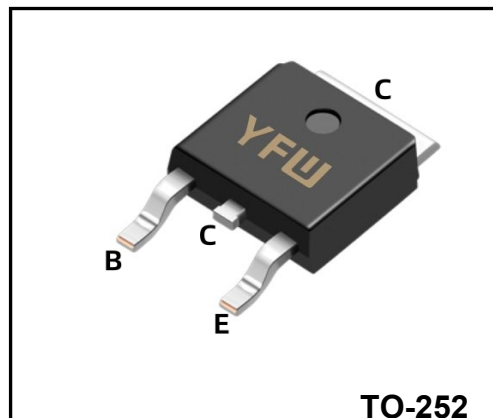


NPN Plastic-Encapsulate Transistors

High Voltage Switch Mode Applications

- High Speed Switching
- Suitable for Switching Regulator and Motor Control



TO-252

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	BV_{CBO}	700	V
Collector-Emitter Voltage	BV_{CEO}	400	V
Emitter-Base Voltage	BV_{EBO}	9	V
Collector Current	I_C	1.5	A
Collector Power Dissipation (Ta=25°C)	P_C	20	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55~150	°C

Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-base breakdown voltage	BV_{CBO}	$I_C = 100\mu A, I_E = 0$	700			V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1mA, I_B = 0$	400			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 100\mu A, I_C = 0$	9			V
Collector -base cut-off current	I_{CBO}	$V_{CB} = 700V, I_E = 0$			10	μA
Emitter- base cut-off current	I_{EBO}	$V_{EB} = 9V, I_C = 0$			10	μA
DC current gain*	$h_{FE(1)}$	$V_{CE} = 2V, I_C = 0.5A$	8		40	
	$h_{FE(2)}$	$V_{CE} = 2V, I_C = 1A$	5			
Collector-emitter saturation voltage*	$V_{CE(sat)}$	$I_C = 1A, I_B = 0.25A$			1	V
Base -emitter saturation voltage*	$V_{BE(sat)}$	$I_C = 1A, I_B = 0.25A$			1.2	V
Transition frequency	f_T	$V_{CE} = 10V, I_C = 0.1A$	4			MHz
Output capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 0.1MHz$		21		pF

Note *Pulse Test: $PW \leq 350\mu s$, Duty Cycle $\leq 2\%$

Typical Characteristic

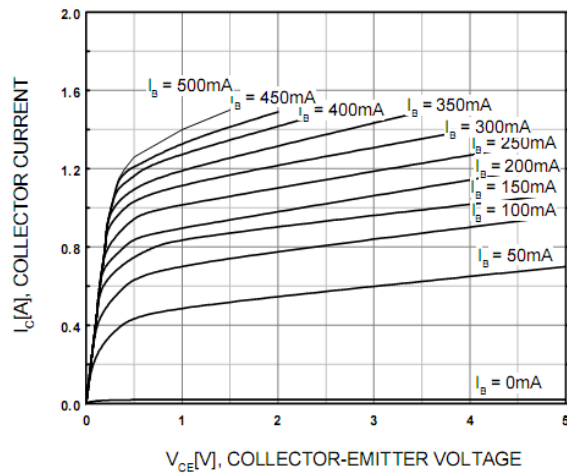


Figure 1. Static Characteristic

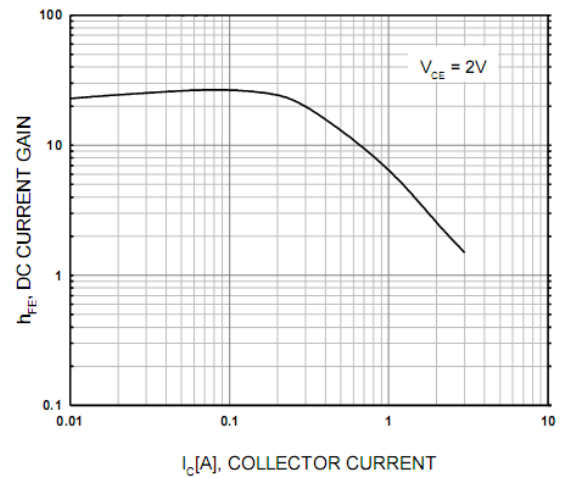


Figure 2. DC current Gain

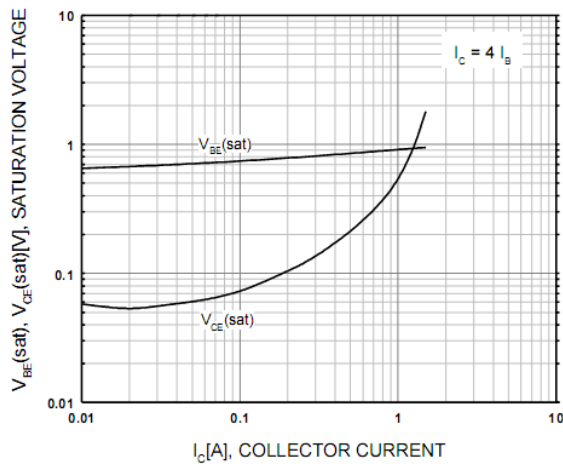


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

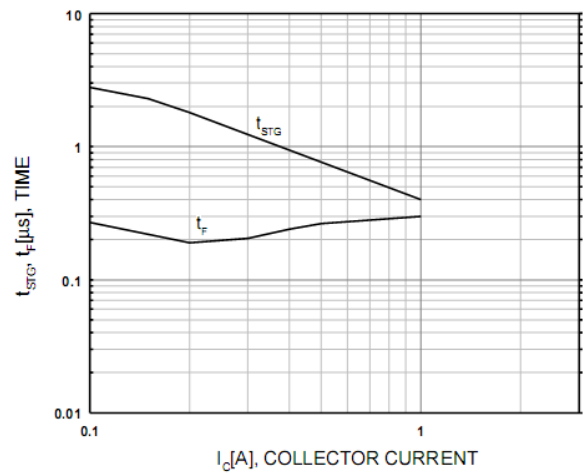


Figure 4. Switching Time

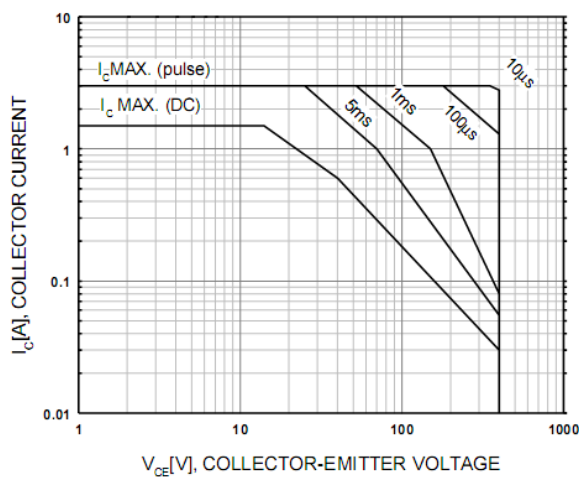


Figure 5. Safe Operating Area

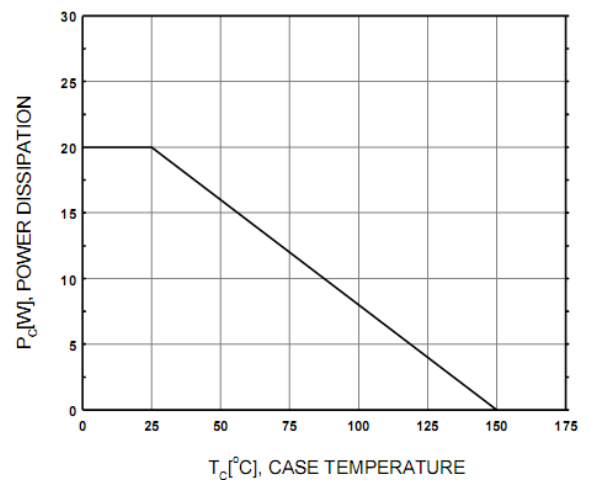
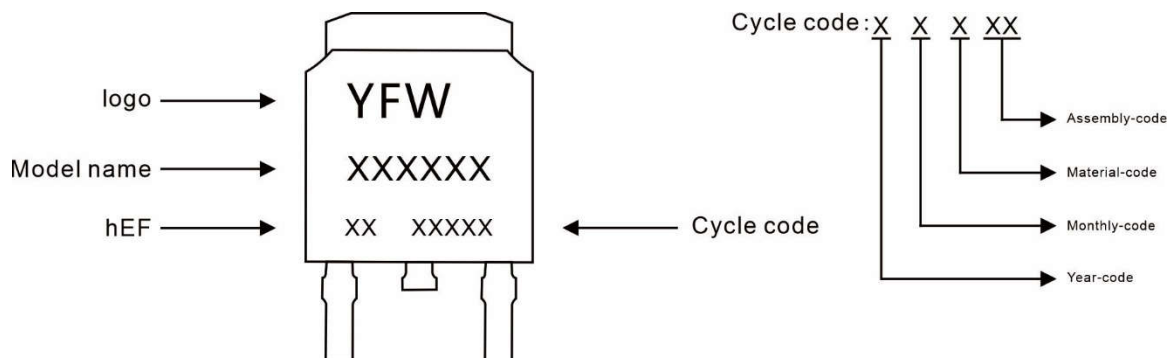


Figure 6. Power Derating

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
3DD13003	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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