

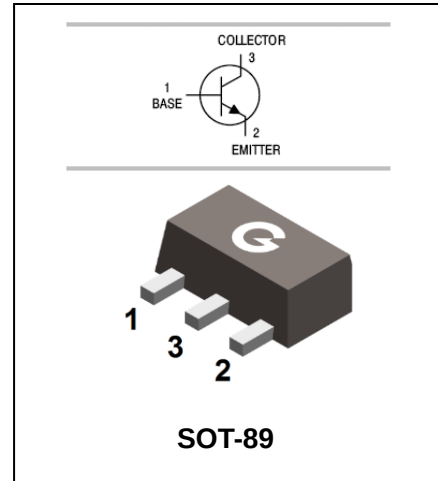
NPN Epitaxial Planar Silicon Transistors

2SD1899E

FEATURES

- High h_{FE}
- Low $V_{CE(sat)}$ $V_{CE(sat)} \leq 0.3V$
- RoHS compliant with Halogen-free

HF



ORDERING INFORMATION

Type No.	Marking	Package Code
2SD1899E-M	1899	SOT-89
2SD1899E-L	1899	SOT-89
2SD1899E-K	1899	SOT-89

MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current	3	A
I_{CP}	Collector Power Dissipation	5	A
I_B	Base current	0.5	A
P_C	Collector Power Dissipation	0.5 1.3 Note1	W
T_j, T_{stg}	Junction and Storage temperature range	-55 to +150	°C

Note1: Mounted on ceramic substrate(250mm²*0.8t)

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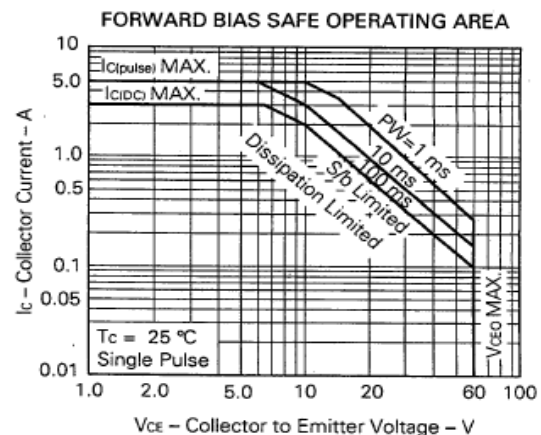
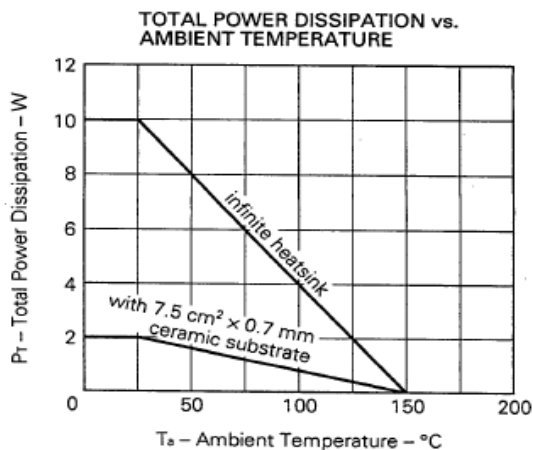
ELECTRICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	V_{CBO}	$I_C=10\mu\text{A}, I_E=0$	60			V
Collector-emitter breakdown voltage	V_{CEO}	$I_C=1\text{mA}, I_B=0$	60			V
Emitter-base breakdown voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	7			V
Collector cut-off current	I_{CBO}	$V_{CB}=60\text{V}, I_E=0$			10	μA
Emitter cut-off current	I_{EBO}	$V_{EBO}=7\text{V}, I_C=0$			10	μA
DC current gain	h_{FE}	$V_{CE}=2\text{V}, I_C=0.2\text{A}$ $V_{CE}=2\text{V}, I_C=0.6\text{A}$ $V_{CE}=2\text{V}, I_C=2.0\text{A}$	60 100 50		400	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1.5\text{A}, I_B=0.15\text{A}$		0.14	0.25	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1.5\text{A}, I_B=0.15\text{A}$		0.93	1.2	V
Transition frequency	f_T	$V_{CE}=5\text{V}, I_E=-1.5\text{A}$		120		MHz
Collector output capacitance	C_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$		30		pF
Turn-on Time	t_{on}	$I_C=1\text{A}, V_{CC}=10\text{V}$ $R_L=10\Omega$, $I_{B1}=-I_{B2}=0.1\text{A}$		0.15	0.5	μs
Storage Time	t_{stg}			0.75	2.0	μs
Fall Time	t_f			0.2	0.5	μs

CLASSIFICATION OF h_{FE}

Rank	M	L	K
Range	100-200	160-320	200-400

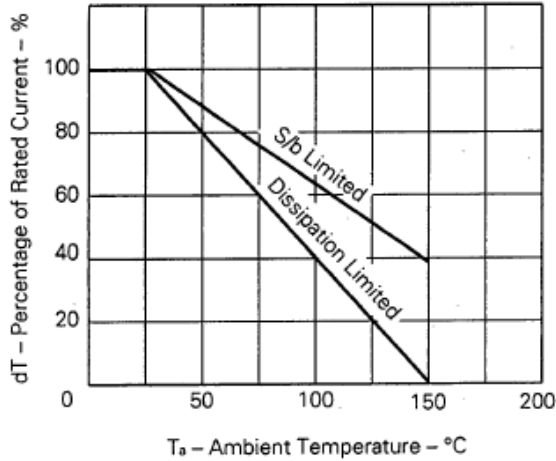
TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified



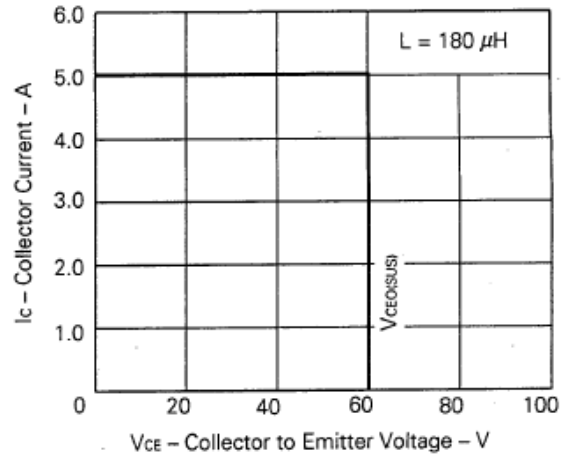
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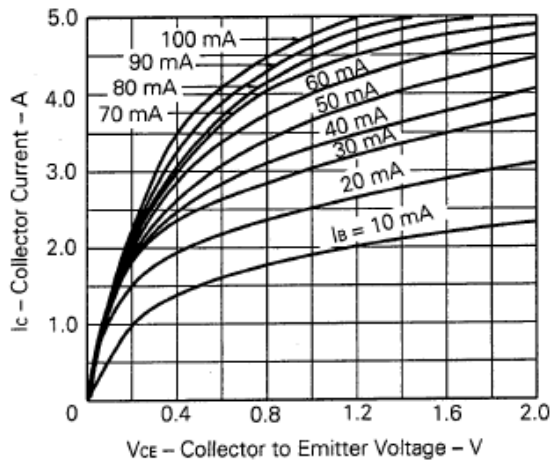
DERATING CURVE OF SAFE
OPERATING AREA



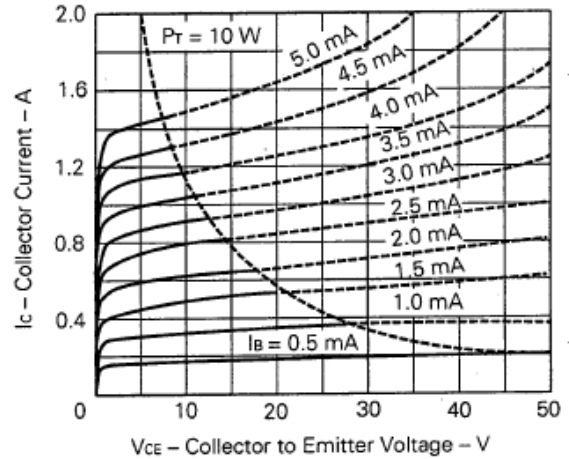
REVERSE BIAS SAFE OPERATING AREA



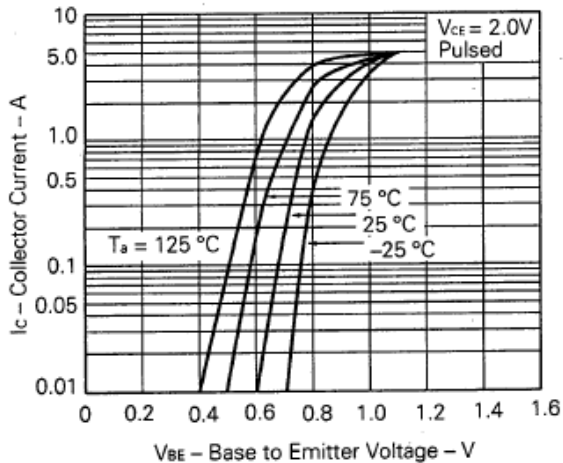
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



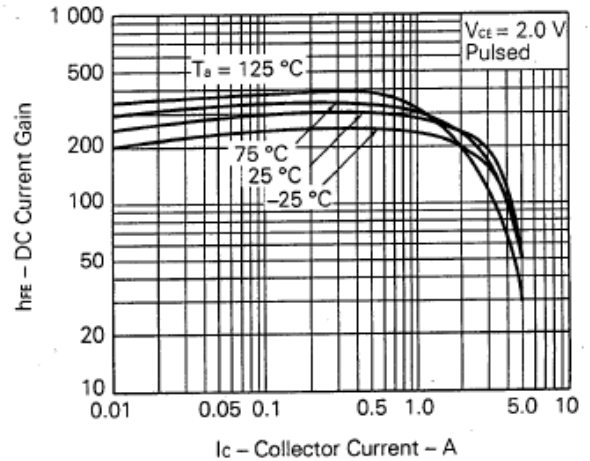
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



DC CURRENT GAIN vs.
COLLECTOR CURRENT



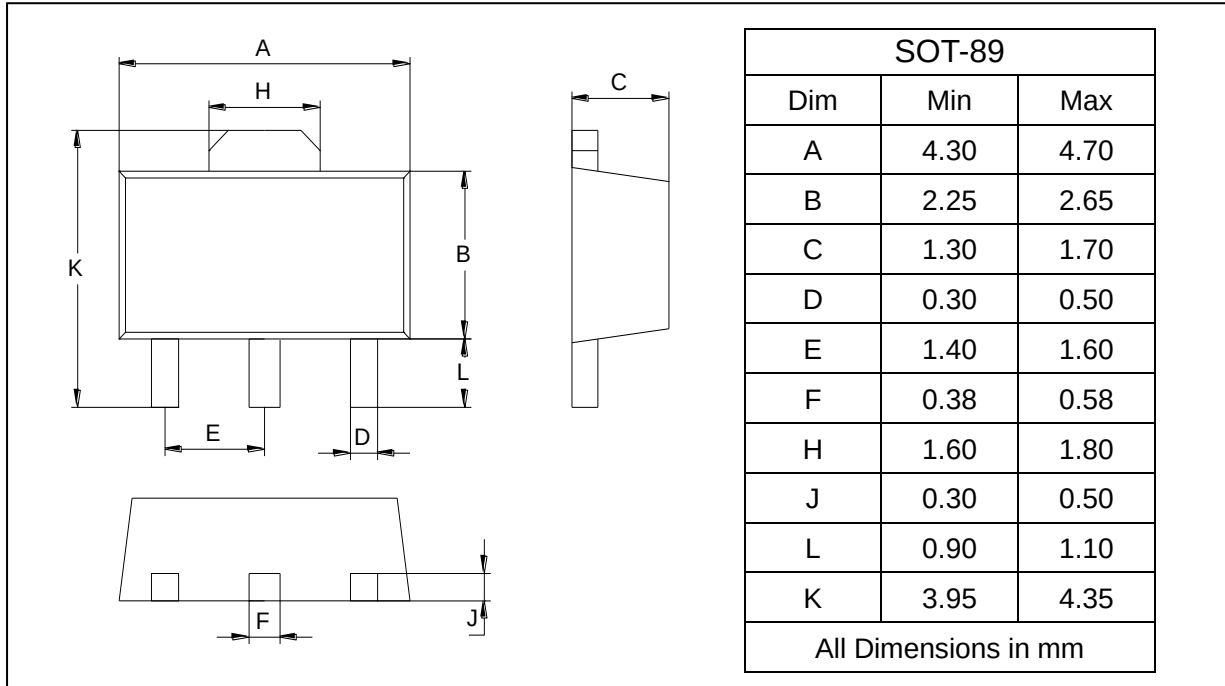
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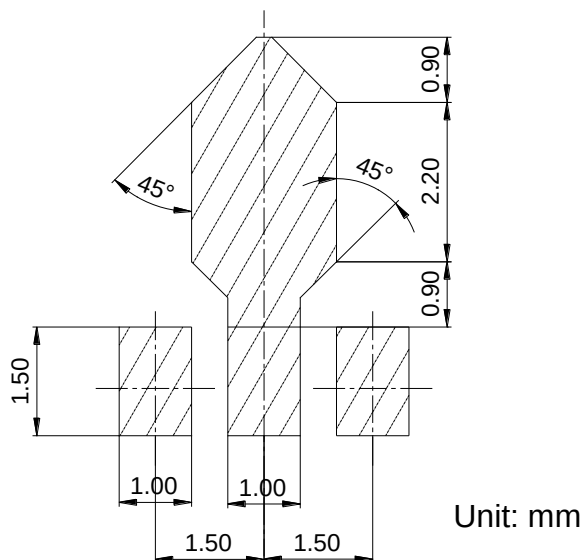
PACKAGE OUTLINE

Plastic surface mounted package

SOT-89



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
2SD1899E	SOT-89	1000 pcs / Tape & Reel