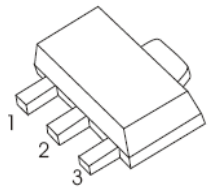
A42-Q1

NPN Silicon Epitaxial Planar Transistor

Features

- Epitaxial planar die construction
- Ultra-small surface mount package
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

SOT-89



Mechanical Data

- Case:SOT-89
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

Maximum Ratings (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V_{CBO}	300	V
Collector-Emitter Breakdown Voltage	V_{CEO}	300	V
Emitter-Base Breakdown Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	0.5	A
Peak Collector Current	I_{CM}	1	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	500	mW
Operating junction Temperature	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	300	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	300	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	5	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 200V, I_E = 0	-	-	250	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	-	100	nA
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 1mA	60	-	-	-
		V_{CE} = 10V, I_C = 10mA	100	-	300	-
		V_{CE} = 10V, I_C = 30mA	75	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 20mA, I_B = 2mA	-	-	0.2	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 20mA, I_B = 2mA	-	-	0.9	V
Transition Frequency	f_T	I_C = 10mA, V_{CE} = 20V	50	-	-	MHz

Ratings and Characteristics Curves (T A = 25°C unless otherwise specified)

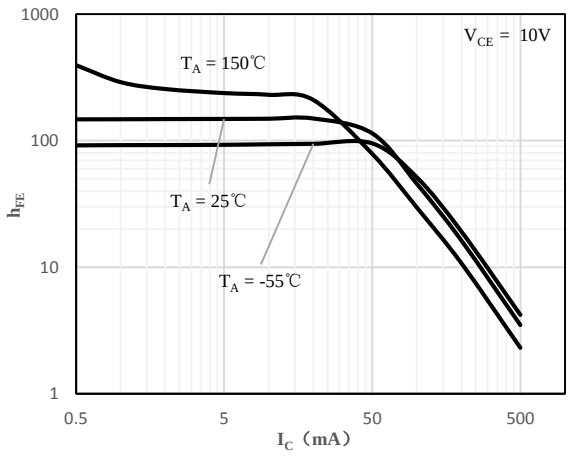


Fig 1 h_{FE} vs. I_C

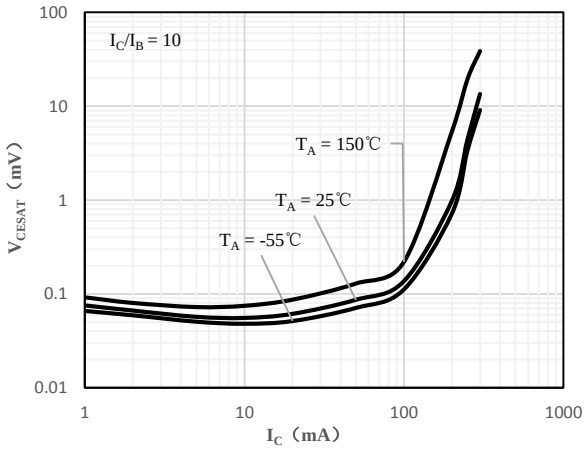


Fig 2 $V_{CE(sat)}$ vs. I_C

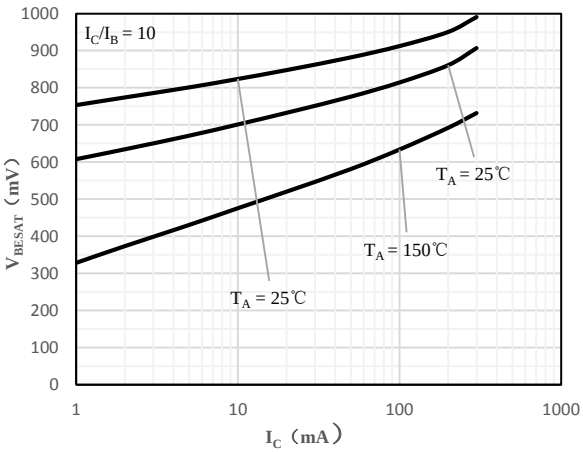


Fig 3 $V_{BE(sat)}$ vs. I_C

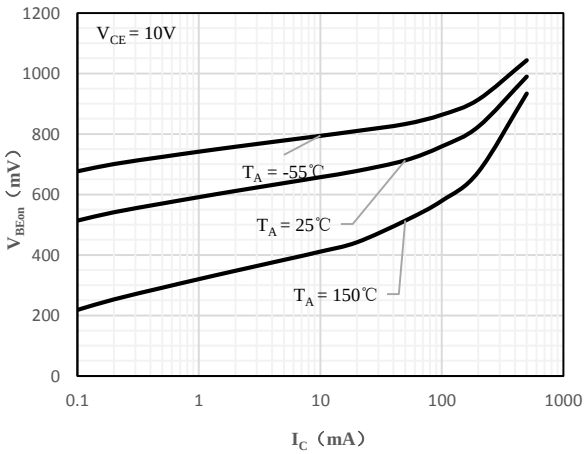


Fig 4 $V_{BE(ON)}$ vs. I_C

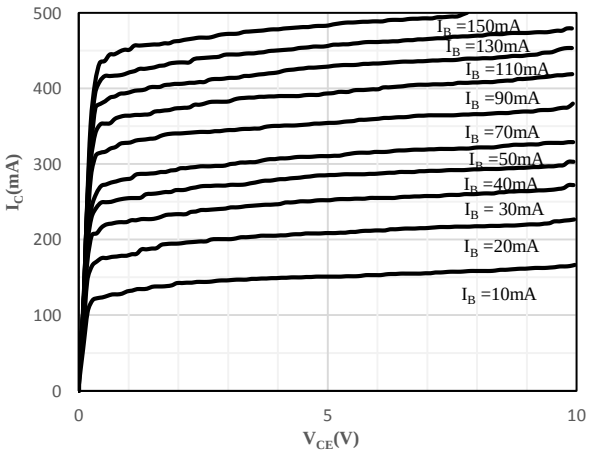


Fig 5 I_C vs. V_{CE}

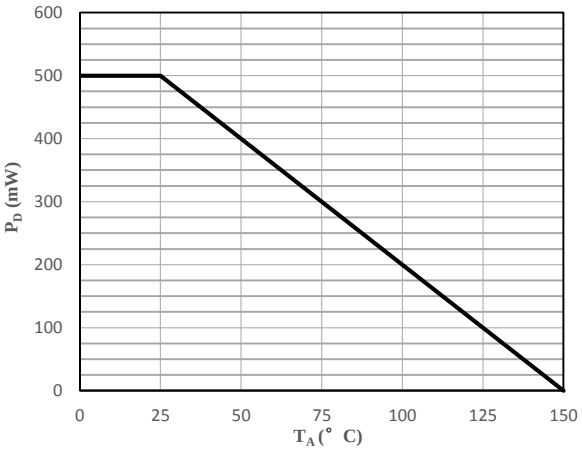


Fig 6 P_D vs. T_A

Document ID	Issued Date	Revised Date	Revision	Page.
AS-1140124	2018/03/08	2025/02/06	B	6

Ratings and Characteristics Curves (T_A = 25°C unless otherwise specified)

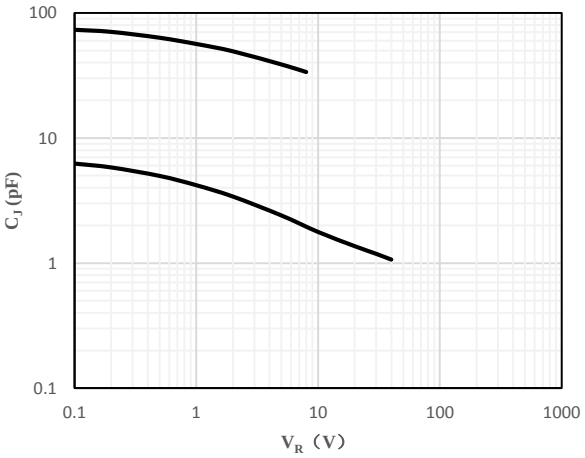


Fig 7 C_J vs. V_R

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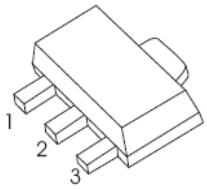
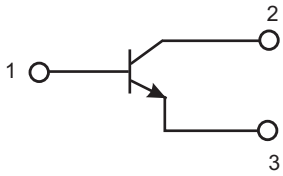
Pinning Information

Pin	Simplified outline	Symbol
Pin1 Base Pin2 Collector Pin3 Emitter		

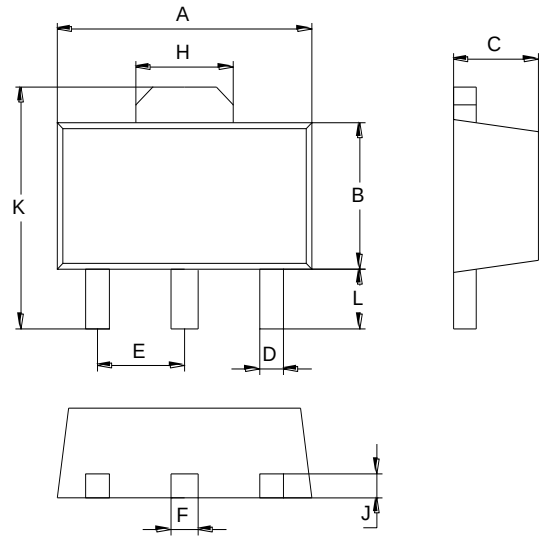
Marking

Type number	Marking code
A42-Q1	A42

A42-Q1

NPN Silicon Epitaxial Planar Transistor

Package Outline Dimensions (Unit: mm)



SOT-89		
Dimension	**Min.**	**Max.**
A	4.30	4.70
B	2.25	2.65
C	1.30	1.70
D	0.30	0.50
E	1.40	1.60
F	0.38	0.58
H	1.60	1.80
J	0.30	0.50
L	0.90	1.10
K	3.95	4.35

Mounting Pad Layout (Unit: mm)

SOT-89