

# YGW15N120F1A

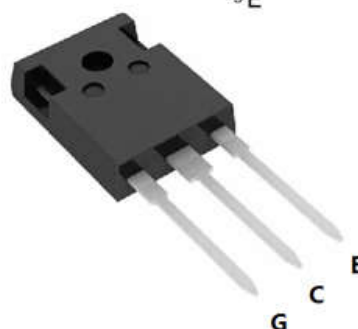
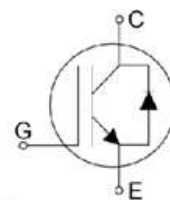
**1200V /15A Trench Field Stop IGBT**

Lu-semi Field Stop Trench IGBTs offer low switching losses, high energy efficiency and high avalanche ruggedness for soft switching applications such as inductive heating, microwave oven, etc.

$V_{CE}$	<b>1200</b>	<b>V</b>
$I_C$	<b>15</b>	<b>A</b>
$V_{CE(SAT)} I_C=15A$	<b>1.9</b>	<b>V</b>

## FEATURES

- Trench-Stop Technology offering :
  - High speed switching
  - High ruggedness, temperature stable
  - Low  $V_{CEsat}$
  - Easy parallel switching capability due to positive temperature coefficient in  $V_{CEsat}$
- Soft current turn-off waveforms
- Enhanced avalanche capability



## APPLICATION

- Inductive cooking
- Inverterized microwave ovens
- Resonant converters
- Soft switching applications

Product	Package	Packaging
YGW15N120F1A	TO247	Tube

**Maximum Ratings**

Parameter	Symbol	Value	
Collector-Emitter Breakdown Voltage	$V_{CE}$	1200	
DC collector current, limited by $T_{jmax}$ $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	$I_C$	30 15	A
Diode Forward current, limited by $T_{jmax}$ $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$		30 15	A
Continuous Gate-Emitter Voltage		$\pm 20$	V

**Electrical Characteristics of the IGBT** ( $T_j = 25^\circ\text{C}$  unless otherwise specified) :

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Collector-Emitter breakdown voltage	$BV_{CES}$	$V_{GE}=0V, I_C=250\mu A$	1200	-	-	V
Gate threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=250\mu A$	5.2	5.8	6.8	V
Collector-Emitter Saturation voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=15A$ $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$	- -	1.9 2.3	2.3 -	V
Zero gate voltage collector current	$I_{CES}$	$V_{CE} = 1200V, V_{GE} = 0V$ $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$	- -	- -	100 1000	$\mu A$
Gate-emitter leakage current	$I_{GES}$	$V_{CE} = 0V, V_{GE} = \pm 20V$	-	-	100	nA

### Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Dynamic at <math>T_j = 25^\circ \text{C}</math></b>						
	$t_{d(on)}$	$V_{CC} = 600\text{V}$ , $I_C = 15\text{A}$ , $V_{GE} = 0/15\text{V}$ , $R_g = 12\Omega$	-	24	-	ns
Rise Time	$t_r$		-	17	-	ns
Turn-off delay time	$t_{d(off)}$		-	80	-	ns

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Fig. 5 Switching times vs. gate resistor

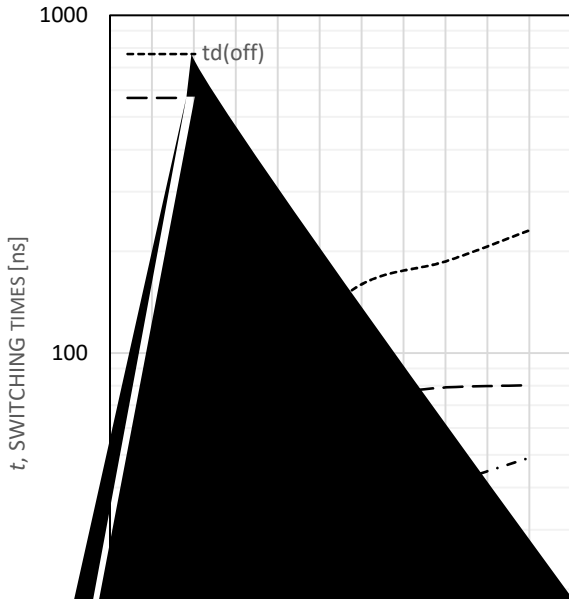
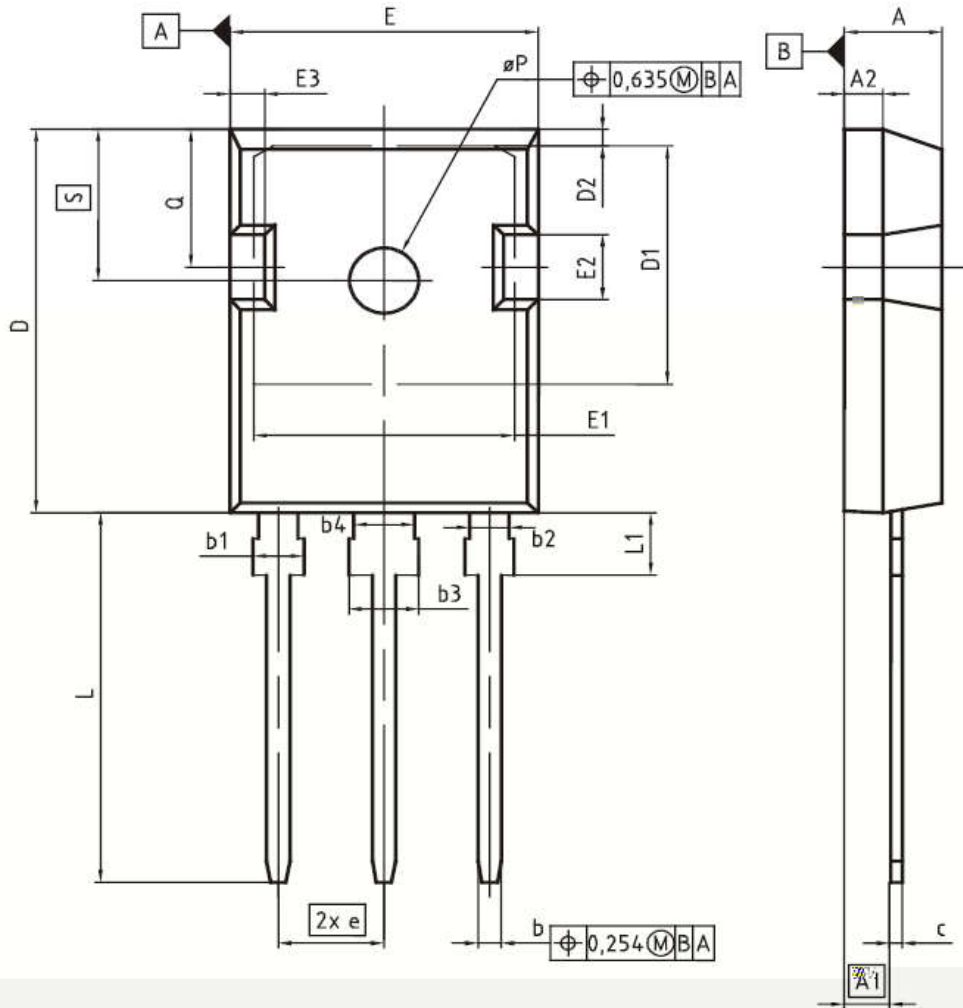


Fig. 6 Switching times vs. collector current

Fig. 7

Fig. 8 Switching loss vs. collector current


**PG-TO247-3**



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	0.190	0.205
A1	2.27	2.54	0.089	0.100
A2	1.85	2.16	0.073	0.085
b	1.07	1.33	0.042	0.052
b1	1.90	2.41	0.075	0.095
b2	1.90	2.16	0.075	0.085
b3	2.87	3.38	0.113	0.133
b4	2.87	3.13	0.113	0.123
c	0.55	0.68	0.022	0.027
D	20.80	21.10	0.819	0.831
D1	16.25	17.65	0.640	0.695

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
e	1.07	1.33	0.042	0.052
L	16.50	20.30	0.650	0.800
L1	4.00	4.00	0.157	0.157
S	2.54	3.00	0.100	0.118
a	1.00	1.00	0.039	0.039