micross components
transforming specialty electronics

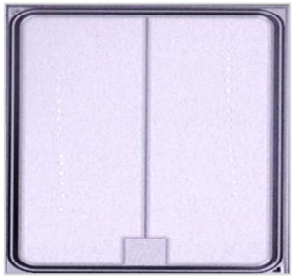
FAIRCHILD

600V Planar IGBT Chip

HGTG30N60

600V, 60A, $V_{CE(sat)}$ = 1.8V

Part	V_{CES}	I_{Cn}	$V_{CE\ (sat)\ Typ}$	Die Size
HGTG30N60	600V	60A	1.8	6.6 x 6.6 mm^2
See page 2 for ordering part numbers & supply formats				



Applications

- AC & DC Motor Controls
- General Purpose Inverters

Features

- Fast Switching & Low Conduction Loss
- High Input Impedance
- Short Circuit Rated

Maximum Ratings

Symbol	Parameter		Ratings	Units
BV_{CES}	Collector to Emitter Voltage		600	V
V_{GES}	Gate to Emitter Voltage		±20	V
I_C	Drain Current[1]	Continuous (T_C = 25°C)	75	A
		Continuous (T_C = 110°C)	60	A
I_{CM}	Pulsed Collector Current		240	A
SCWT	Short Circuit Withstand Time[3]	V_{CE} = 360V, R_G = 3Ω, V_{GE} = 10V, T_C = 125°C	10	µS
T_J, T_{STG}	Operation Junction & Storage Temperature		-55 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 = 250µA		600	-	-	V
I_{CES}	Collector Cut-Off Current	V_{CE} = 600	T_J = 25°C	-	-	250	µA
			T_J = 125°C	-	-	4.0	mA
I_{GES}	G-E Leakage Current	V_{GE} = ±20		-	-	±250	nA

Notes:

1. Defined by chip design, not subject to 100% production test at wafer level
2. Performance will vary based on assembly technique and substrate choice
3. Repetitive Rating: Pulse width limited by maximum junction temperature

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 = 250µA, V_{CE} = 600V	4.5	5..5	7.0	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	I_C = 30A, V_{GE} = 15V	-	1.8	2.6	V
		I_C = 30A, V_{GE} = 15V T_C = 125°C	-	1.6	2.0	V

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

Symbol	Parameter	Test Conditions		Min	Typ	Max	Units
Q_g	On-State Gate Charge	V_{CE} = 300V, I_C = 30A	V_{GE} = 15V	-	225	-	nC
			V_{GE} = 20V	-	300	-	

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} = 390V, I_{CE} = 30A R_G = 3Ω, V_{GE} = 15V V_{CE} =390V L = 200µH T_C = 25°	-	25	-	ns
t_r	Rise Time		-	12	-	ns
$t_{d\ (off)}$	Turn-Off Delay Time		-	150	-	ns
t_f	Fall Time		-	38	-	ns
E_{on}	Turn-On Switching Loss		-	280	-	mJ
E_{off}	Turn-Off Switching Loss		-	240	-	mJ
$t_{d\ (on)}$	Turn-On Delay Time	V_{CE} = 390V, I_C = 30A R_G = 3Ω, V_{GE} = 15V L=200µH T_C = 125°C	-	24	-	ns
t_r	Rise Time		-	11	-	ns
$t_{d\ (off)}$	Turn-Off Delay Time		-	180	-	ns
t_f	Fall Time		-	58	-	ns
E_{on}	Turn-On Switching Loss		-	280	-	µJ
E_{off}	Turn-Off Switching Loss		-	450	-	µJ

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
HGTG30N60MW	Un-sawn wafer, electrical rejects inked	Page 3
HGTG30N60MF	Sawn wafer on film-frame	Page 4
HGTG30N60MD	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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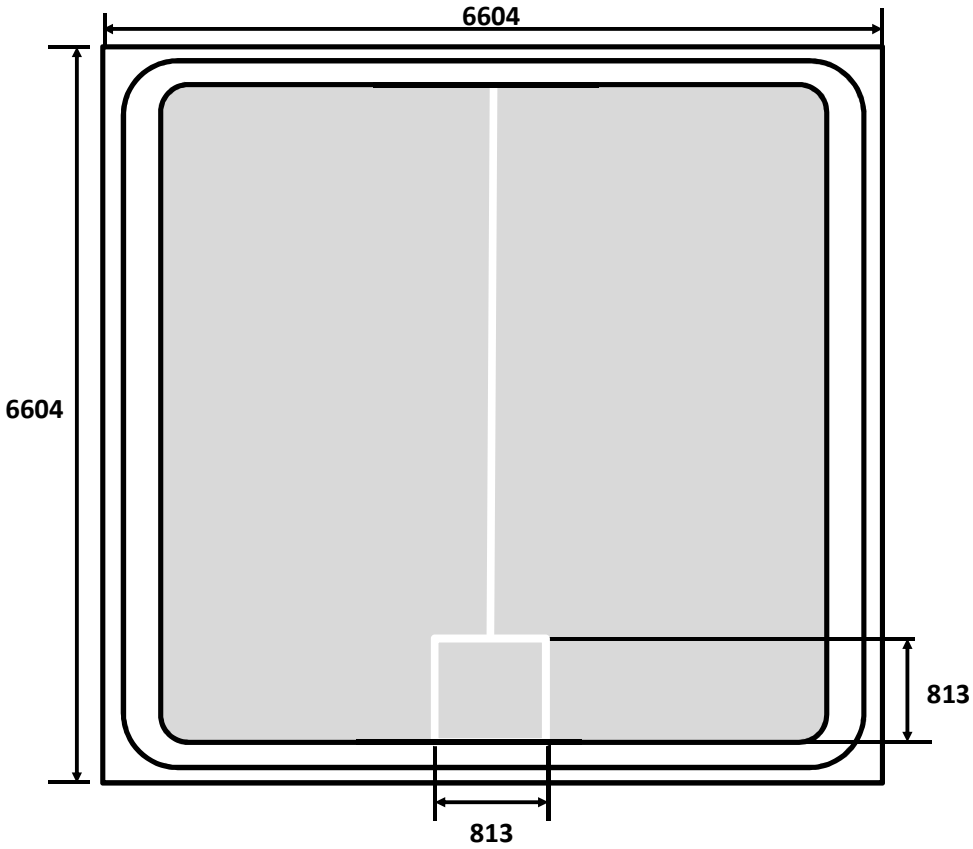
Die Drawing – Dimensions (µm)



Mechanical Data

Parameter			Units
Chip Dimensions Un-sawn	6604 x 6604		µm
Chip Thickness (Nominal)	300		µm
Gate Pad Size	813 x 813		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	4	µm
Backside Metallisation & Thickness	V/Ni/Ag	0.45	µm
Topside Passivation	Silicon Nitride		
Recommended Die Attach Material	Soft Solder or Conductive Epoxy		
Recommended Wire Bond - Gate	Al 150µm X1		
Recommended Wire Bond – Source	Al 500µm X2		

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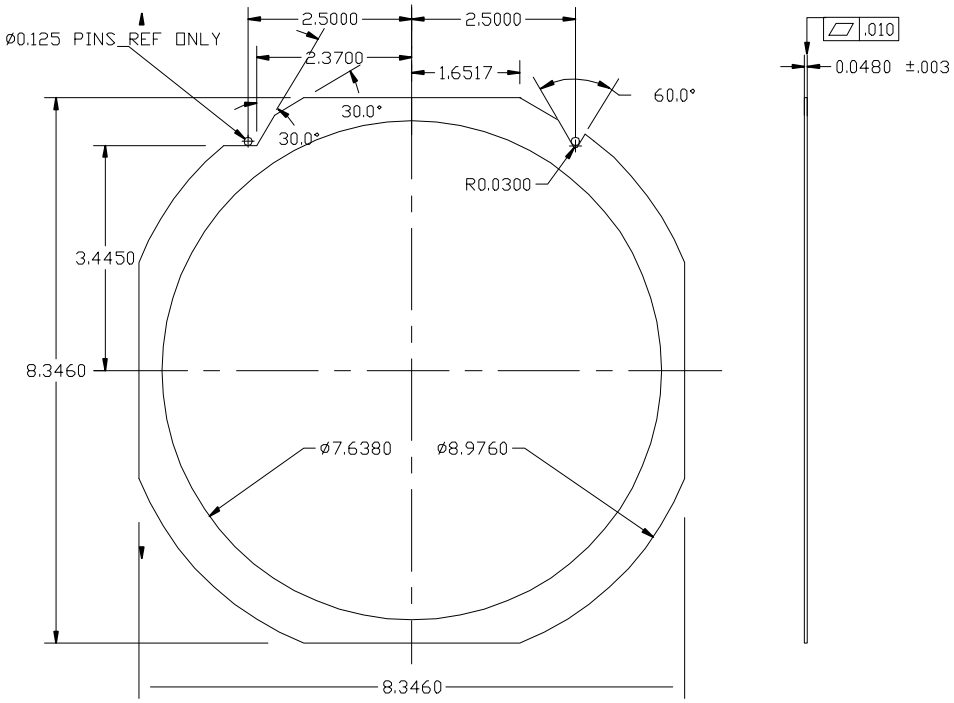
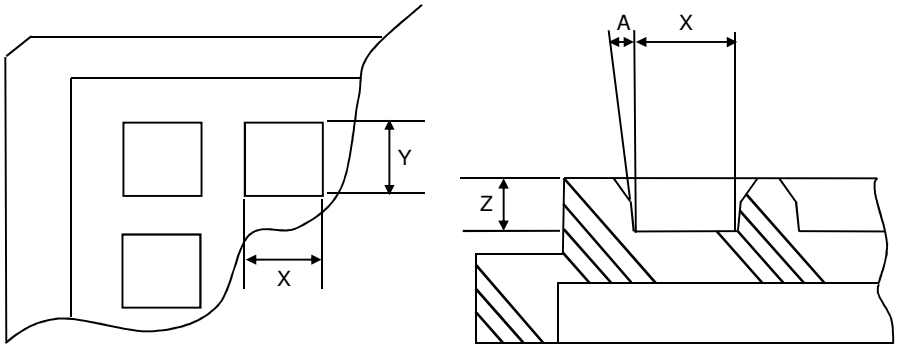
Sawn Wafer on Film-Frame – Dimensions (inches)



Die in Waffle Pack – Dimensions (mm)



X = 6.86mm ±0.13mm pocket size
Y = 6.86mm ±0.13mm pocket size
Z = 0.89mm ±0.08mm pocket depth
A = 5° ±1/2° pocket draft angle
No Cross Slots
Array = 4 X 4 (16)

OVERALL TRAY SIZE

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

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