



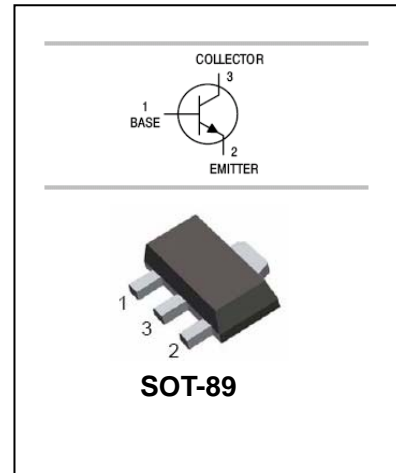
**DONGGUAN NANJING ELECTRONICS LTD.,**

**NPN Silicon Epitaxial Transistor**

**2SD999**

**FEATURES**

- Low Collector Saturation Voltage:  
 $V_{CE(sat)} < 0.4V$  ( $I_C = 1.0A, I_B = 100mA$ )
- Excellent DC Current Gain Linearity:  
 $h_{FE} = 140$  Typ. ( $V_{CE} = 1.0V, I_C = 1.0A$ )
- Complements to PNP type 2SB798



**ORDERING INFORMATION**

Type No.	Marking	Package Code
2SD999	CM/CL/CK	SOT-89

**MAXIMUM RATING @ Ta=25°C unless otherwise specified**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	30	V
$V_{CEO}$	Collector-Emitter Voltage	25	V
$V_{EBO}$	Emitter-Base Voltage	5.0	V
$I_C$	Collector Current	1.0	A
$P_C$	Collector power dissipation	2.0	W
$T_j$	Junction Temperature	-55 to +150	°C
$T_{stg}$	Storage Temperature	-55 to +150	°C

# NPN Silicon Epitaxial Transistor

# 2SD999

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	30			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=2mA, I_B=0$	25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5.0			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=30V, I_E=0$			0.1	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5.0V, I_C=0$			0.1	$\mu A$
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1.0A, I_B=0.1A$		0.21	0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1.0A, I_B=0.1A$		1.0	1.2	V
Base to emitter voltage	$V_{BE}$	$V_{CE}=6.0V, I_C=10mA$	600	630	700	mV
DC current gain(note)	$h_{FE}$	$V_{CE}=1.0V, I_C=100mA$	90	200	400	
		$V_{CE}=1.0V, I_C=1.0A$	50	140		
Current gain bandwidth product	$f_T$	$V_{CE}=6V, I_E=-10mA$		130		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=20V, f=1MHz, I_E=0A$		22		pF

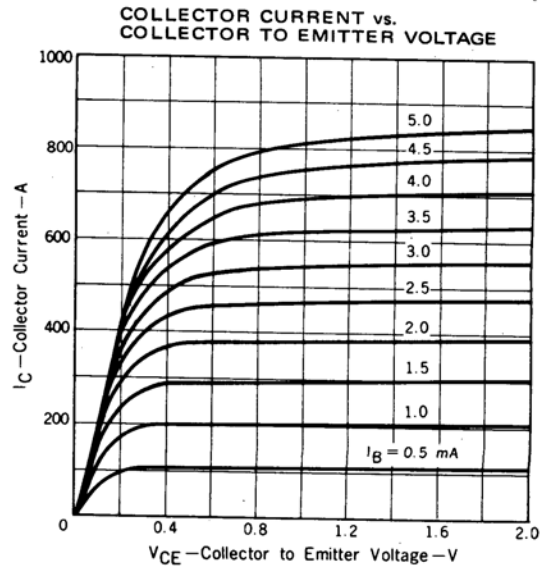
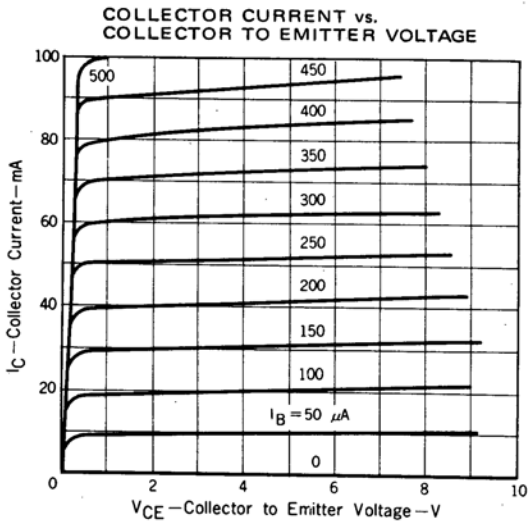
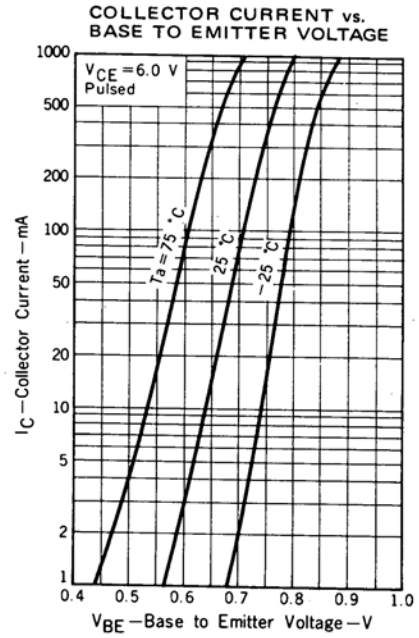
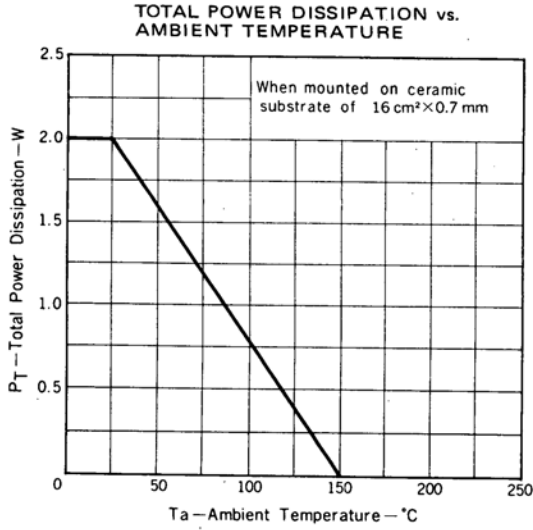
## CLASSIFICATION OF $h_{FE}$

RANK	M	L	K
RANGE	90-180	135-270	200-400

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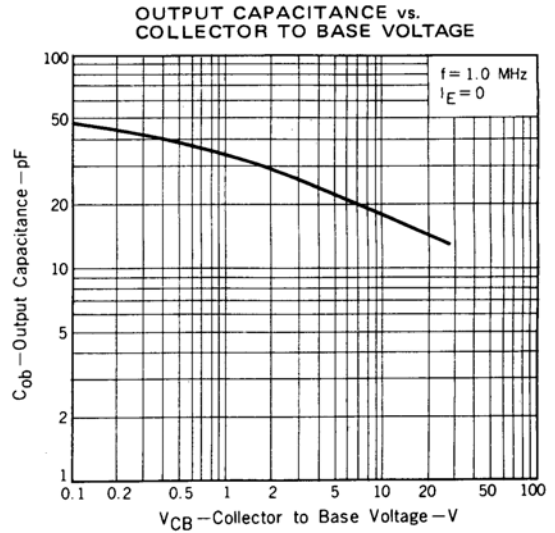
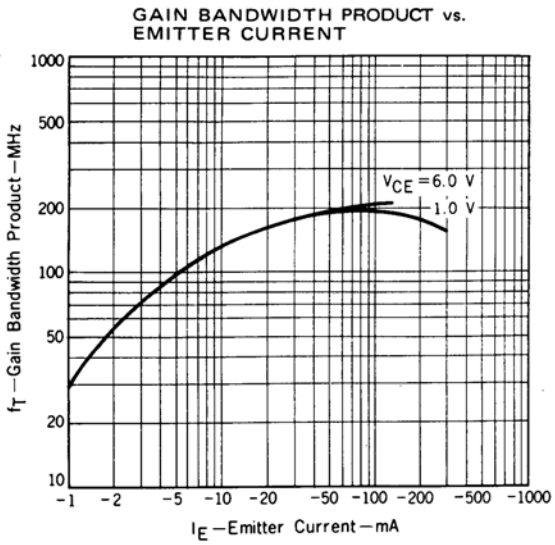
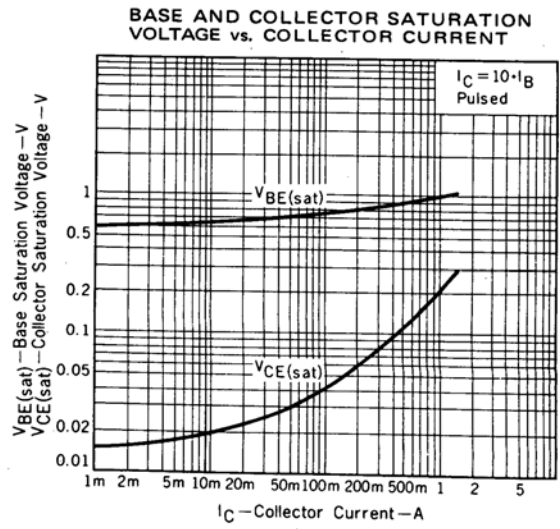
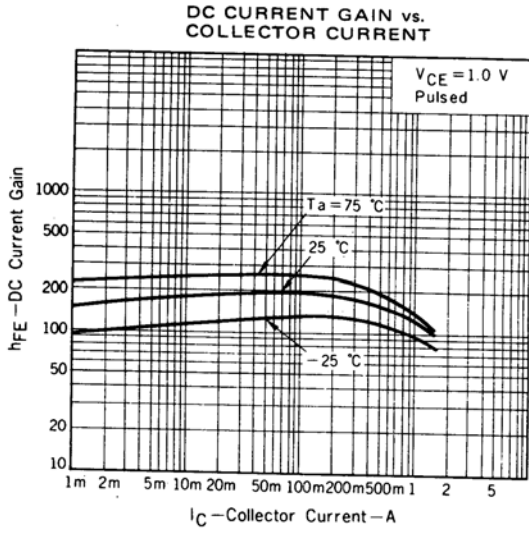
2SD999

TYPICAL CHARACTERISTICS @  $T_a=25^\circ\text{C}$  unless otherwise specified



# NPN Silicon Epitaxial Transistor

# 2SD999



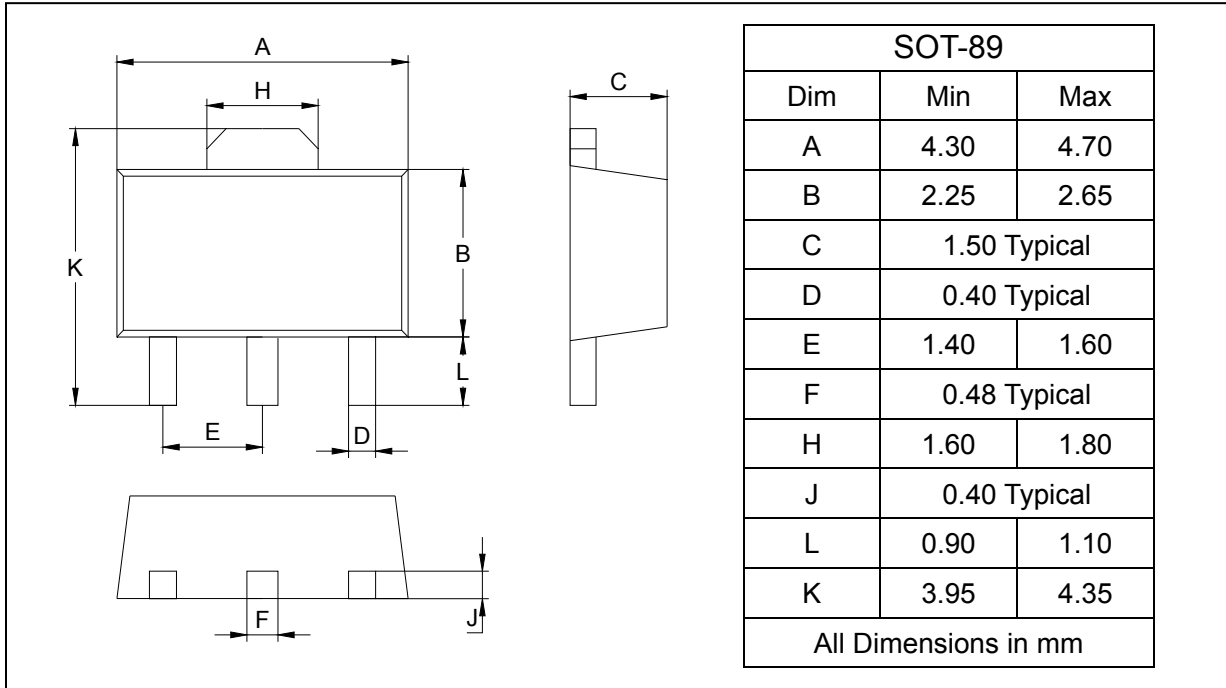
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**2SD999**

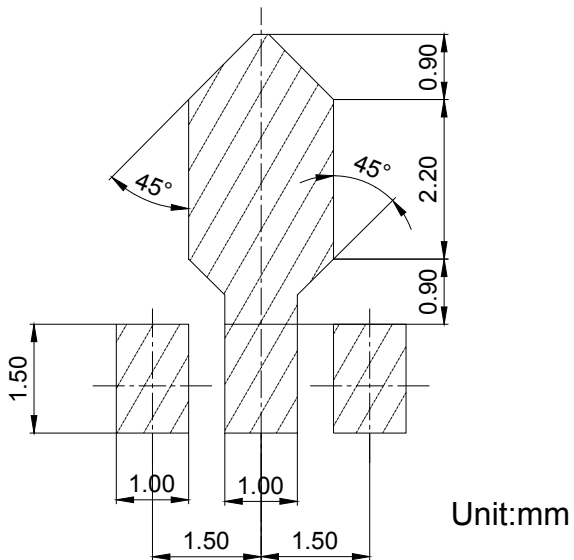
## PACKAGE OUTLINE

Plastic surface mounted package

SOT-89



## SOLDERING FOOTPRINT



## PACKAGE INFORMATION

Device	Package	Shipping
2SD999	SOT-89	1000/Tape&Reel