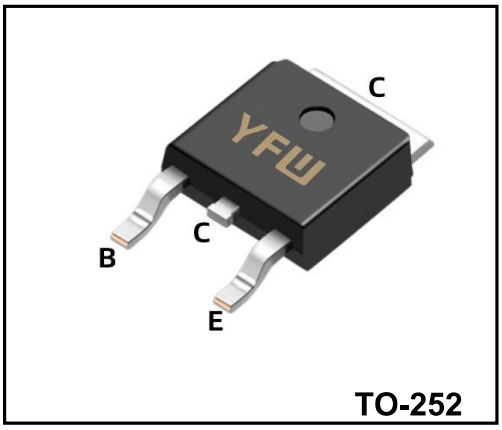
NPN Plastic-Encapsulate Transistors



Applications

- DC-to-DC converters
- Inverters
- Motor control systems
- High-frequency electronic lighting ballast applications

Features

- Fast switching
- Low thermal resistance
- High voltage capability
- Surface-mountable package

Absolute Maximum Rating (Ta=25℃)

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 (DC)	I_C	4	A
Peak collector current	I_{CM}	8	A
Base current	I_B	2	A
Total power dissipation (T_{mb}≤25℃)	P_{tot}	80	W
Junction temperature	T_j	150	℃
Storage temperature	T_{stg}	-55～150	℃

Thermal characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal resistance, Junction to mounting base	$R_{\theta JA}$		60		℃/W
Thermal resistance, Junction to case	$R_{\theta JMB}$			1.56	℃/W

Electrical Characteristics (Ta=25℃)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	BV_{CBO}	I_C = 100μA，I_B = 0	700			V
Collector-emitter breakdown voltage	BV_{CEO}	I_E = 10mA，I_C = 0	400			V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 100μA，I_C = 0	9			V
Collector-base current	I_{CBO}	V_{CB} = 700V，I_B = 0			10	μA
Collector-emitter current	I_{CEO}	V_{CB} = 400V，I_B = 0			10	mA
Collector cut-off current	I_{EBO}	V_{CE} = 9V，I_B = 0			10	μA
DC current gain *	h_{FE}	V_{CE} = 5V，I_C= 0.1A V_{CE} = 3V，I_C= 0.8A	30 20		40	
Collector-emitter saturation voltage*	$V_{CE(sat)}$	I_C = 1.0A，I_B = 0.2A I_C = 3.5A，I_B =1A			0.5 1.5	V
Base -emitter saturation voltage*	$V_{BE(sat)}$	I_C = 3.5A，I_B = 1A			1.5	V
Transition frequency	f_T	V_{CE} =10V，I_B = 0.5A	4			MHz
Output capacitance	C_{ob}	V_{CB} =10V,I_E=0,f =1MHz		65		pF
Storage Time	t_s	I_C =2.5A, I_{Bon} =0.5A,I_{Boff} =-0.5A R_L=60Ω,V_{BB}=-5V, T_{mb}=25℃ resistive load; tp = 300μs			3.5	μs
Fall Time	t_f				0.5	μs

* Pulse test: pulse duration ≤ 300 μs, duty cycle ≤ 2 %

Typical Characteristics

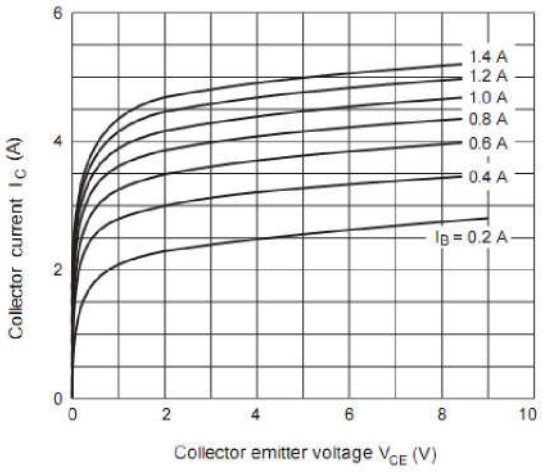


Figure 1. Static Characteristic

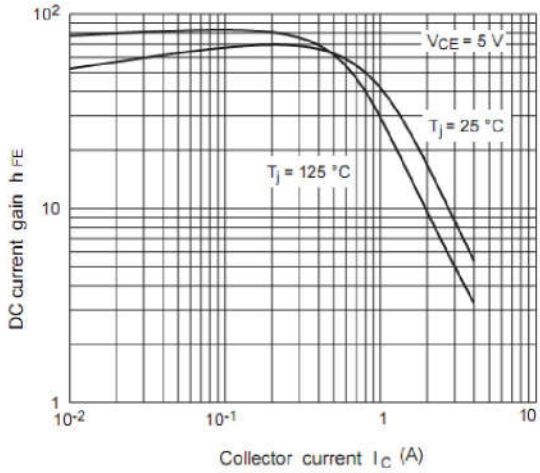


Figure 2. DC current Gain

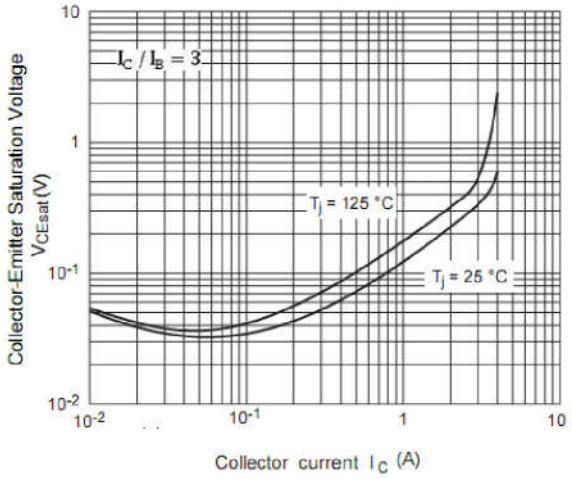


Figure 3. Collector-Emitter Saturation Voltage

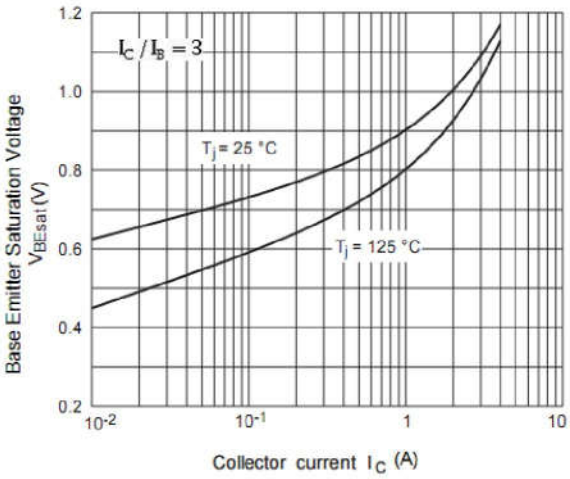


Figure 4. Base-Emitter Saturation Voltage

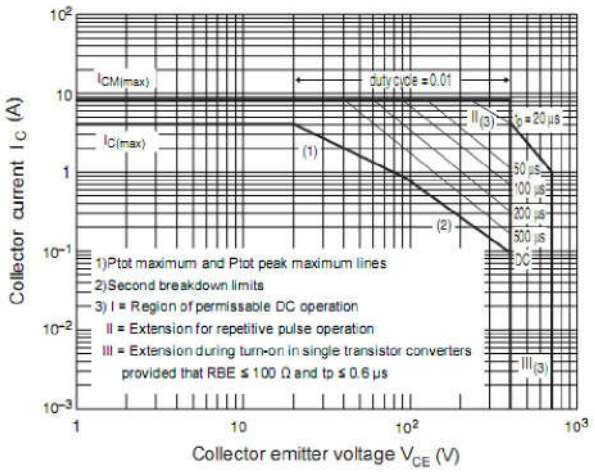


Figure 5. Safe operating area

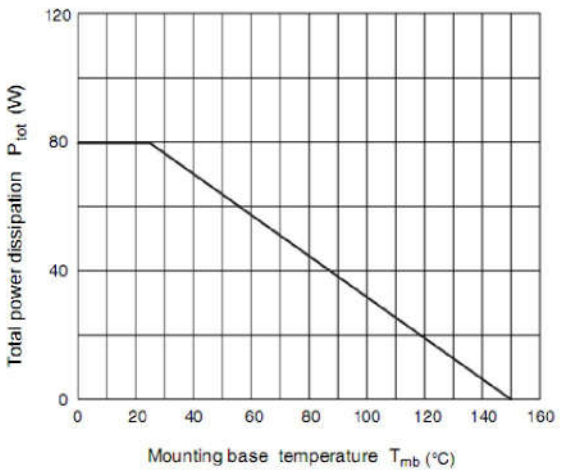
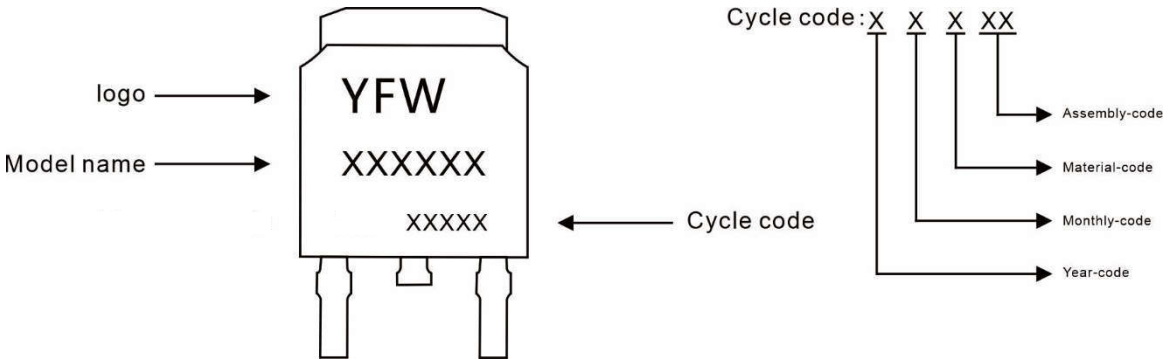


Figure 6. Power Derating

Marking Diagram

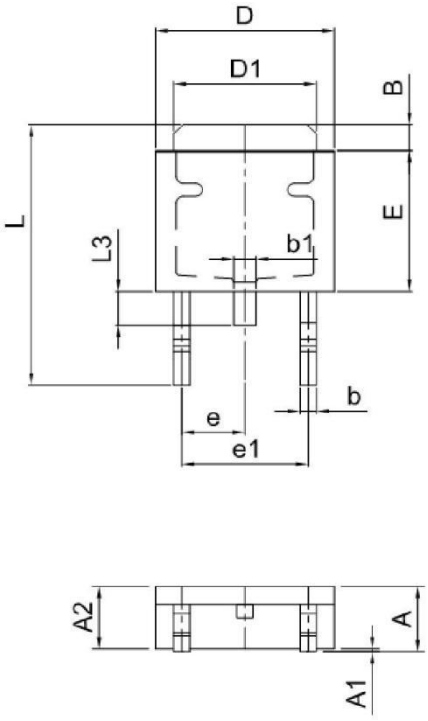


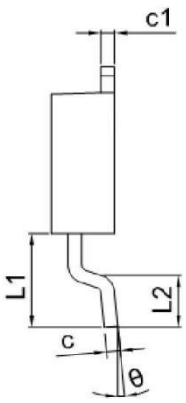
Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW13005AD	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	0.95	1.55	0.037	0.061
b	0.50	0.80	0.020	0.031
b1	0.60	0.90	0.024	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	5.80	6.40	0.228	0.252
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	3.50	0.106	0.138
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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