

NPN Silicon Epitaxial Planar Transistor

Features

- High voltage
- High speed switching

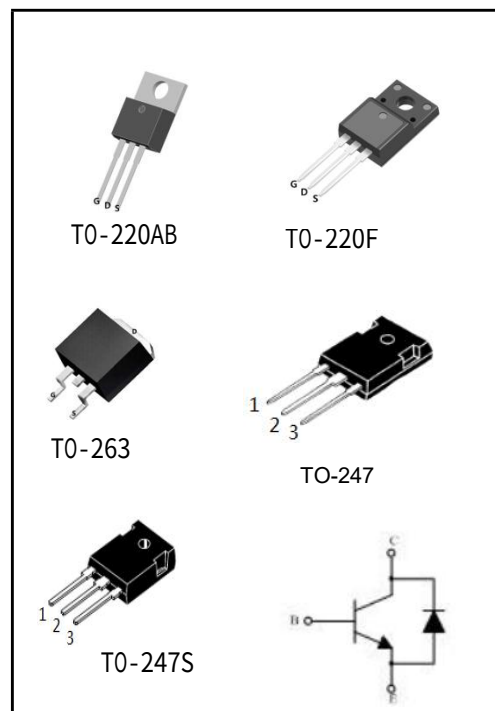


APPLICATIONS

- ELECTRONIC TRANSFORMER
- SWITCH MODE POWER SUPPLY

Mechanical Data

- Case: Molded plastic
- Polarity: As marked
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD22-106



Product Specification Classification

Part Number	Package	Marking	Pack
YFW13009AT	TO-220AB	YFW 13009AT XXXXX	1000PCS/Tape
YFW13009AF	TO-220F	YFW 13009AF XXXXX	1000PCS/Tape
YFW13009AS	TO-263	YFW 13009AS XXXXX	1000PCS/Tape
YFW13009AS-R	TO-263	YFW 13009AS XXXXX	800PCS/Tube
YFW13009PT	TO-247	YFW 13009PT XXXXX	600PCS/Tube
YFW13009PTS	TO-247S	YFW 13009PT XXXXX	600PCS/Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value			Units
		220AB/263	220F	247	
Collector Base Voltage	V_{CBO}	700			V
Collector Emitter Voltage	V_{CEO}	400			V
Emitter Base Voltage	V_{EBO}	9			V
Collector Current	I_C	12			A
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	1.56			°C/W
Power Dissipation (Tc = 25 °C) Superimposed on Rated Load (JEDEC method)	P_{tot}	3			W
Operating Temperature Range	T_J	150			°C
Storage Temperature Range	T_{STG}	-55 to +150°C			°C

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
DC Current Gain	at $V_{CE} = 5V, I_C = 3A$	h_{FE}	8	-	40	-
Collector Base Cutoff Current	at $V_{CB} = 700V$	I_{CBO}	-	-	100	μA
Collector Emitter Cutoff Current	at $V_{CE} = 400V$	I_{CEO}	-	-	100	μA
Emitter Base Cutoff Current	at $V_{EB} = 9V$	I_{EBO}	-	-	100	μA
Collector Emitter Saturation Voltage	at $I_C = 5A, I_B = 1A$	$V_{CE(sat)}$	-	-	1	V
Base Emitter Saturation Voltage	at $I_C = 4A, V_{CE} = 1V$	$V_{BE(sat)}$	-	-	1.6	V
Transition Frequency	at $V_{CE}=10V, I_C=500mA, f=1MHz$	f_T	4	-	-	MHZ

Ratings And Characteristic Curves

Fig1 SOA (DC)

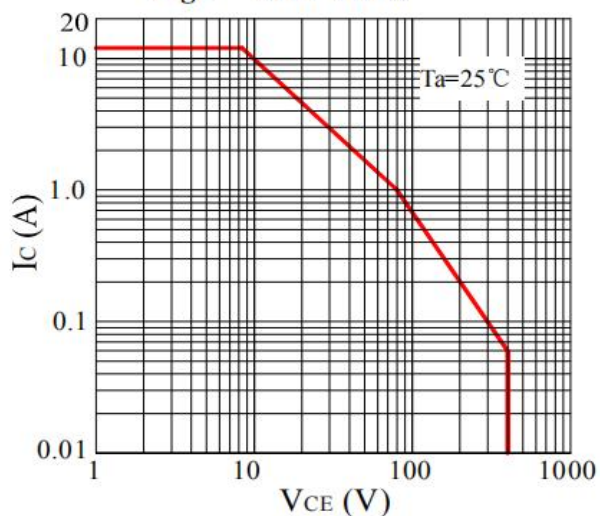


Fig2 $P_{tot} - T$

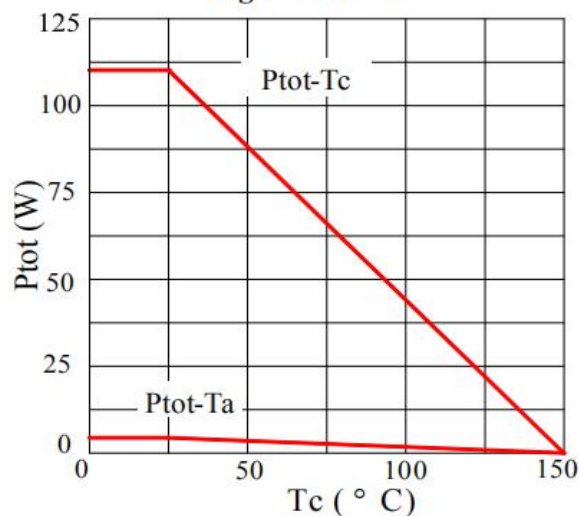


Fig3 Static Characteristic

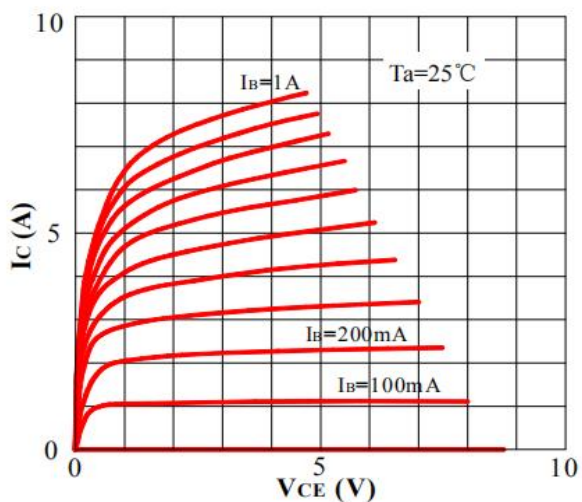
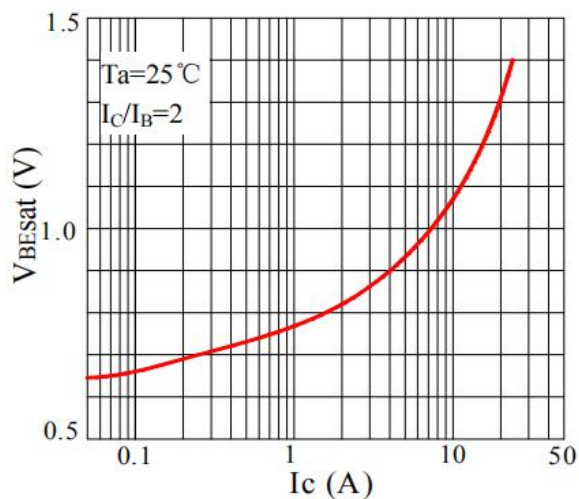
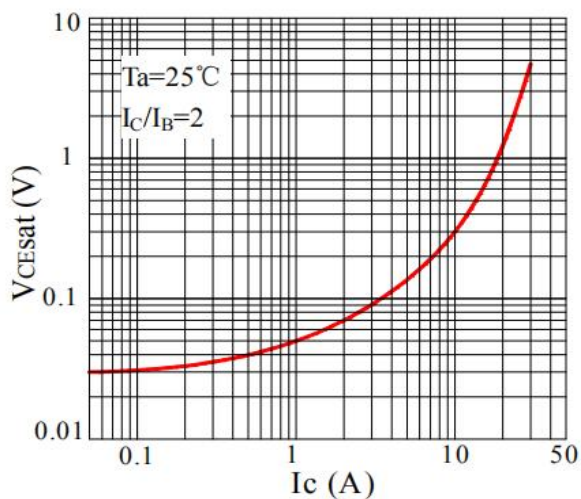
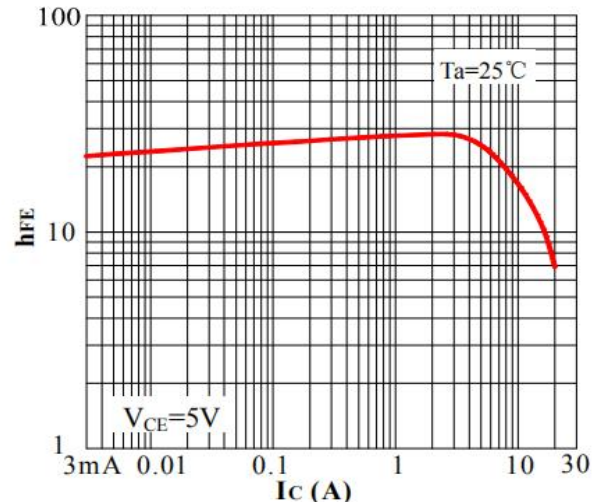


Fig4 $h_{FE}-I_C$



Package Outline Dimensions millimeters

TO-220AB

The image shows a technical drawing of a TO-220AB package. The top view (left) shows a rectangular body with a circular mounting hole. Dimensions include: A (body width), B (hole diameter), C (hole offset), D (total height), E (lead width), L (lead length), M (lead pitch), N (lead thickness), and O (lead diameter). The side view (right) shows the package profile with dimensions: F (body thickness), G (lead thickness), H (body height), I (lead thickness), J (lead length), K (lead diameter), and L (lead length).

Dim.	Min.	Max.
A	10.15	10.35
B	2.50	2.95
C	3.70	3.90
D	28.5	29.5
E	1.20	1.40
F	6.20	6.55
G	2.85	3.25
H	15.0	16.0
I	0.35	0.42
J	4.3	4.55
K	1.2	1.4
L	Typ5.08	
L1	13	14
L2	8.5	9.5
M	Typ2.54	
N	2.8	3.5
O	0.70	0.90
All Dimensions in millimeter		

TO-220F

Technical drawing of a TO-220F package showing three views: top, side, and bottom. Dimensions are labeled as follows:

- Top View:** A (total width), B (width of mounting holes), C (hole diameter), D (total length), F (length of lead), G (lead width), H (lead pitch), I (lead length), P (lead thickness).
- Side View:** J (total height), K (height of mounting holes), L (height of lead), M (total height), N (height of lead), O (lead thickness), Q (lead length).
- Bottom View:** A1 (width of lead).

Dim.	Min.	Max.
A	9.95	10.35
A1	4.5	5.0
B	2.95	3.25
C	1.25	1.45
D	12.65	12.95
E	0.40	0.60
F	2.8	3.5
G	1.30	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.60	4.75
K	2.45	2.65
L	6.45	6.85
M	15.4	16.0
N	2.75	3.05
O	0.45	0.55
P	0.70	0.90

All Dimensions in millimeter

TO-263

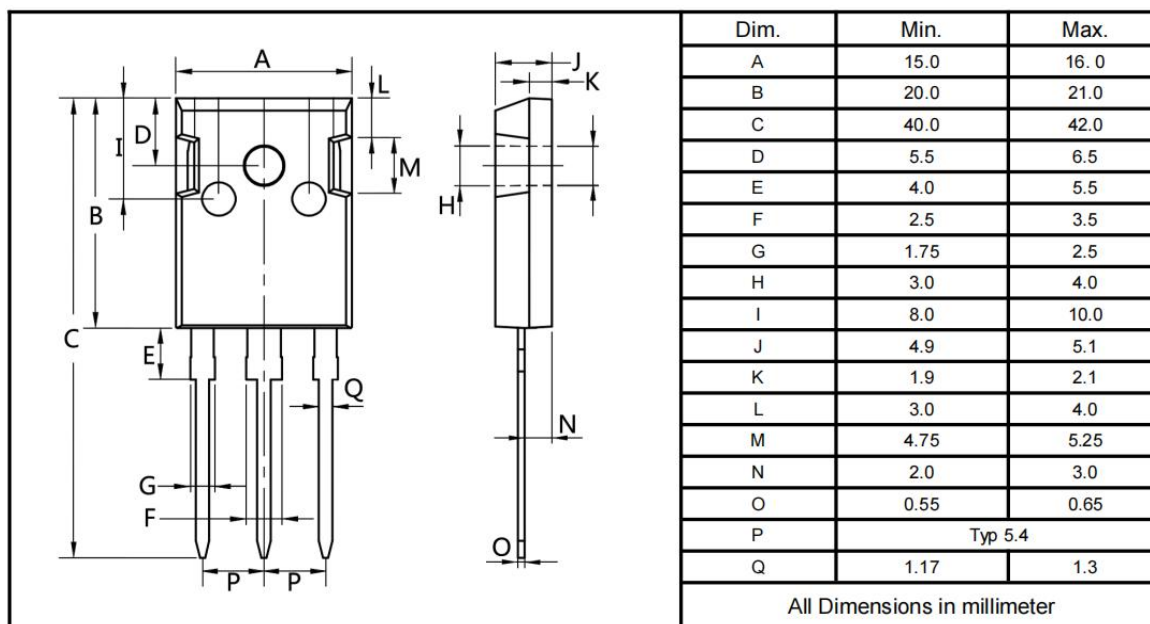
The image shows a technical drawing of a TO-263 package. The top view (left) shows a rectangular body with a flat top and two mounting tabs. Dimensions A, B, C, D, F, G, H, I, and J are indicated. The side view (right) shows the package's profile, including the mounting tabs and the lead. Dimensions K, L, M, N, and O are indicated. The package is shown in a perspective view, with the top view and side view. The dimensions are in millimeters.

Dim.	Min.	Max.
A	10.10	10.35
B	6	8
C	1.2	1.5
D	0.55	1.0
E	4.3	5.3
F	1.4	1.6
G	0.75	0.85
H	1.2	1.5
I	Typ2.54	
J	8.5	9.5
K	4.3	4.55
L	1.25	1.35
M	0.02	0.23
N	2.2	2.8
O	0.3	0.4

All Dimensions in millimeter

Package Outline Dimensions millimeters

TO-247



TO-247S

