

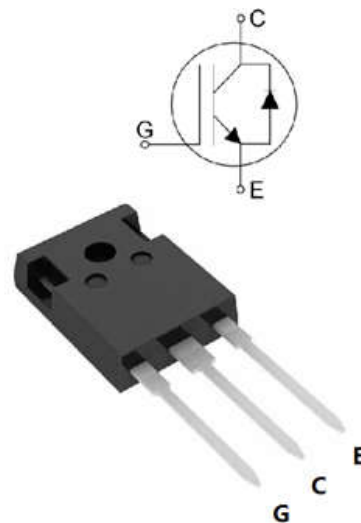
YGW15N120T1

1200V /15A Trench Field Stop IGBT

FEATURES

- High breakdown voltage to 1200V for improved reliability
- Trench-Stop Technology offering :
 - very tight parameter distribution
 - high ruggedness, temperature stable behavior
 - Short circuit withstand time – 10μs
 - High ruggedness, temperature stable
 - Low $V_{CE(SAT)}$
 - Easy parallel switching capability due to positive temperature coefficient in $V_{CE(SAT)}$
- Enhanced avalanche capability

V_{CE}	1200	V
I_C	15	A
$V_{CE(SAT)} I_C=15A$	1.7	V



APPLICATION

- Frequency Converters
- Motor Drive

Product	Package	Packaging
YGW15N120T1	TO247	Tube

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Breakdown Voltage	V_{CE}	1200	V
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} $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	I_F	30 15	A
Continuous Gate-emitter voltage	V_{GE}	± 20	V
Transient Gate-emitter voltage	V_{GE}	± 30	V
Turn off safe operating area $V_{CE} = 1200\text{V}$, $T_j = 150^\circ\text{C}$	-	60	A
Pulsed collector current, $V_{GE} = 15\text{V}$, t_p limited by T_{jmax}	I_{CM}	60	A
Short Circuit Withstand Time, $V_{GE} = 15\text{V}$, $V_{CE} = 600\text{V}$	T_{sc}	10	μs
Power dissipation, $T_j = 25^\circ\text{C}$	P_{tot}	208	W
Operating junction temperature	T_j	-40...+150	$^\circ\text{C}$
Storage temperature	T_s	-55...+150	$^\circ\text{C}$
Soldering temperature, wave soldering 1.6mm (0.063in.) from case for 10s	-	260	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Max. Value	Unit
IGBT thermal resistance, junction - case	$R(j-c)$	0.65	K/W
Diode thermal resistance, junction - case	$R(j-c)$	1.5	K/W
Thermal resistance, junction - ambient	$R(j)$		

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static						
Collector-Emitter breakdown voltage	BV_{CES}	$V_{GE}=0V, I_C=250\mu A$	1200	-	-	V

Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Dynamic , at $T_j = 25^\circ \text{C}$						

 Turn-on delay time $t_{d(on)}$
 $V_{CC} = 600\text{V}, I_C = 15\text{A},$
 $V_{GE} = 0/15\text{V},$
 $R_g = 42$

Fig. 1 FBSOA characteristics

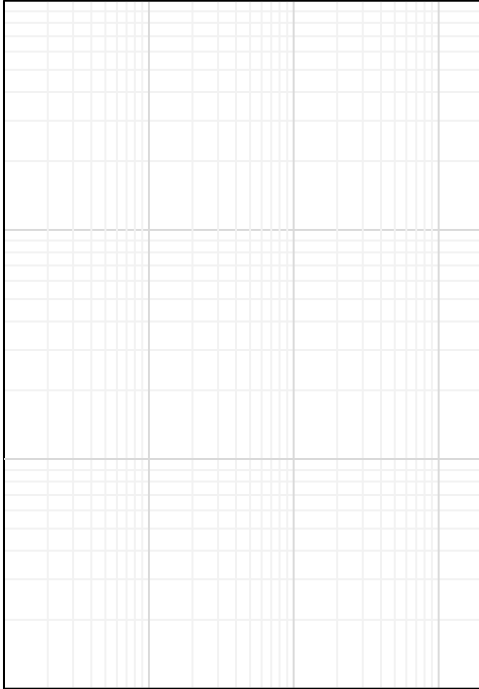


Fig. 2 Load Current vs. Frequency

Fig. 3 Output characteristics

Fig. 4 Saturation voltage characteristics

Fig. 5 Switching times vs. gate resistor

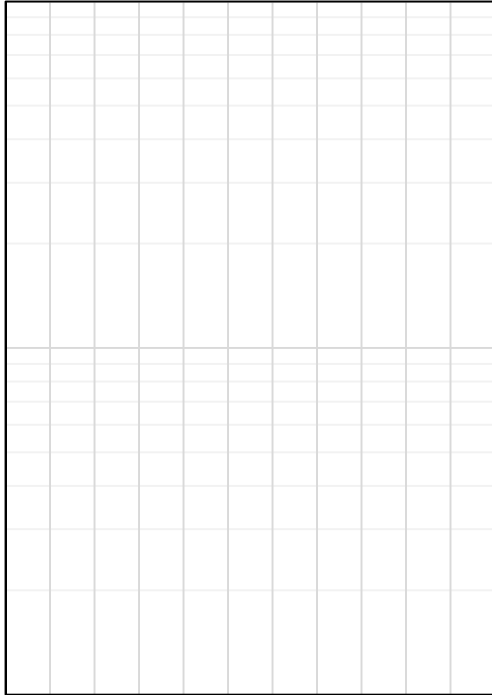


Fig. 6 Switching times vs. collector current

Fig. 7 Switching loss vs. gate resistor

Fig. 8 Switching loss vs. collector current

Fig. 9 Gate charge characteristics

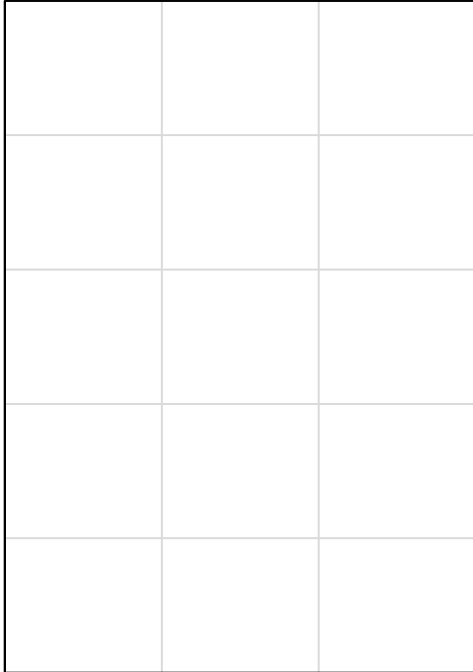
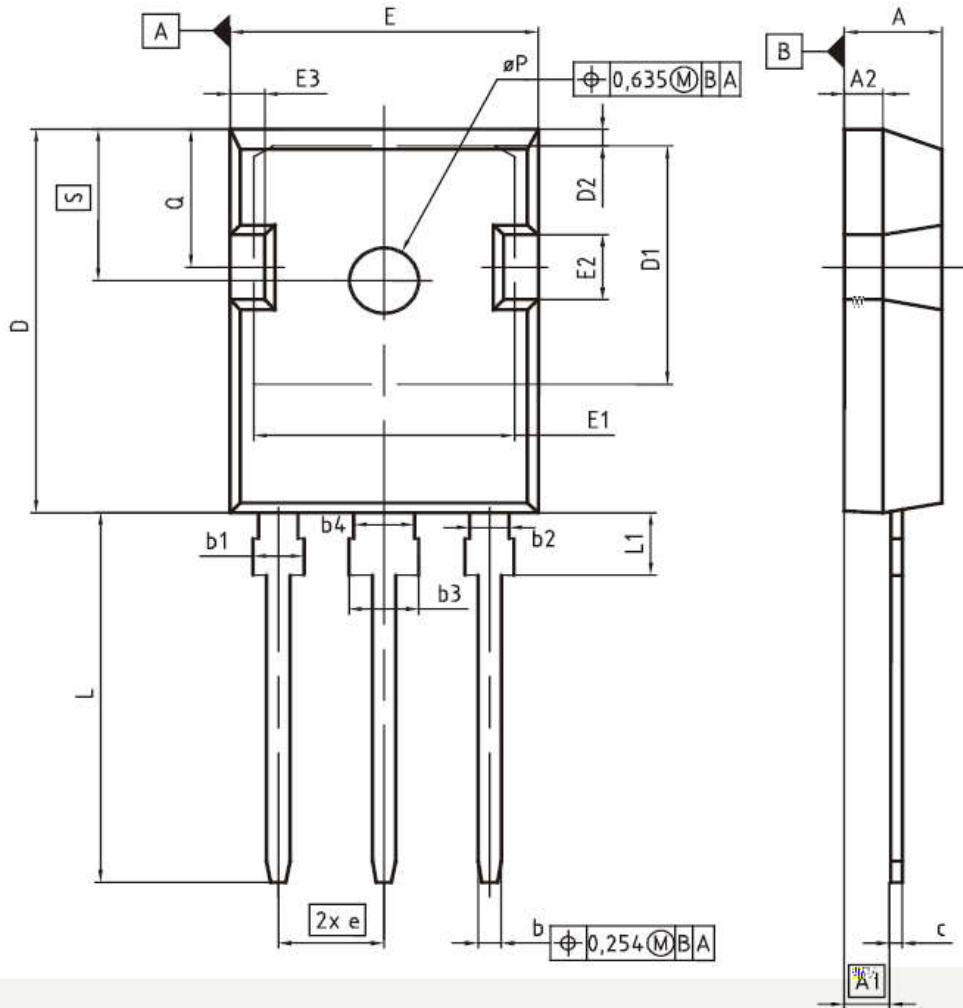


Fig. 10 Capacitance characteristics

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
D2	0.95	1.35	0.037	0.053
E	15.778	16.13	0.618	0.635
E1	13.70	14.15	0.516	0.557
E2	3.68	5.10	0.145	0.201
E3	1.00	2.60	0.039	0.102
e	5.44 (BSC)		0.214 (BSC)	
N	3		3	
L	19.80	20.32	0.780	0.800
L1	4.10	4.47	0.161	0.176
øP	3.50	3.70	0.138	0.146
Q	5.49	6.00	0.216	0.236
S	6.04	6.30	0.238	0.248