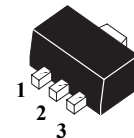


**NPN Epitaxial Planar Transistors**

**(Pb)** Lead(Pb)-Free

**SOT-89**


1. BASE  
2. COLLECTOR  
3. EMITTER

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C)**

Rating	Symbol	Limits	Unit
Collector-Base Voltage	V <sub>CBO</sub>	180	V
Collector-Emitter Voltage	V <sub>CEO</sub>	160	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C(DC)</sub>	1.5	A
	I <sub>C(Pulse)</sub>	3	
Collector Power Dissipation	P <sub>D</sub>	1	W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

**Device Marking**

WTM669A=669A

**ELECTRICAL CHARACTERISTICS(T<sub>A</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage I <sub>C</sub> =1mA, I <sub>E</sub> =0	BV <sub>CBO</sub>	180	-	-	V
Collector-Emitter Breakdown Voltage I <sub>C</sub> =10mA, I <sub>B</sub> =0	BV <sub>CEO</sub>	160	-	-	V
Emitter-Base Breakdown Voltage I <sub>E</sub> =1mA, I <sub>C</sub> =0	BV <sub>EBO</sub>	5	-	-	V
Collector Cutoff Current V <sub>CB</sub> =160V, I <sub>E</sub> =0	I <sub>CBO</sub>	-	-	10	μA

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C Unless otherwise noted)**

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

**ON CHARACTERISTICS<sup>(1)</sup>**

DC Current Gain V <sub>CE</sub> =5V, I <sub>C</sub> =150mA V <sub>CE</sub> =5V, I <sub>C</sub> =500mA	h <sub>FE1</sub> h <sub>FE2</sub>	60 30	- -	200 -	-
Collector-Emitter Saturation Voltage I <sub>C</sub> =600mA, I <sub>B</sub> =50mA	V <sub>CE(sat)</sub>	-	-	1	V
Base-Emitter Saturation Voltage V <sub>CE</sub> =5V, I <sub>C</sub> =150mA	V <sub>BE(on)</sub>	-	-	1.5	V

1. Pulse Test: Pulse Width ≤ 380μs, Duty Cycle ≤ 2%

**DYNAMIC CHARACTERISTICS**

Transition Frequency V <sub>CE</sub> =5V, I <sub>C</sub> =10mA, f=100MHz	f <sub>T</sub>	-	140	-	MHz
Output Capacitance V <sub>CB</sub> =10V, f=1MHz	C <sub>ob</sub>	-	14	-	pF

**CLASSIFICATION OF h<sub>FE1</sub>**

Rank	B	C
h <sub>FE1</sub>	60-120	100-200

## ELECTRICAL CHARACTERISTIC CURVES

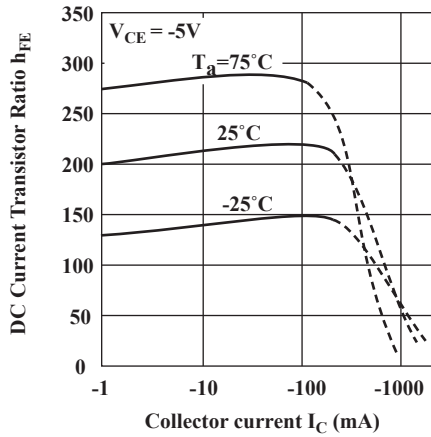


Fig.1 Current Gain & Collector Current

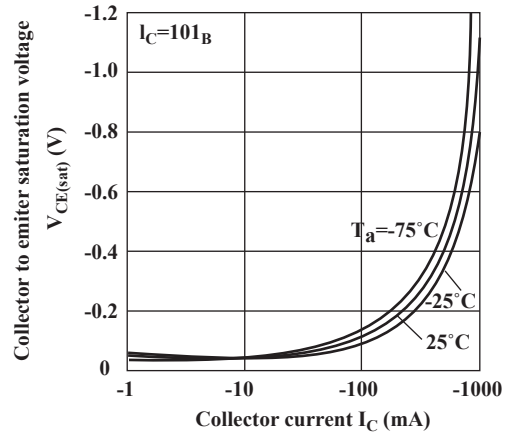


Fig.2 Saturation Voltage & Collector Current

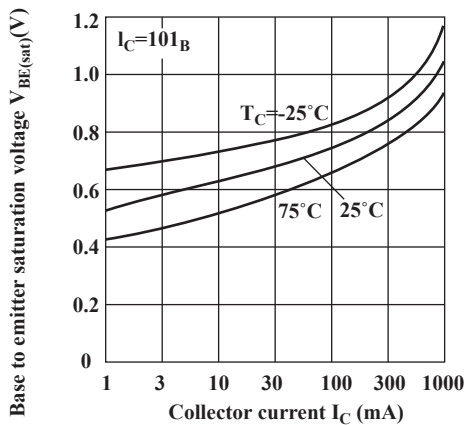


Fig.3 Saturation Voltage & Collector Current

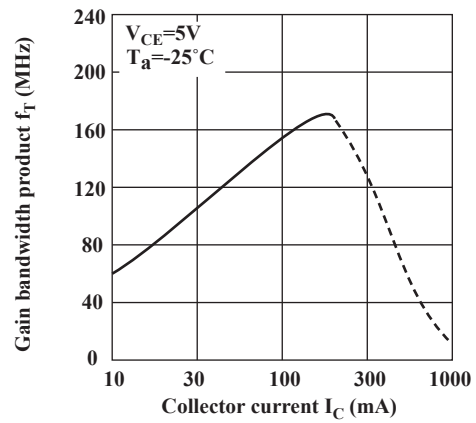


Fig.4 Gain Bandwidth Product & Collector Current

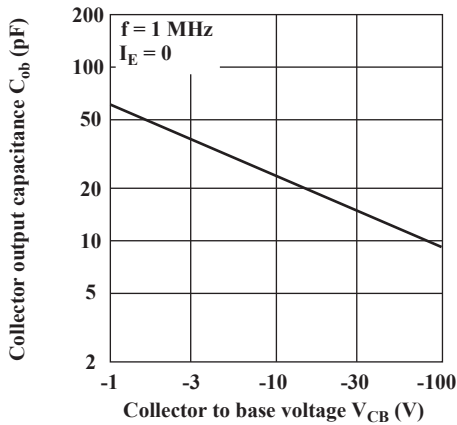


Fig.5 Capacitance & Collector to Base Voltage

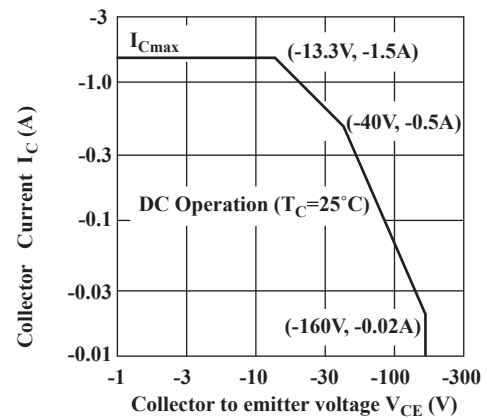
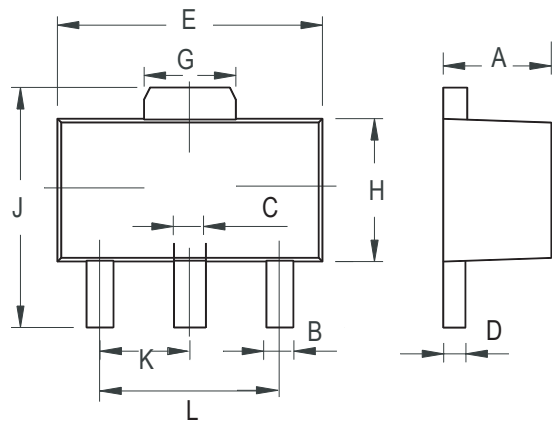


Fig.6 Safe Operating Area

**SOT-89 Outline Dimensions**

unit:mm



SOT-89		
Dim	Min	Max
A	1.400	1.600
B	0.320	0.520
C	0.360	0.560
D	0.350	0.440
E	4.400	4.600
G	1.400	1.800
H	2.300	2.600
J	3.940	4.250
K	1.500TYP	
L	2.900	3.100