



PRODUCT DATA SHEET

To learn more about JGSEMI, please visit our website at



Datasheet



Resources

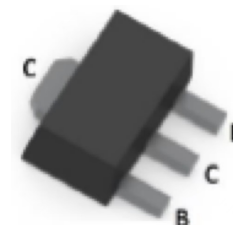


Samples

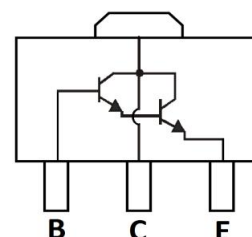
Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

FEATURES

- Integrated Diode and Resistor
- Low Voltage
- High Current
- For Industrial Switching Application:
Print Hammer ,Solenoid, Relay and Lamp Driving
- Surface Mount device



SOT-89



MECHANICAL DATA

- Case: SOT-89
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.055 grams (approximate)

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

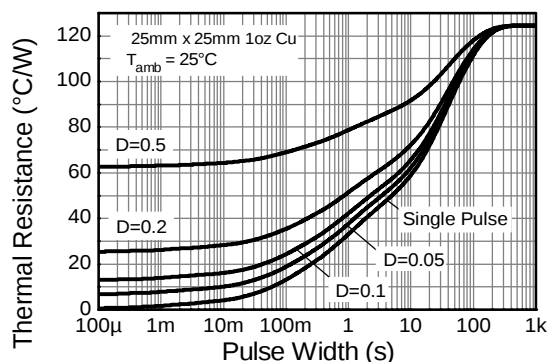
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	90	V
Collector-Emitter Voltage	V _{CEO}	80	V
Emitter-Base Voltage	V _{EBO}	10	V
Collector Current	I _C	500	mA
Peak Collector Current	I _{CM}	1.5	A
Base Current	I _B	100	mA
Collector Power Dissipation	P _C	500	mW
Thermal Resistance From Junction To Ambient	R _{θJA}	250	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~+150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

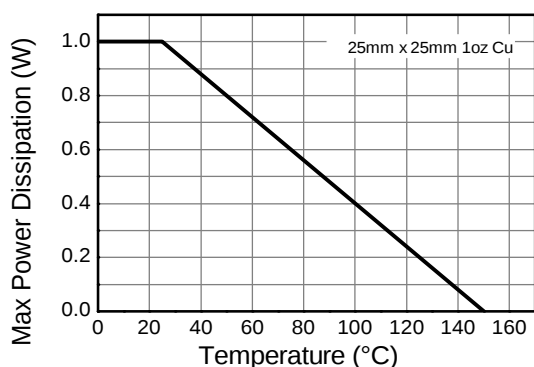
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	V _{(BR)CBO}	90			V	I _C =10uA, I _E =0
Collector-emitter breakdown voltage	V _{(BR)CEO} *	80			V	I _C =10mA, I _B =0
Emitter-base breakdown voltage	V _{(BR)EBO}	10			V	I _E =10uA, I _C =0
Collector cut-off current	I _{CES}			50	nA	V _{CE} =80V, V _{BE} =0
Emitter cut-off current	I _{EBO}			50	nA	V _{EB} =4V, I _C =0
DC current gain	h _{FE} *	1000				V _{CE} =10V, I _C =150mA
		2000				V _{CE} =10V, I _C =500mA
Collector-emitter saturation voltage	V _{CE(sat)} *			1.3	V	I _C =500mA, I _B =0.5mA
Base-emitter saturation voltage	V _{BE(sat)} *			1.9	V	I _C =500mA, I _B =0.5mA
Transition frequency	f _T		200		MHz	V _{CE} =5V, I _C =500mA, f=100MHz
Turn on time	t _{ON}		0.4		uS	I _C =500mA, I _{Bon} =I _{Boff} =0.5mA
Turn off time	t _{OFF}		1.5		uS	I _C =500mA, I _{Bon} =I _{Boff} =0.5mA

*Pulse test: pulse width≤300uS,duty cycles≤2%;

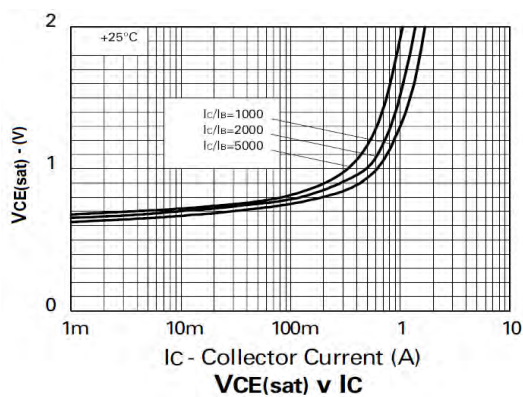
Typical Characteristics



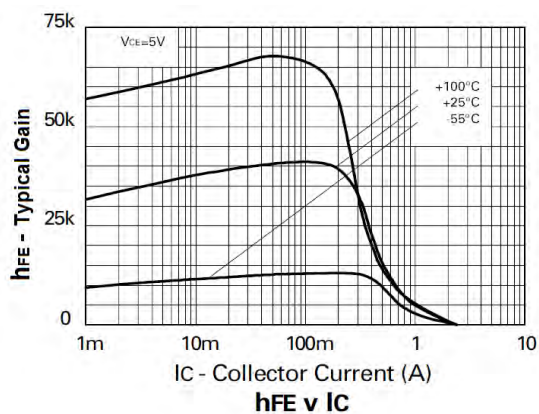
Transient Thermal Impedance



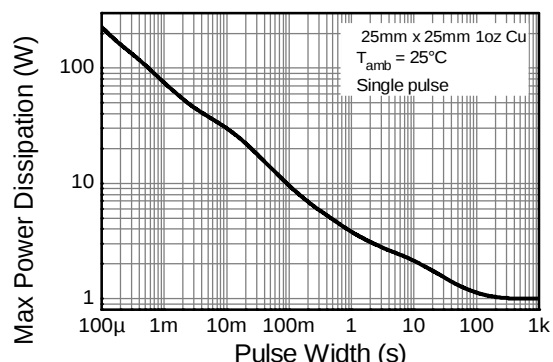
Derating Curve



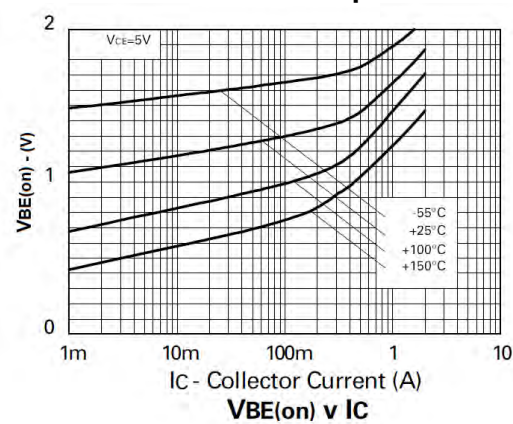
$V_{\text{CE(sat)}}$ v I_{C}



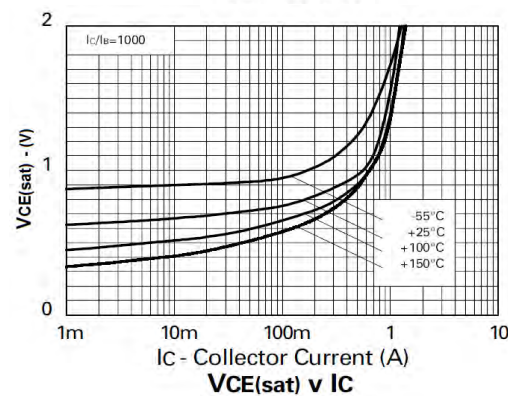
h_{FE} v I_{C}



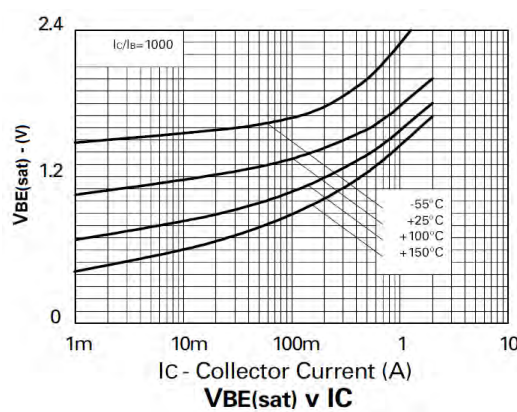
Pulse Power Dissipation



$V_{\text{BE(on)}}$ v I_{C}

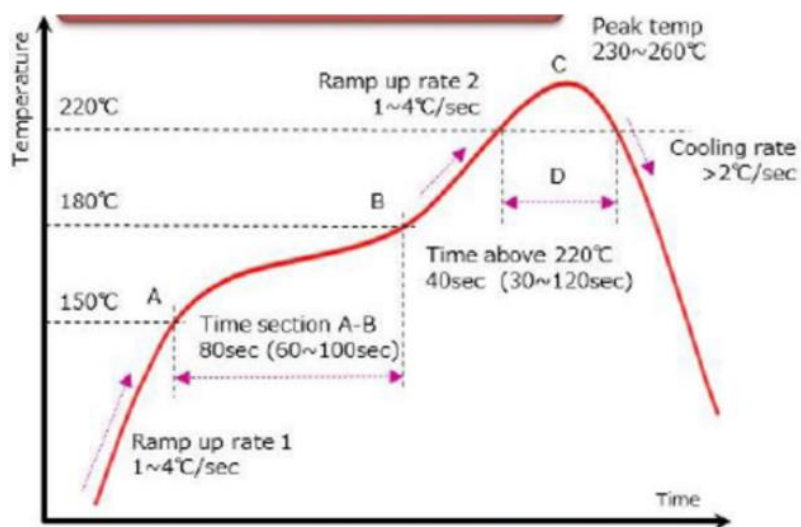


$V_{\text{CE(sat)}}$ v I_{C}

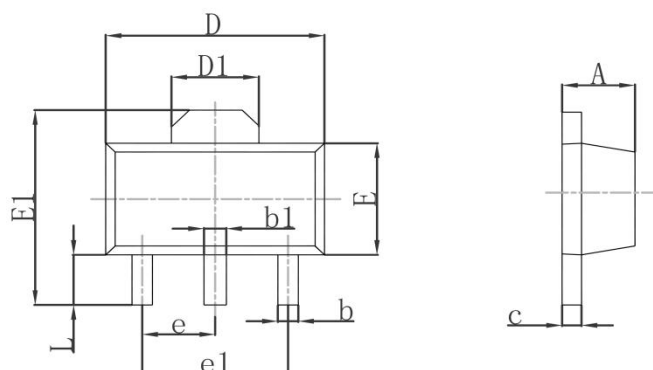


$V_{\text{BE(sat)}}$ v I_{C}

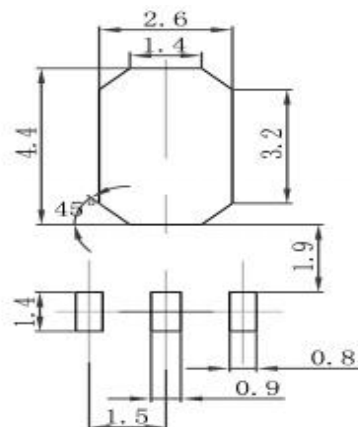
Furnace Temperature Curve



Node		Lower limit	Standard	Upper limit
~A	Heating rate-1	1°C/sec	2°C/sec	4°C/sec
A	Start temperature of insulation	140°C	150°C	160°C
B	End temperature of insulation	160°C	180°C	200°C
A~B	Time for A~B	60s	80s	100s
B~C	Heating rate-2	1°C/sec	2°C/sec	4°C/sec
C	Reflow temperature	230°C	240°C	260°C
D	Time above 220°C	30s	45s	120s
	Cooling rate	2°C/sec	-	6°C/sec

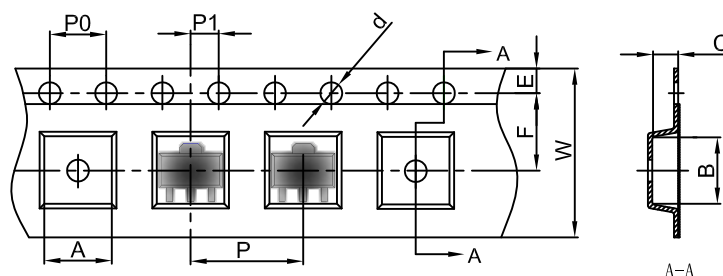
SOT-89 Package Outline Dimensions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550REF		0.061REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047

SOT-89 Suggested Pad Layout

Note:

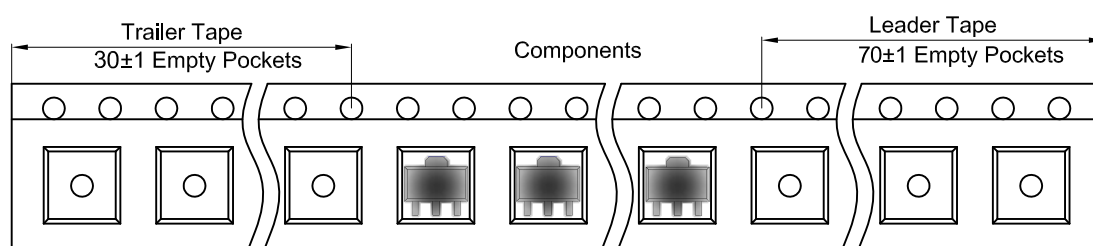
1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

SOT-89-3L Embossed Carrier Tape



Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-89-3L	4.85	4.45	1.85	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOT-89-3L Tape Leader and Trailer



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