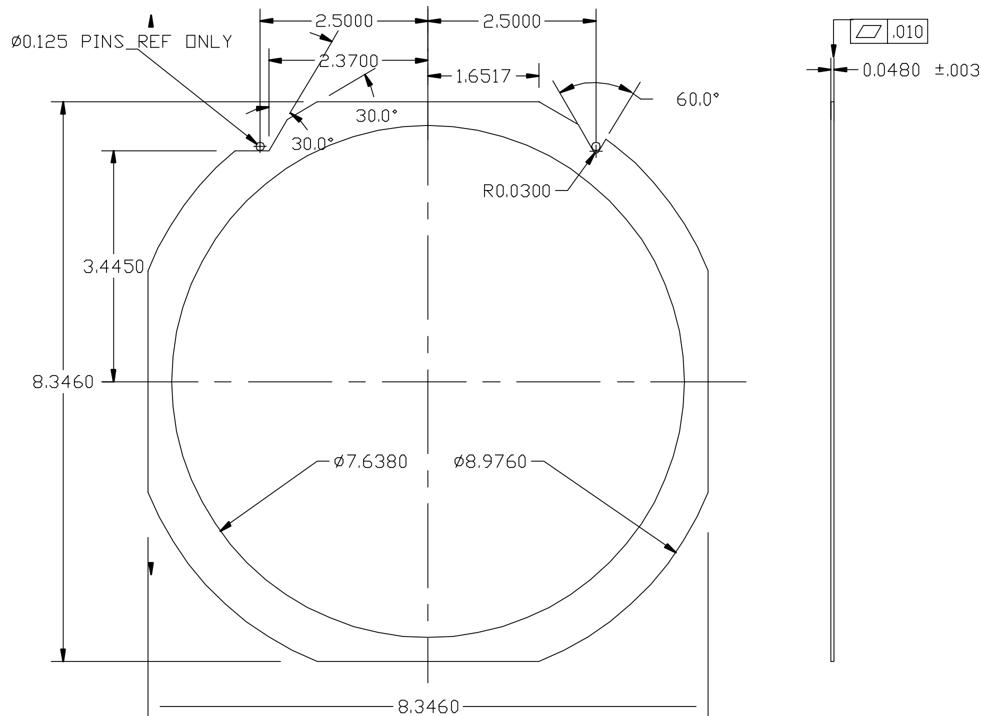
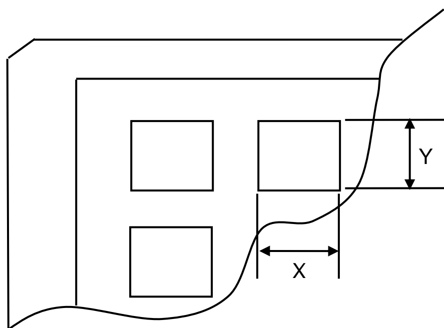
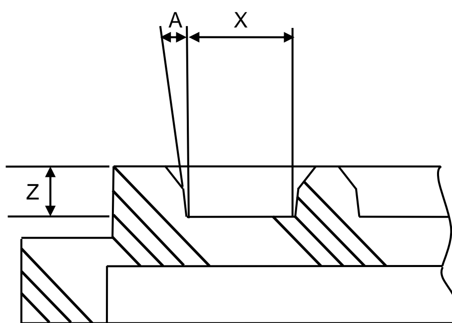
Sawn Wafer on Film-Frame – Dimensions (inches)



Die in Waffle Pack – Dimensions (mm)





X = 13.94mm ±0.13mm pocket size
Y = 13.94mm ±0.13mm pocket size
Z = 0.99mm ±0.08mm pocket depth
A = 5° ±1/2° pocket draft angle
No Cross Slots
Array = 3 X 3 (9)

OVERALL TRAY SIZE

Size = 50.67mm ±0.25mm
Height = 3.94mm ±0.13mm
Flatness = 0.30mm

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