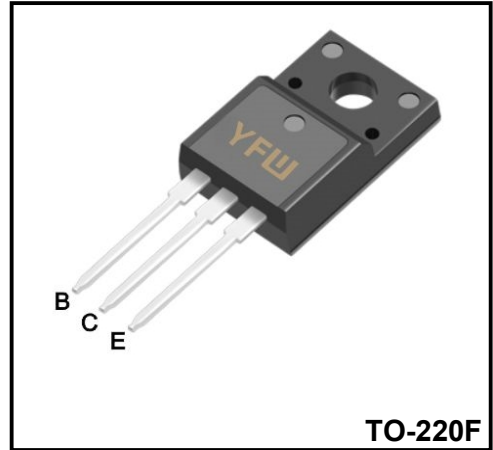


**NPN Plastic-Encapsulate Transistors**



**Applications**

- ◆ High-voltage, high-speed, power switching
- ◆ inductive circuit
- ◆ Switching regulator's
- ◆ DC-DC converter.

**Features**

- ◆ Collector-emitter sustaining voltage :  
 $BV_{CEO} = 400V(\text{Min})$
- ◆ Fast Switching Speed
- ◆ Collector-Emitter Saturation Voltage  
 $V_{CE(\text{sat})} = 0.8V(\text{Max.}) (I_C=4A)$

**Absolute Maximum Rating (Ta=25°C)**

Parameter	Symbol	Value	Unit
Collector-base voltage	$BV_{CBO}$	450	V
Collector-emitter voltage	$BV_{CEO}$	400	V
Emitter-Base voltage	$BV_{EBO}$	8	V
Collector current DC	$I_C$	7	A
Collector current Pulse	$I_{CM}$	14	A
Base current	$I_B$	2	A
Collector power dissipation	$P_C$	40	W
	$T_c=25^\circ\text{C}$		
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55~150	°C

\*  $PW \leq 10\text{ms}$ , Duty Cycle  $\leq 50\%$

**Thermal Characteristic**

Parameter	Symbol	Value	Units
Thermal Resistance, Junction-case	$R_{\theta JC}$	3.125	°C/W
Thermal Resistance, Junction-Ambient	$R_{\theta JA}$	62.5	°C/W

**Electrical Characteristics (Ta=25°C)**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage	$BV_{CBO}$	$I_C = 100\mu A, I_E = 0$	450			
Collector-emitter voltage	$BV_{CEO}$	$I_C = 10mA, I_B = 0$	400			V
Emitter-base voltage	$BV_{EBO}$	$I_E = 100\mu A, I_C = 0$	8			
Collector cut-off current	$I_{CBO}$	$V_{CB} = 450V, I_E = 0$			100	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 8V, I_C = 0$			100	$\mu A$
DC current gain	$h_{FE}$	$V_{CE} = 5V, I_C = 4A$	10			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 4A, I_B = 0.8A$			0.8	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 4A, I_B = 0.8A$			1.2	V
Transition frequency	$f_T$	$V_{CE} = 10V, I_C = 0.5A$		100		MHz
Output capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0, f = 1MHz$		30		pF
Turn-on time	$t_{on}$	$I_C = 5A, I_{B1} = -I_{B2} = 1A$ $R_L = 30\Omega, V_{CC} = 150V$			1.6	$\mu S$
Storage time	$t_{stg}$				3	$\mu S$
Fall time	$t_f$				0.7	$\mu S$

Typical Characteristics

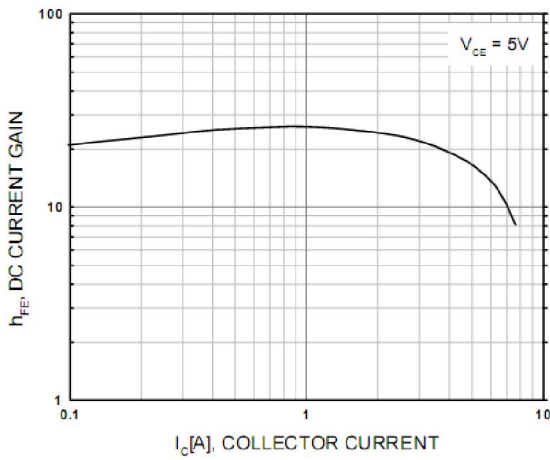


Figure 1. DC Current Gain

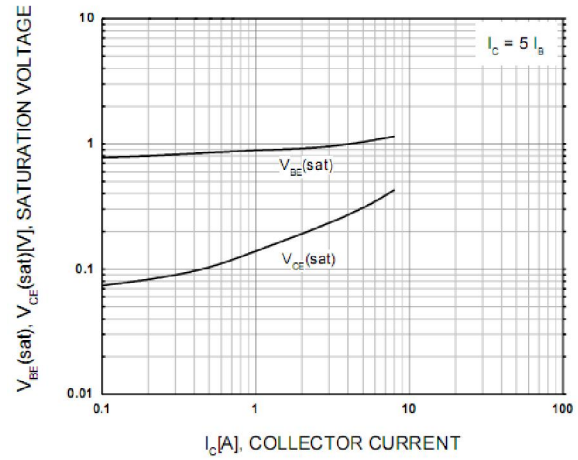


Figure 2. Base-Emitter Saturation Voltage  
Collector-emitter Saturation voltage

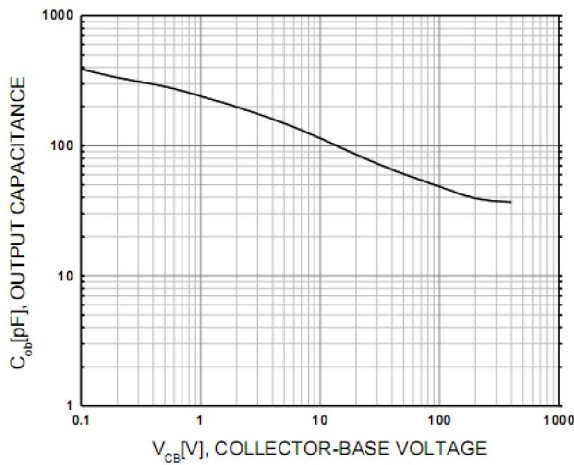


Figure 3. Collector Output Capacitance

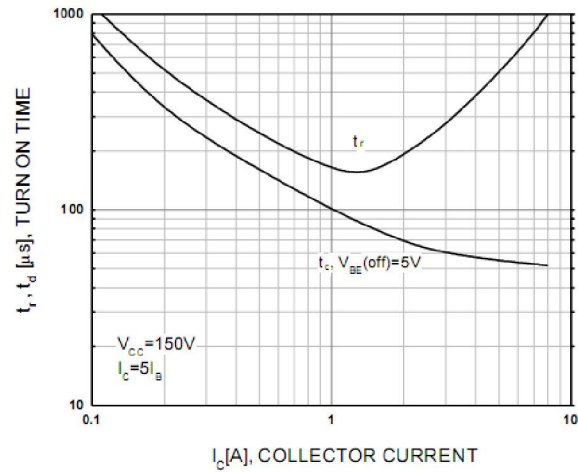


Figure 4. Turn On Time

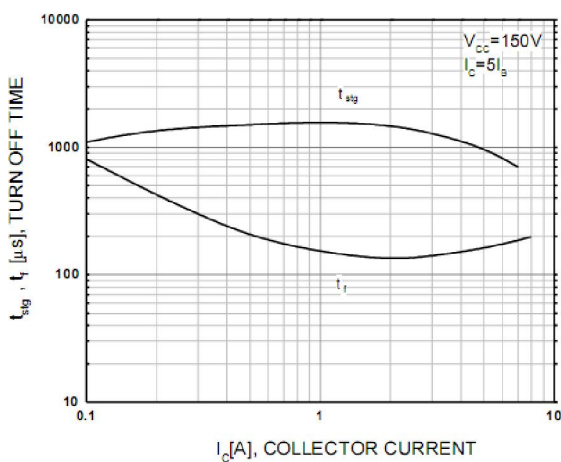


Figure 5. Turn Off Time

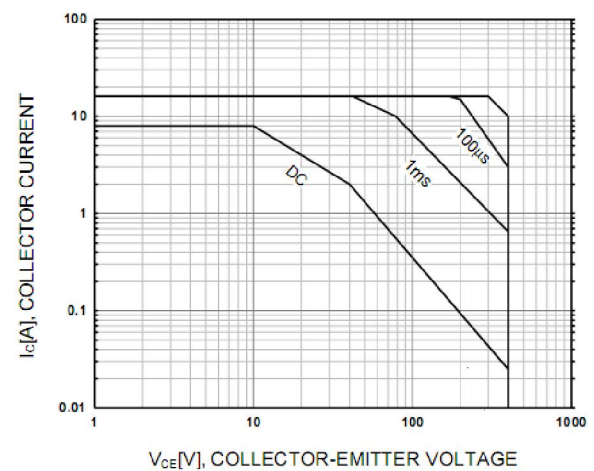
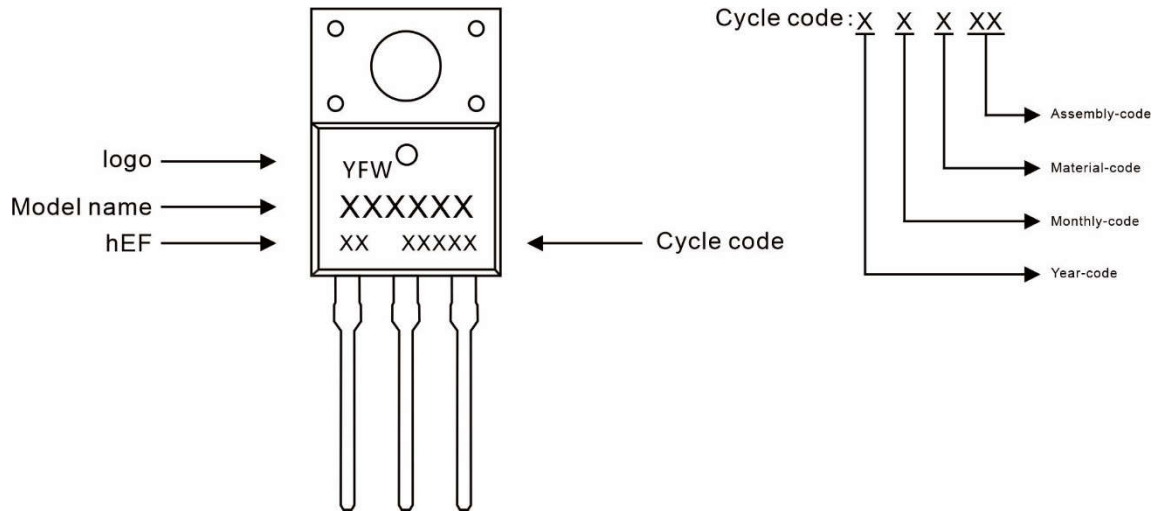


Figure 6. Safe Operating Area

**Marking Diagram**



**Ordering information**

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
2SC4977	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

**Package Dimensions**

**TO-220F**

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b	0.75	0.85	0.030	0.033
b1	1.24	1.44	0.049	0.057
c	0.40	0.60	0.016	0.024
D	10.00	10.32	0.394	0.406
E	15.75	16.05	0.620	0.632
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	3.10	3.5	0.122	0.138
L	13.50	13.90	0.531	0.547
L1	2.90	3.30	0.114	0.130
Φ	3.10	3.30	0.122	0.130

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