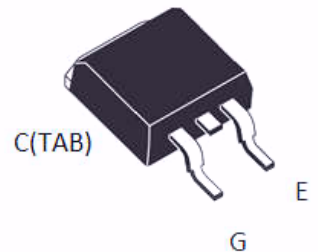
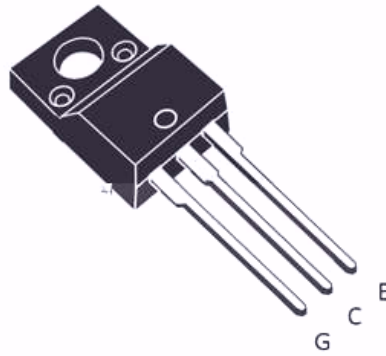
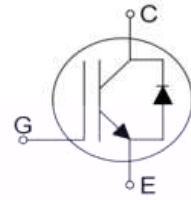
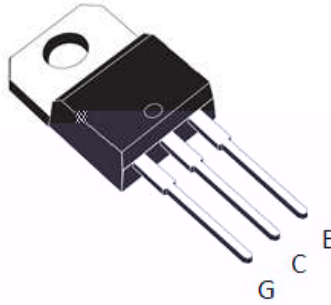


- Max Junction Temperature 150°C
- High breakdown voltage up to 650V for improved reliability
- Short Circuit Rated
- Very Low Saturation Voltage:
 $V_{CE(SAT)} = 1.65V$ (Typ.) @ $I_C = 15A$
- Soft current turn-off waveforms

- Soft switching applications
- Air conditioning
- Motor drive inverter



Product	Package	Packaging
YGP15N65T1	TO-220	Tube
YGK15N65T1	TO-263	Tube
YGF15N65T1	TO-220F	Tube

$T_j = 25$ unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-Emitter Breakdown Voltage	V_{CE}	650	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 $V_{CE} = 650\text{V}$, $T_j = 150^\circ\text{C}$	-	60	A
Pulsed collector current, $V_{GE} = 15\text{V}$, t_p limited by T_{jmax}	I_{CM}	45	A

Short Circuit Withstand Time, V

T_j

$T_j = 25$ unless otherwise specified

Turn-on Delay Time	$t_{d(on)}$	$T_j = 25^\circ\text{C}$ $V_{CC} = 400\text{V},$ $I_C = 15\text{A},$ $V_{GE} = 0/15\text{V},$ $R_g = 12\Omega$	-	15	-	ns
Rise Time	t_r		-	25	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	60	-	ns
Fall Time	t_f		-	46	-	ns
Turn-on Energy	E_{on}		-	0.75	-	mJ
Turn-off Energy	E_{off}		-	0.1	-	mJ

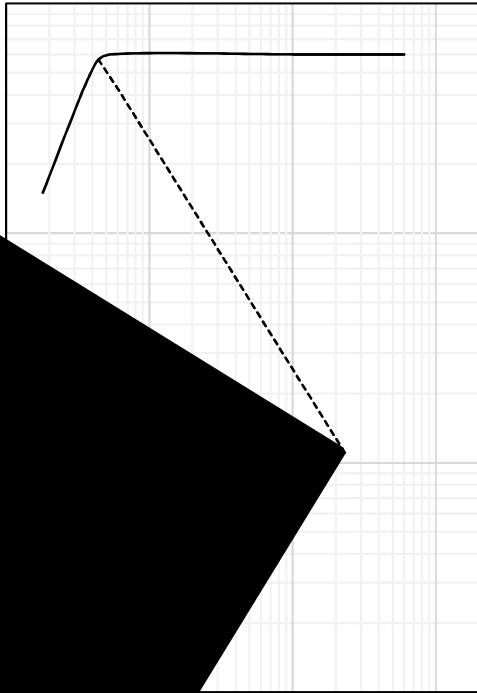
$T_j = 25$ unless otherwise specified

Diode Forward Voltage	V_{FM}	$I_F = 15\text{A}$	-	1.7	-	V

Reverse Recovery Time T_{rr} - 50 - ns

$I_F = 15\text{A}$
 $V_R = 300\text{V},$
 $di/dt = 200\text{A}/\mu\text{s}$

Fig. 1 FBSOA characteristics for TO-220F



Power vs. Frequency for TO-220F

Fig. 2 FBSOA characteristics for TO-220 and TO-263

Fig.4 Load Current vs. Frequency TO-220 and TO-263

Fig. 5 Output characteristics

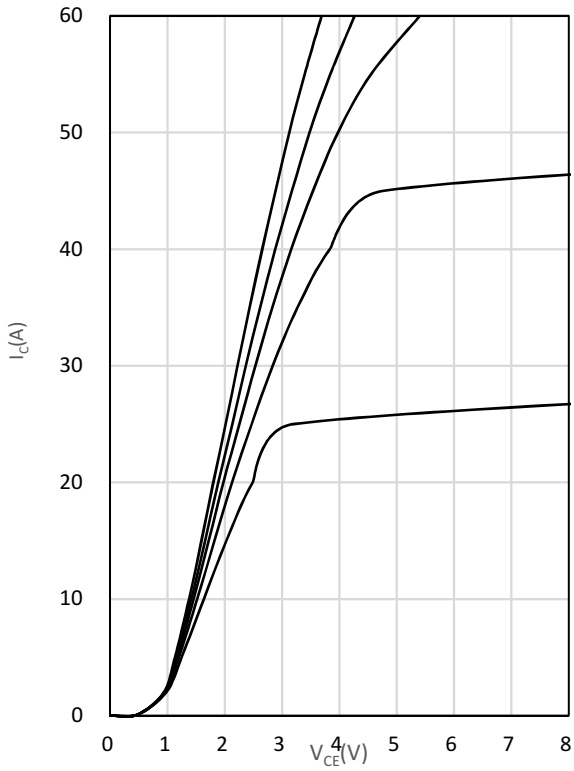


Fig. 6 Saturation voltage characteristics

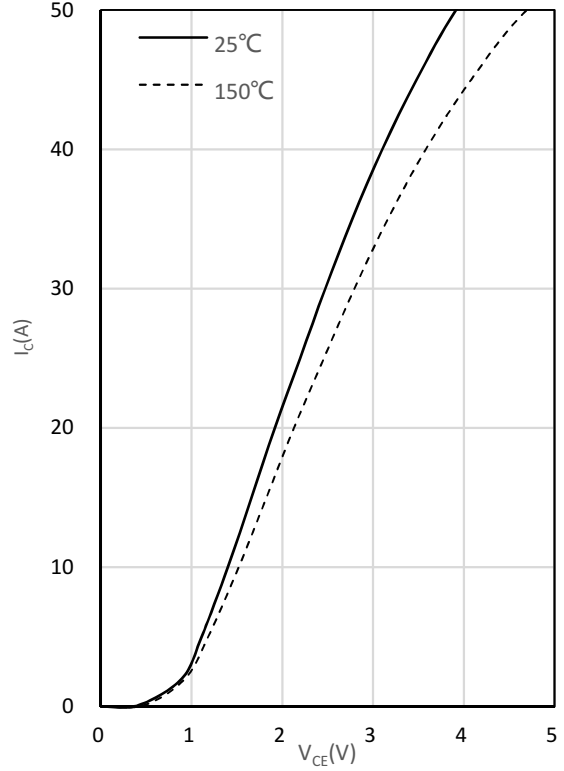


Fig. 7 Switching times vs. gate resistor

Fig. 8 Switching times vs. collector current

Fig. 9 Switching loss vs. gate resistor

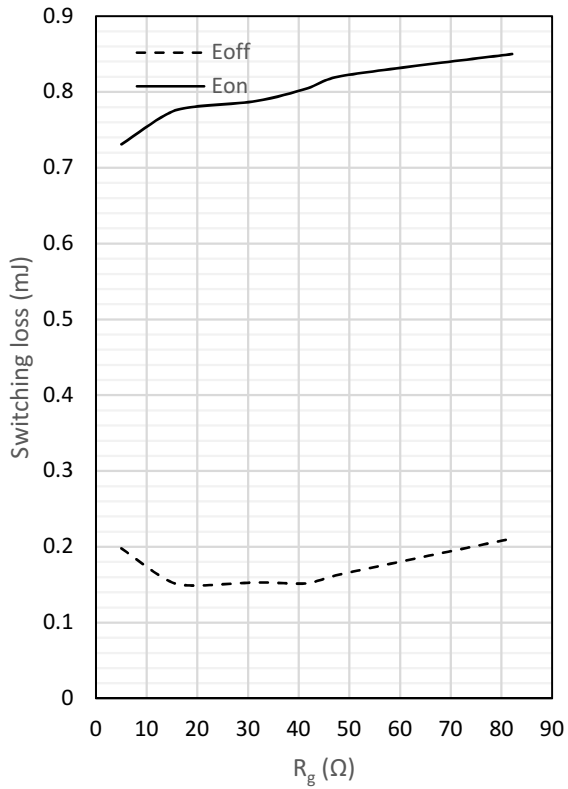


Fig. 10 Switching loss vs. collector current

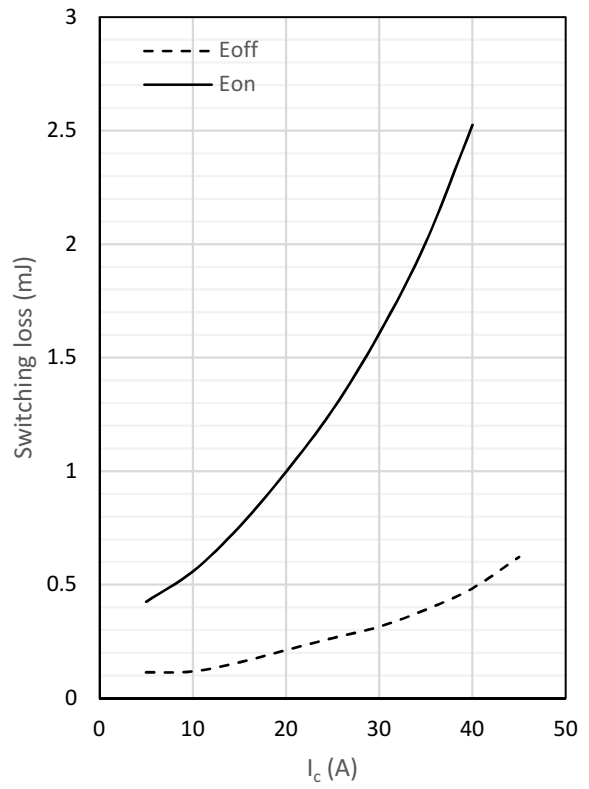
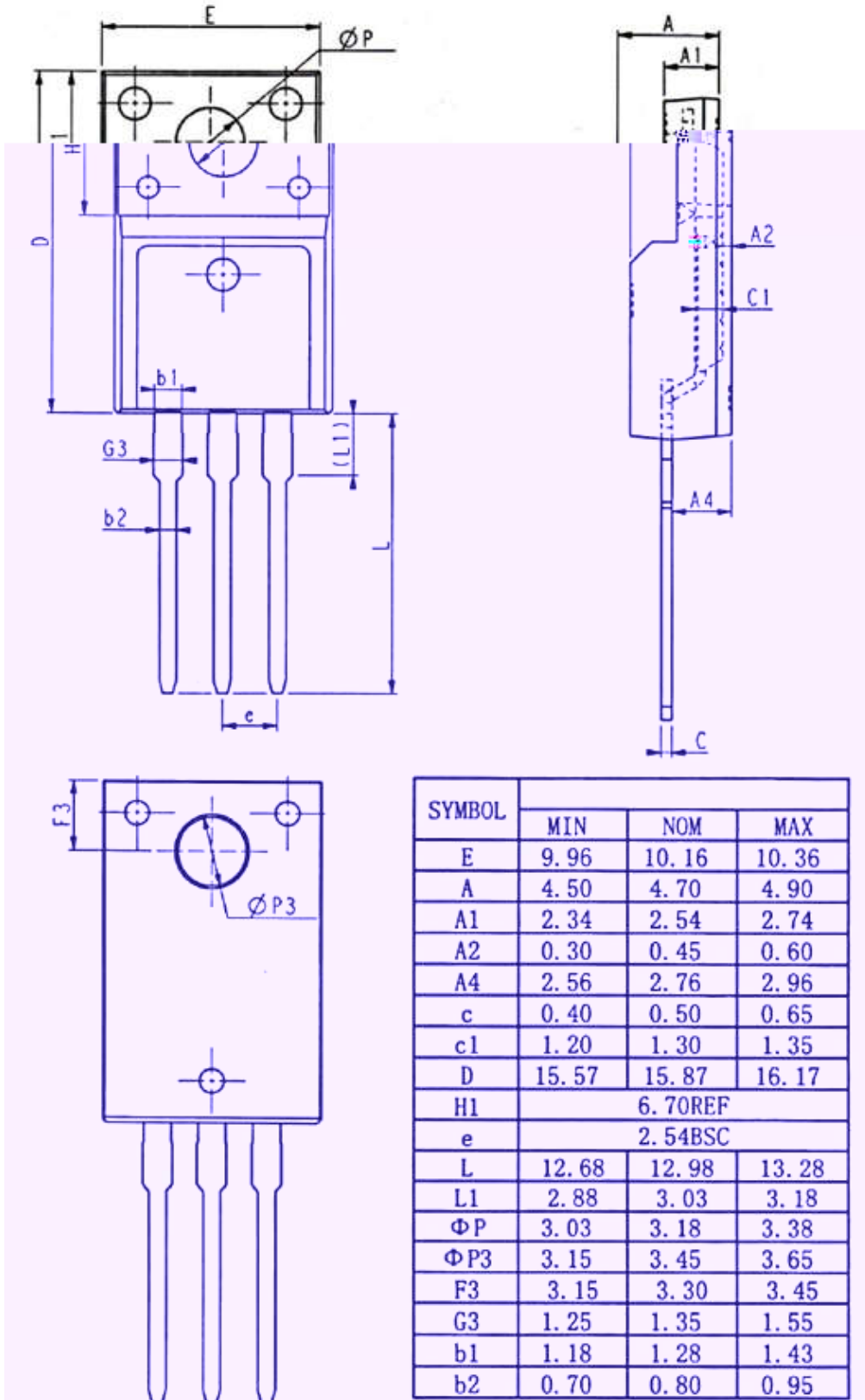
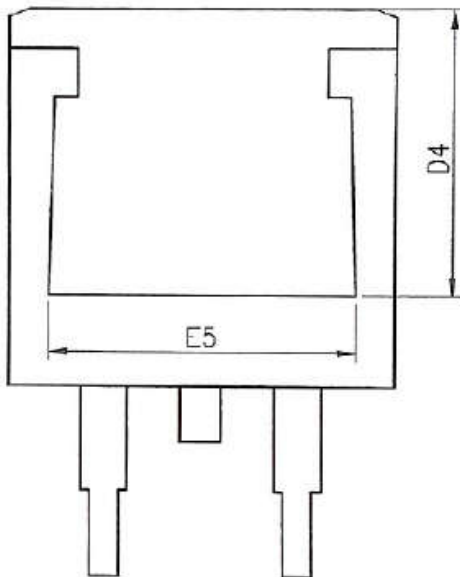
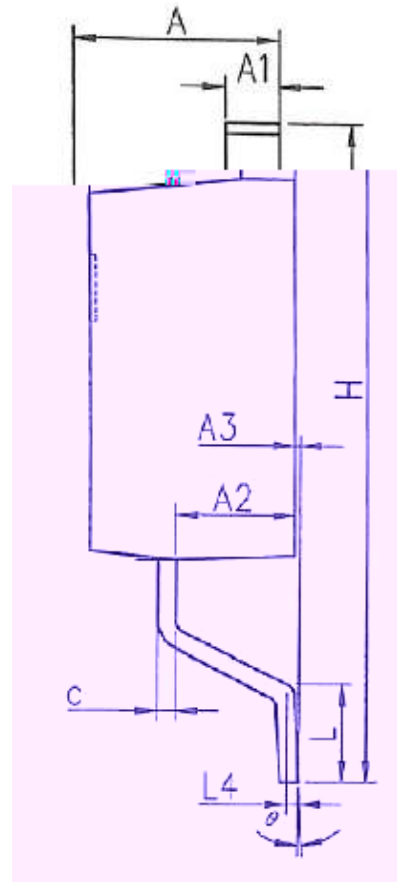
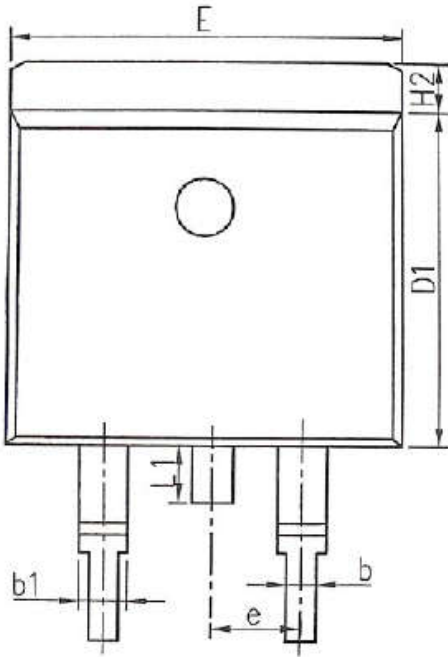


Fig. 11 Gate charge characteristics

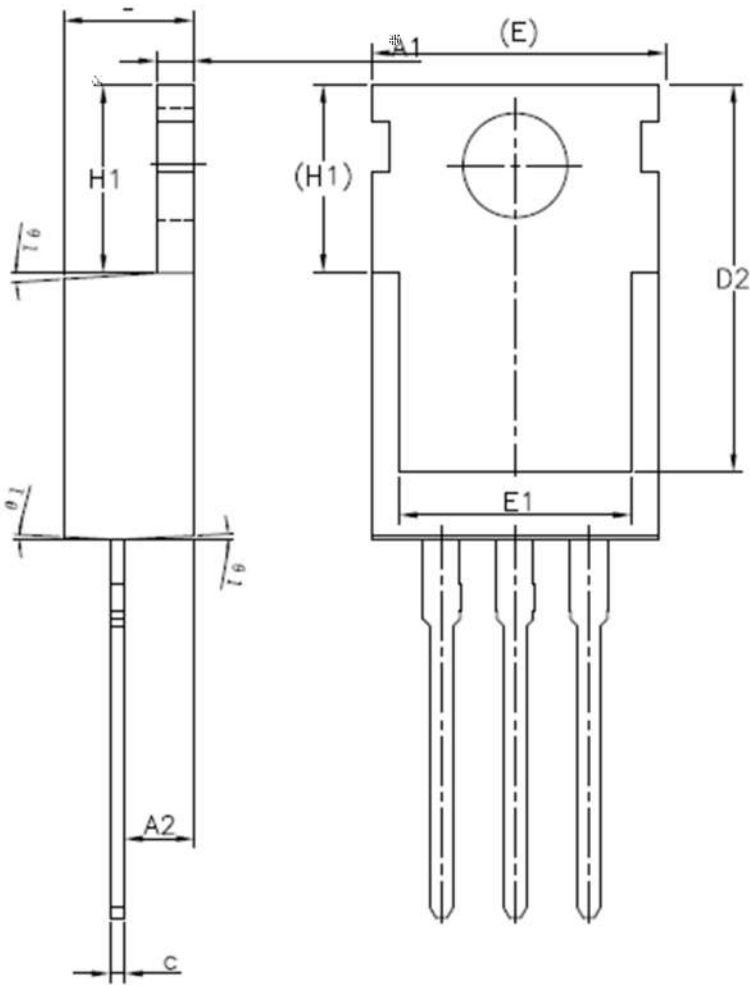


Fig. 12 Capacitance characteristics





SYMBOL	MM		
	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	1.22	1.27	1.42
A2	2.49	2.69	2.89
A3	0.00	0.13	0.25
b	0.70	0.81	0.96
b1	1.17	1.27	1.47
c	0.30	0.38	0.53
D1	8.50	8.76	8.90
D4	6.60	-	-
E	9.88	10.16	10.36
E5	7.06	-	-
e	2.54 BSC		
H	14.70	15.10	15.50
H2	1.07	1.27	1.47
L	2.00	2.30	2.60
L1	1.40	1.55	1.70
L4	0.25 BSC		
θ	0°	5°	9°



SYMBOL	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	-	0.90
b1	1.27	-	1.40
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	-	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20
e	2.54BSC		
e1	5.08BSC		
H1	6.30	6.50	6.70
L	12.78	13.08	13.38
L1	-	-	3.50
L2	4.60REF		
∅P	3.55	3.60	3.65
Q	2.73	-	2.87
θ1	1°	3°	5°

