

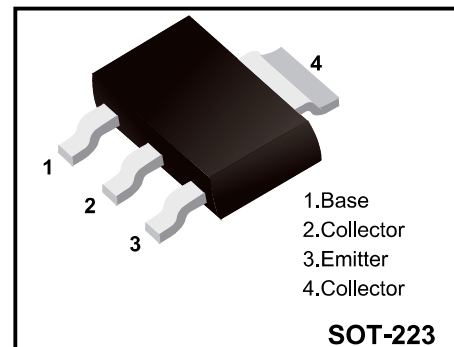
NPN Plastic-Encapsulate Transistors

Applications

- ◆Darlington replacement
- ◆Flash gun convertors and Battery powered circuits

Features

- ◆High DC current gain
- ◆Low saturation voltage
- ◆Extremely low equivalent on-resistance;
 $R_{CE(sat)}$ 92mΩ at 3A
- ◆Complementary to FMM T789



Marking Code

FZT689

YFW FZT689

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Collector-base voltage	BV_{CBO}	20	V
Collector-emitter voltage	BV_{CEO}	20	V
Emitter-base voltage	BV_{EBO}	5	V
Collector current	I_C	3	A
Collector current puls	I_{CM}	8	A
Collector power dissipation	P_{CM}	2	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 ~ + 150	°C

Electrical Characteristics (Ta=25°C)

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Collector-base breakdown voltage	$I_C = 100\mu A, I_E = 0$	BV_{CBO}	20			V
Collector-emitter breakdown voltage	$I_C = 10mA, I_B = 0$	BV_{CEO}	20			V
Emitter-base breakdown voltage	$I_E = 100\mu A, I_C = 0$	BV_{EBO}	5			V
Collector cut-off current	$V_{CB} = 16V, I_E = 0$	I_{CBO}			0.1	μA
Emitter cut-off current	$V_{EB} = 4V, I_C = 0$	I_{EBO}			0.1	μA
DC current gain*	$V_{CE} = 2V, I_C = 0.1A$ $V_{CE} = 2V, I_C = 2A$ $V_{CE} = 2V, I_C = 6A$	h_{FE}	500 400 150			
Collector-emitter saturation voltage*	$I_C = 100mA, I_B = 0.5mA$ $I_C = 2A, I_B = 10mA$ $I_C = 3A, I_B = 20mA$	$V_{CE(sat)}$			0.10 0.50 0.45	V
Equivalent on-resistance	$I_C = 3A, I_B = 20mA$	$R_{CE(sat)}$		92	120	mΩ
Base-emitter saturation voltage*	$I_C = 1A, I_B = 10mA$	$V_{BE(sat)}$			0.9	V
Base-emitter on voltage*	$V_{CE} = 2V, I_C = 1A$	$V_{BE(on)}$			0.9	V
Transition frequency	$V_{CE} = 5V, I_C = 50mA, f = 50MHz$	f_T	150			MHz
Input capacitance	$V_{EB} = 0.5V, I_E = 0, f = 1.0MHz$	C_{ibo}		200		pF
Output capacitance	$V_{CB} = 10V, I_E = 0, f = 1.0MHz$	C_{obo}		16		
Switching times	Turn on times	t_{on}		30		ns
	Turn off times	t_{off}		800		

* Measured under pulsed conditions. Pulse width=300μs. Duty cycle≤2%

Typical Characteristics

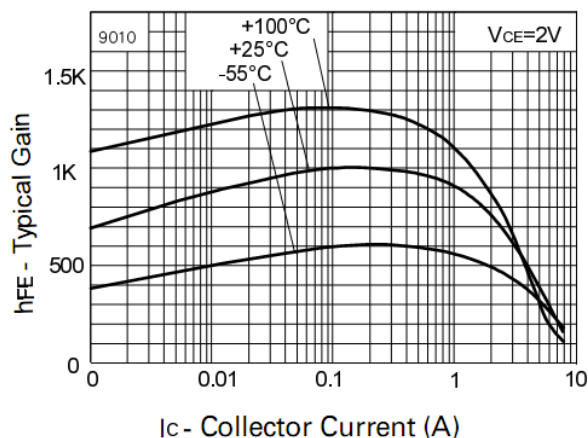


Figure 1. Typical Pulsed Current Gain vs Collector Current

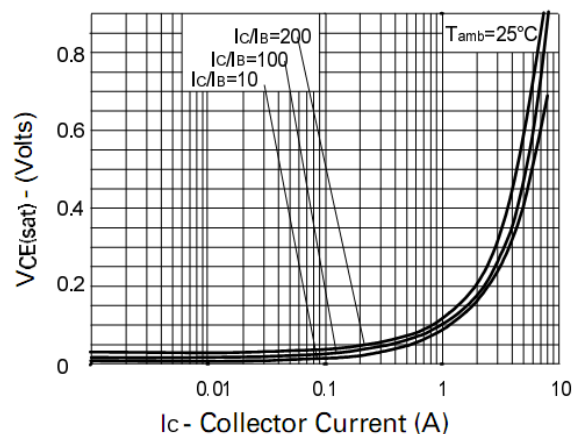


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

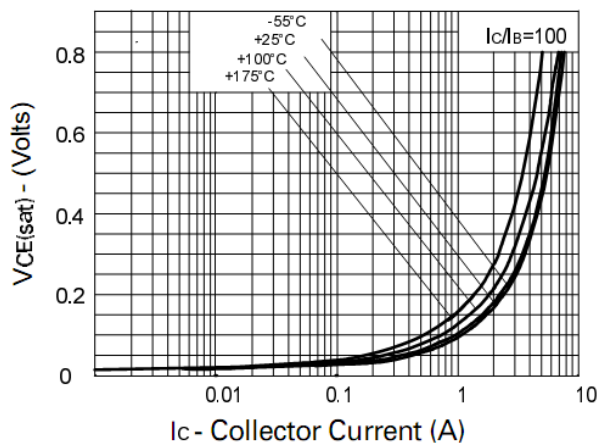


Figure 3. Collector -Emitter Saturation Voltage vs Collector Current

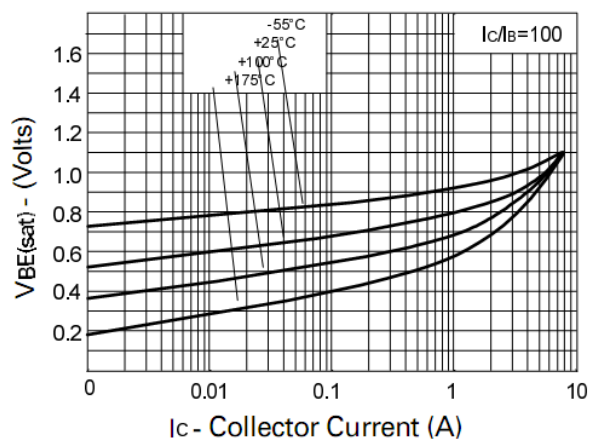


Figure 4. Base-Emitter Saturation Voltage vs Collector Current

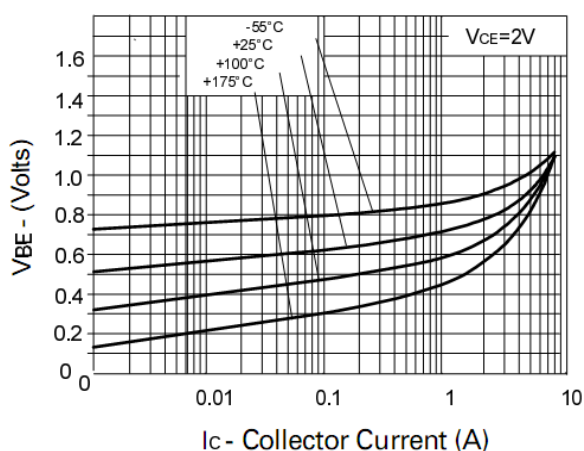


Figure 5. Base-emitter on voltage vs collector current

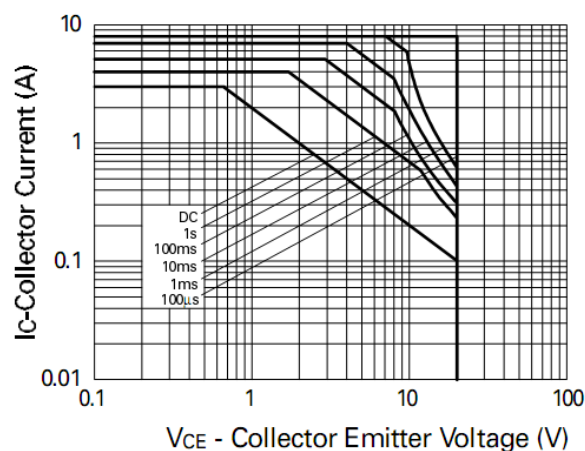


Figure 6. Safe Operating Area

Ordering information

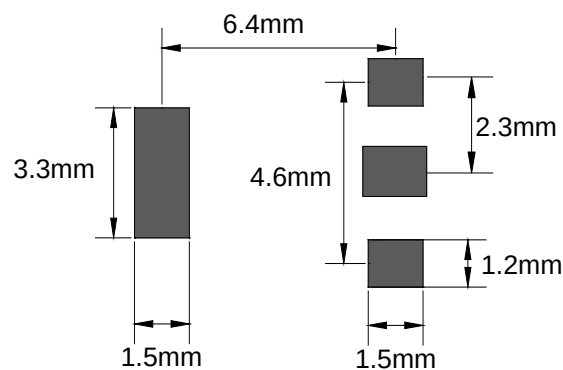
Package	Packing Description	Base Quantity	Packing Quantity
SOT-223	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton
	Tape/Reel, 13" reel	2500pcs/Reel	5000PCS/Box 30000PCS/Carton

Package Dimensions

SOT-223

Dlm	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.80	0.059	0.071
A1	0.00	0.10	0.000	0.004
A2	1.50	1.70	0.059	0.067
b	0.65	0.75	0.026	0.030
c	0.20	0.30	0.008	0.012
D	6.40	6.60	0.252	0.260
D1	2.90	3.10	0.114	0.122
E	3.30	3.70	0.130	0.146
E1	6.85	7.15	0.270	0.281
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	1.65	1.85	0.065	0.073
L1	0.90	1.15	0.035	0.045

The recommended mounting pad size



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