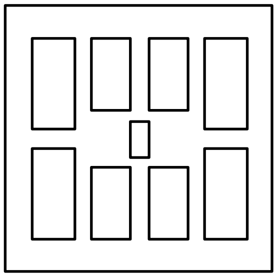
Non-Punch-Through (NPT) IGBT Chip

MYX100N170

1700V, 100A, $V_{CE(sat)}$ = 2.2V

Part	V_{CES}	I_{Cn}	$V_{CE\ (sat)\ Typ}$	Die Size
MYX100N170	1700V	100A	2.2V	6.5 x 9.7 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, $T_J \geq 25°C$	1700	V
V_{GES}	Gate to Emitter Voltage		±20	V
I_C	Drain Current[1]		100	A
I_{CM}	Pulsed Collector Current		200	A
t_{PSC}	IGBT short circuit SOA	V_{CC} =1000V, V_{CEM} CHIP ≤ 1700V $V_{GE} \leq 15V$, $T_J \leq 150°C$	10	µs
T_J, T_{STG}	Operation Junction & Storage Temperature		-40 to 125	°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 = 1mA,T_J = 25 °C		-	-	1700	V
I_{CES}	Collector Cut-Off Current	V_{CE} = 1800V V_{GE} = 0V	T_J = 25°C	-	-	0.1	µA
			T_J = 150°C	-	-	-	mA
I_{GES}	G-E Leakage Current	V_{CE} = 0V T_J = 25°C	V_{GE} = +50V	-	1000	-	nA
			V_{GE} = +30V		50		
			V_{GE} = -30V		50		

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

Further Information - Contact your Micross sales office or email your enquiry to baredie@micross.com

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, $V_{CE} = V_{GE}$	4.5	5.5	6.5	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	I_C = 15A, V_{GE} = 15V,	2.0	2.2	2.6	V
		I_C = 15A, V_{GE} = 15V T_J = 150°C	-	-	-	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	-	30	-	nF
C_{oes}	Output Capacitance		-	-	-	nF
C_{res}	Reverse Transfer Capacitance		-	-	-	nF
Q_{ge}	Gate charge	I_C = 100A,V_{CE} = 900V, V_{GE} = ±15V	-	4.5	-	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} =900V, I_C = 100A, R_{gon} R_{goff} = 4.7Ω V_{GE} = ±15V Ls app 100nH, inductive load	T_J = 25 °C	-	250	-	ns
			T_J = 125 °C		400	-	
t_r	Rise Time		T_J = 25 °C	-	250	-	ns
			T_J = 125 °C		250	-	
$t_{d(off)}$	Turn-Off Delay Time		T_J = 25 °C	-	1150	-	ns
			T_J = 125 °C		1400	-	
t_f	Fall Time		T_J = 25 °C	-	100	-	ns
			T_J = 125 °C		130	-	
E_{on}	Turn-On Switching Loss		T_J = 25 °C	-	150	-	mJ
			T_J = 125 °C		170	-	
E_{off}	Turn-Off Switching Loss		T_J = 25 °C	-	120	-	mJ
			T_J = 150 °C		180	-	
I_{SC}	Short circuit current	t_{PSC} ≤ 10 µs, V_{GE} ≤15V, V_{CC} =1000V, V_{CEM} CHIP ≤1700V	T_J = 125 °C	I1	463	-	A
				I2	400		

Notes:

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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
MYX100N170MW	Un-sawn wafer, electrical rejects inked	Page 3
MYX100N170MF	Sawn wafer on film-frame	Page 4
MYX100N170MD	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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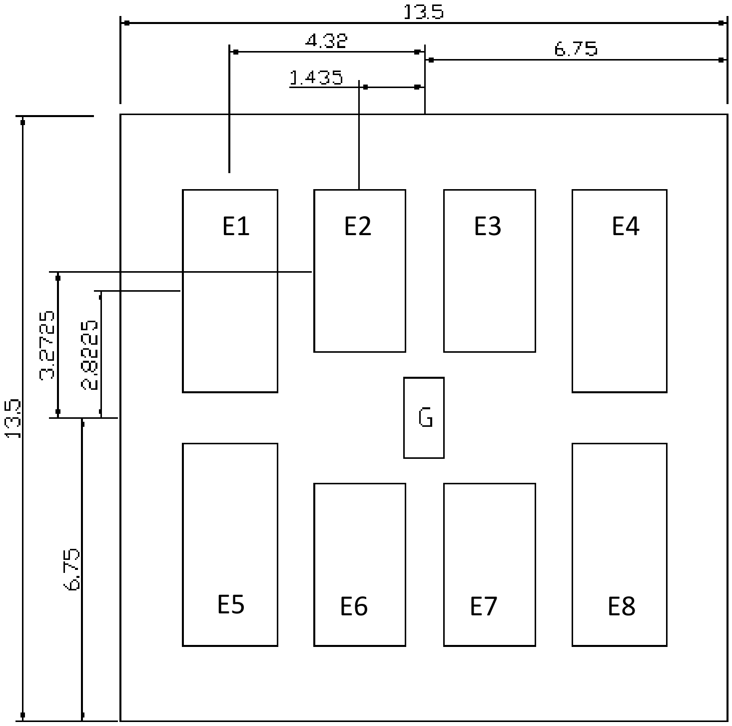
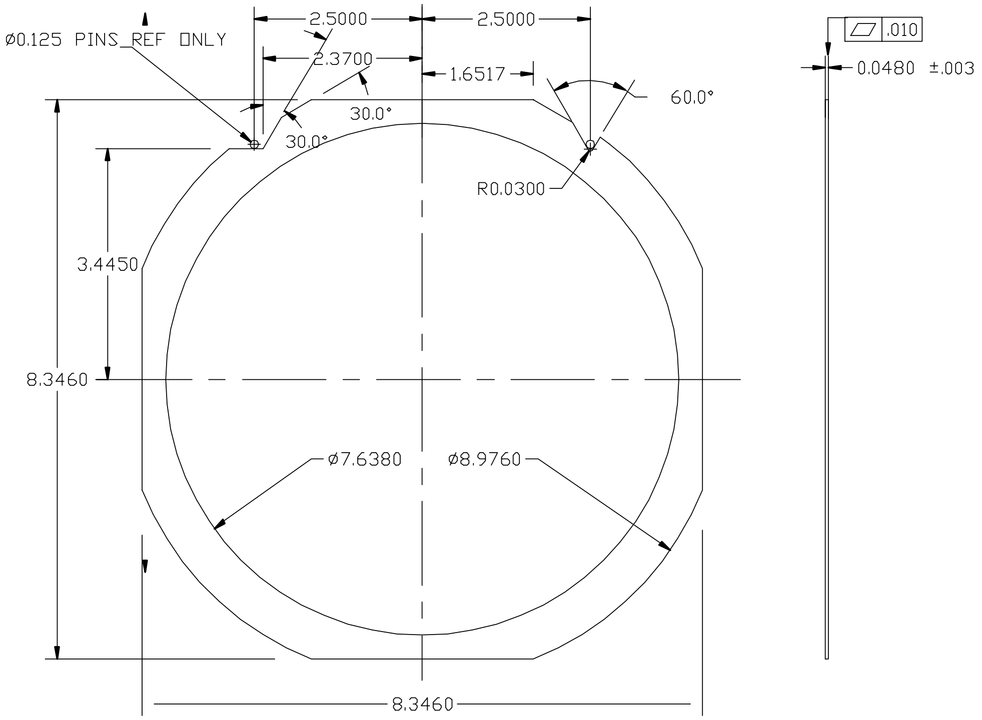
Die Drawing –Dimensions (mm)



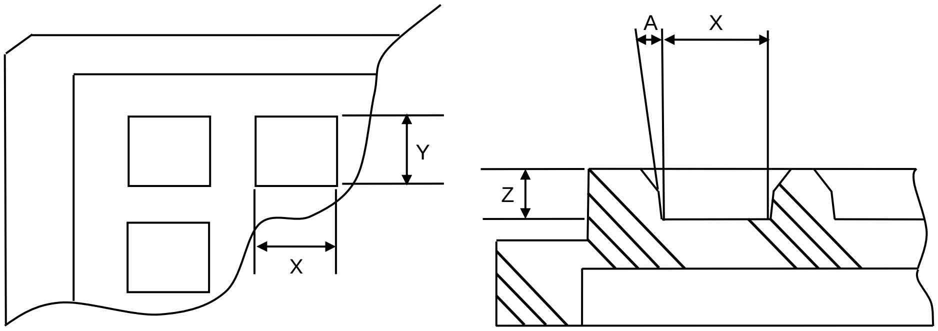
Mechanical Data

Parameter			Units
Chip Dimensions Un-sawn	13500 x 13500		µm
Chip Thickness (Nominal)	514		µm
Gate Pad Size	900 x 1770		µm
Emitter Pad Size – E1, E4, E5, E8	4505 x 2163		µm
Emitter Pad Size – E2, E3, E6, E7	3605 x 2030		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		

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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