



JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

TO-220 Plastic-Encapsulate Transistors

3DD13003 TRANSISTOR (NPN)

FEATURES

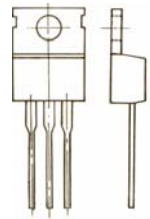
- power switching applications

MAXIMUM RATINGS* $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	700	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current -Continuous	1.5	A
P_C	Collector Dissipation	2	W
T_J, T_{stg}	Junction and Storage Temperature	-55-150	$^{\circ}\text{C}$

TO-220

1. BASE
2. COLLECTOR
3. EMITTER



1 2 3

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

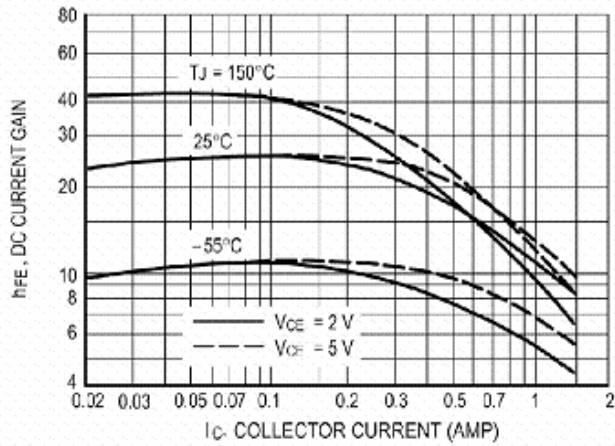
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=1000\mu\text{A}, I_E=0$	700			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	400			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=1\text{mA}, I_C=0$	9			V
Collector cut-off current	I_{CBO}	$V_{CB}=700\text{V}, I_E=0$			1000	μA
Collector cut-off current	I_{CEO}	$V_{CE}=400\text{V}, I_B=0$			500	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=9\text{V}, I_C=0$			1000	μA
DC current gain	$h_{FE(1)}$	$V_{CE}=5\text{V}, I_C=0.5\text{A}$	8		40	
	$h_{FE(2)}$	$V_{CE}=5\text{V}, I_C=1.5\text{A}$	5			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1000\text{mA}, I_B=250\text{mA}$			1	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1000\text{mA}, I_B=250\text{mA}$			1.2	V
Base-emitter voltage	V_{BE}	$I_E=2000\text{mA}$			3	V
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=100\text{mA}$ $f=1\text{MHz}$	5			MHz
Fall time	t_f	$I_C=1\text{A}, I_{B1}=-I_{B2}=0.2\text{A}$			0.5	μs
Storage time	t_s	$V_{CC}=100\text{V}$			2.5	μs

CLASSIFICATION OF $h_{FE(1)}$

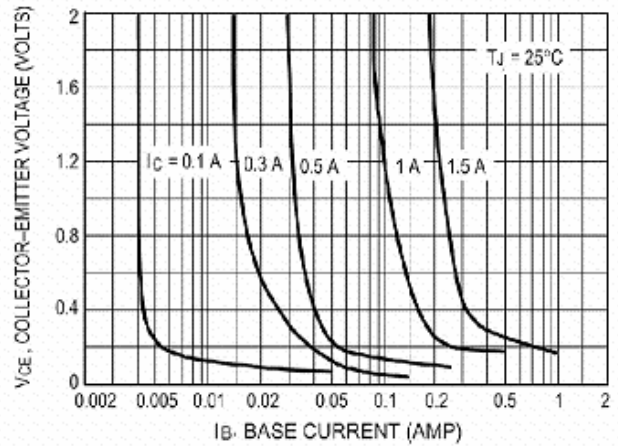
Rank							
Range	8-10	10-15	15-20	20-25	25-30	30-35	35-40

Typical Characteristics

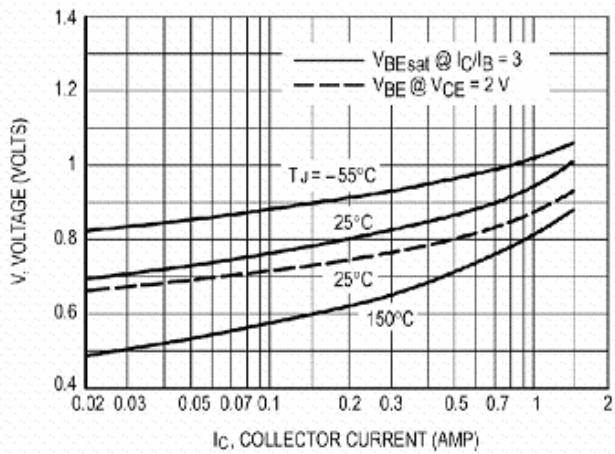
3DD13003



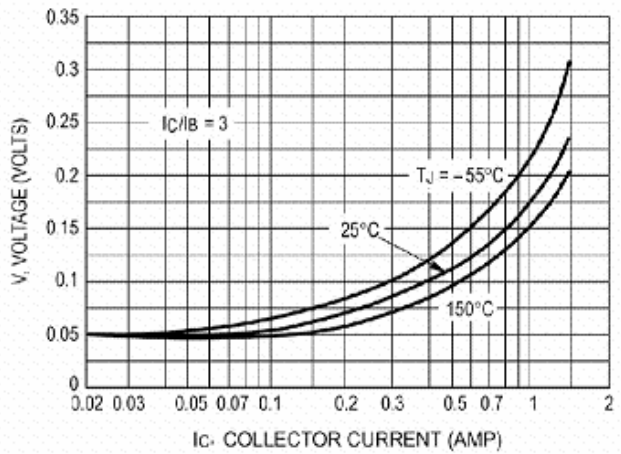
DC Current Gain



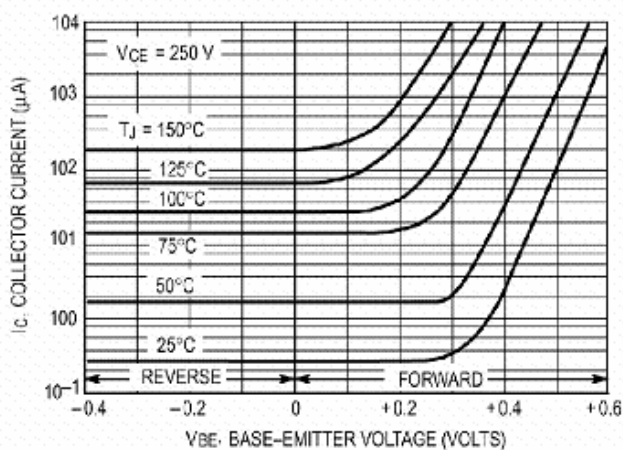
Collector Saturation Region



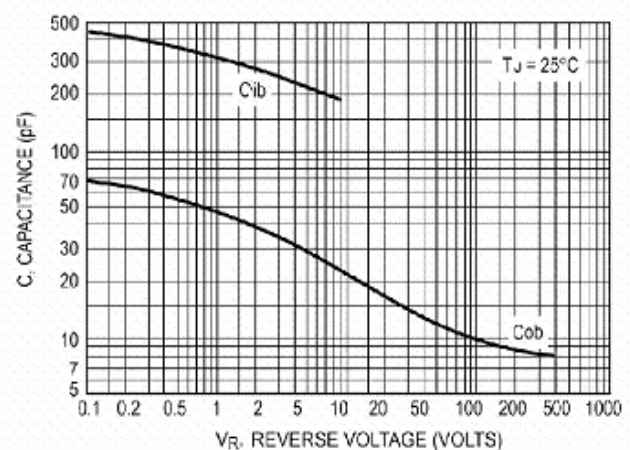
Base-Emitter Voltage



Collector-Emitter Saturation Region



Collector Cutoff Region



Capacitance