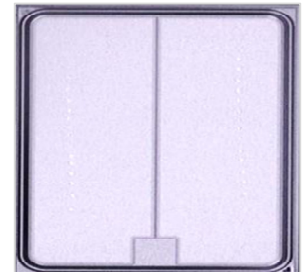


600V Planar IGBT Chip

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 ($T_C = 25^\circ\text{C}$)	75	A
		Continuous ($T_C = 110^\circ\text{C}$)	60	A
I_{CM}	Pulsed Collector Current	240	A	
SCWT	Short Circuit Withstand Time ³	$V_{CE} = 360V, R_G = 3\Omega, V_{GE} = 10V, T_C = 125^\circ\text{C}$	10	µS
T_J, T_{STG}	Operation Junction & Storage Temperature	-55 to 150	°C	

Static Characteristics, $T_J = 25^\circ$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units	
BV_{CES}	Collector to Emitter Breakdown Voltage	$V_{GE} = 0V, I_C = 250\mu\text{A}$	600	-	-	V	
I_{CES}	Collector Cut-Off Current	$V_{CE} = 600$	$T_J = 25^\circ\text{C}$	-	-	250	µA
			$T_J = 125^\circ\text{C}$	-	-	4.0	mA
I_{GES}	G-E Leakage Current	$V_{GE} = \pm 20$	-	-	±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, $T_J = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{GE(th)}$	G-E Threshold Voltage	$I_C = 250\mu\text{A}$, $V_{CE} = 600\text{V}$	4.5	5.5	7.0	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	$I_C = 30\text{A}$, $V_{GE} = 15\text{V}$	-	1.8	2.6	V
		$I_C = 30\text{A}$, $V_{GE} = 15\text{V}$ $T_C = 125^\circ\text{C}$	-	1.6	2.0	V

Dynamic Characteristics², $T_J = 25^\circ\text{C}$ unless otherwise noted

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

Switching Characteristics³, $T_J = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$t_{d(on)}$	Turn-On Delay Time	$V_{CE} = 390\text{V}$, $I_C = 30\text{A}$ $R_G = 3\Omega$, $V_{GE} = 15\text{V}$ $V_{CE} = 390\text{V}$ $L = 200\mu\text{H}$ $T_C = 25^\circ$	-	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	$V_{CE} = 390\text{V}$, $I_C = 30\text{A}$ $R_G = 3\Omega$, $V_{GE} = 15\text{V}$ $L = 200\mu\text{H}$ $T_C = 125^\circ\text{C}$	-	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:

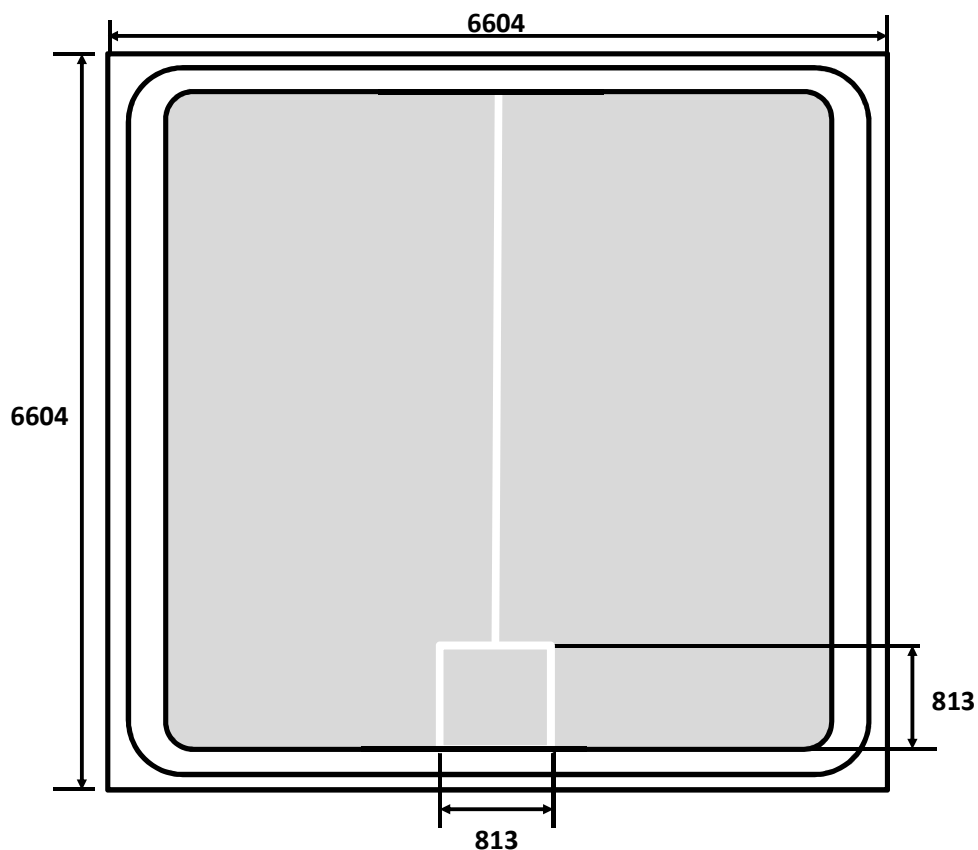
1. Performance will vary based on assembly technique and substrate choice
2. Defined by chip design, not subject to 100% production test at wafer level
3. Specified in discrete package for indicative purposes only, bare die performance will vary depending on module design.

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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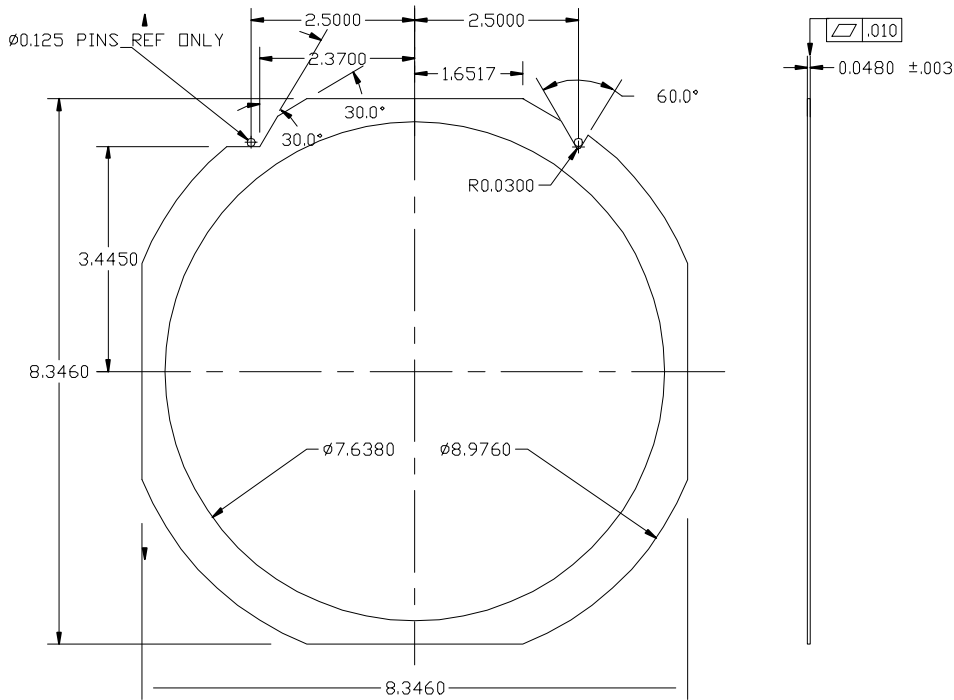
Die Drawing – Dimensions (µm)



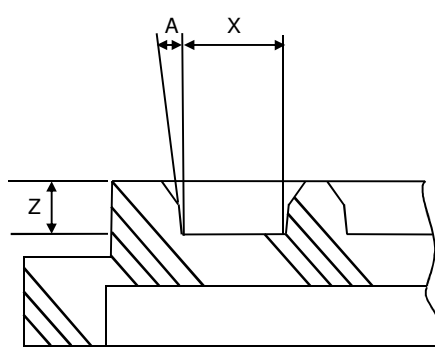
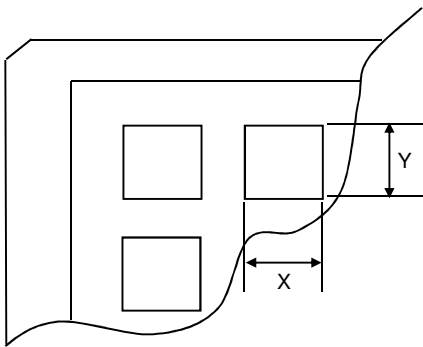
Mechanical Data

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		

Sawn Wafer on Film-Frame – Dimensions (inches)



Die in Waffle Pack – Dimensions (mm)



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

OVERALL TRAY SIZE

Size = 50.67mm \pm 0.25mm
 Height = 3.94mm \pm 0.13mm
 Flatness = 0.30mm

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2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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