

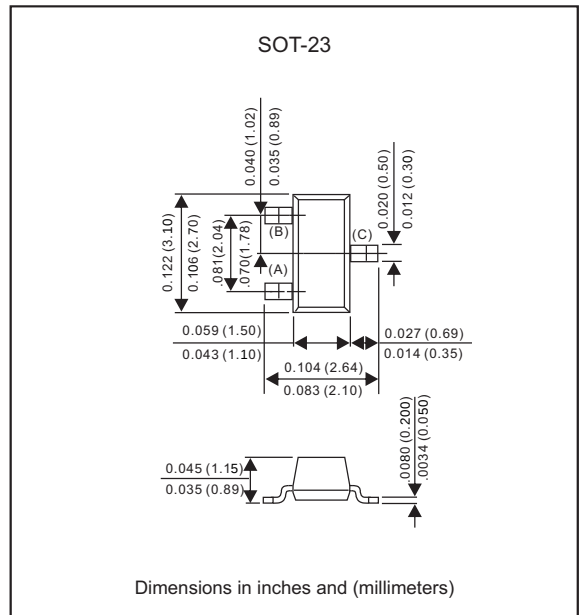
Features

- Epitaxial planar die construction
- Surface mount package
- NPN
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : SOT-23
- Terminals : Matte tin-plated leads, solderable per MIL-STD-202, Method 208

Package outline



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

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V _{CBO}	170	V
Collector-Emitter Breakdown Voltage	V _{CEO}	150	V
Emitter-Base Breakdown Voltage	V _{EBO}	7	V
Collector Current (Continuous)	I _C	1	A
Peak Pulse Current	I _{CM}	2	A
Base Current	I _B	0.2	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation *1	P _D	0.5	W
Thermal Resistance Junction-to-Air *1	R _{θJA}	250	°C/W
Power Dissipation (T _A = 25°C) *2	P _D	2.8	W
Thermal Resistance Junction-to-Air *2	R _{θJA}	190	°C/W
Thermal Resistance Junction-to-Case *2	R _{θJC}	100	°C/W
Thermal Resistance Junction-to-Lead *2	R _{θJL}	150	°C/W
Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	170	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	150	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	7	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 150\text{V}, I_E = 0$	-	-	0.1	μA
Collector Cut-off Current	I_{CES}	$V_{CE} = 150\text{V}$	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$	-	-	0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = 10\text{V}, I_C = 1\text{mA}$	100	-	-	-
		$V_{CE} = 10\text{V}, I_C = 250\text{mA}$	100	-	300	-
		$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	50	-	-	-
		$V_{CE} = 10\text{V}, I_C = 1\text{A}$	10	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 250\text{mA}, I_B = 25\text{mA}$	-	0.085	0.2	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	0.15	0.3	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	1.0	V
Base-emitter Voltage	$V_{BE(on)}$	$I_C = 500\text{mA}, V_{CE} = 10\text{V}$	-	-	1.0	V
Transition Frequency	f_T	$V_{CE} = 10\text{V}, I_C = 50\text{mA}$ $F = 100\text{MHz}$	100	-	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$	-	-	10	pF

Notes:

- For a device surface mounted on 15mm × 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition
- The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper

Ratings and Characteristic Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

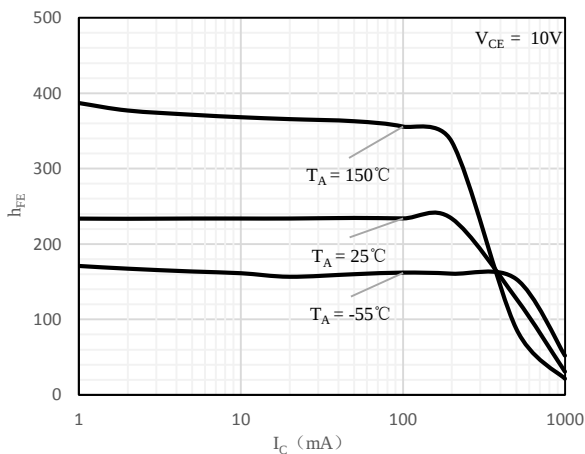


Fig 1 h_{FE} vs. I_C

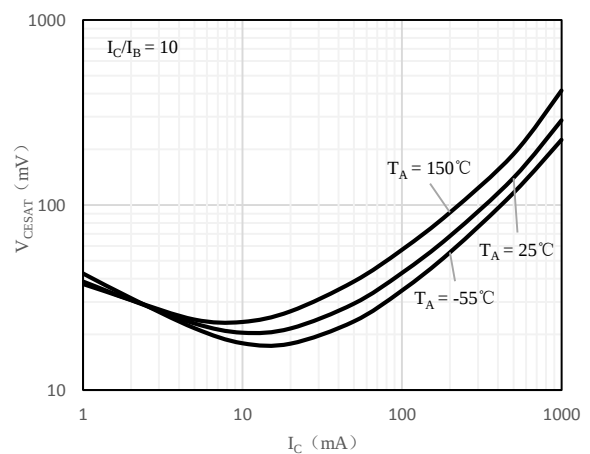


Fig 2 $V_{CE(sat)}$ vs. I_C

Ratings and Characteristic Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

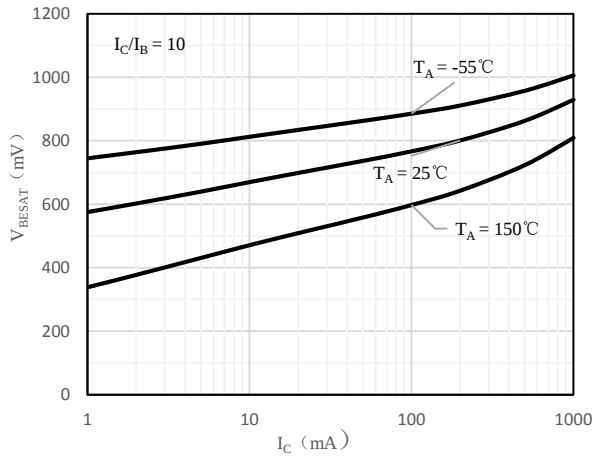


Fig 3 $V_{BE(sat)}$ vs. I_C

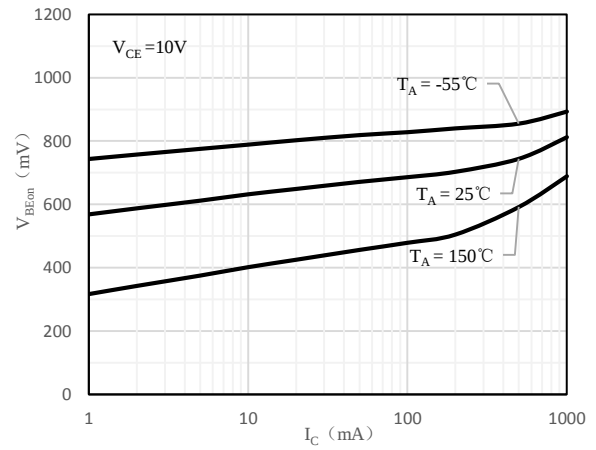


Fig 4 $V_{BE(on)}$ vs. I_C

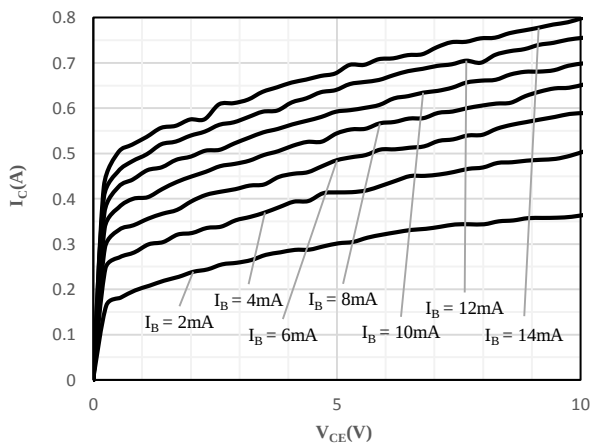


Fig 5 I_C vs. V_{CE}

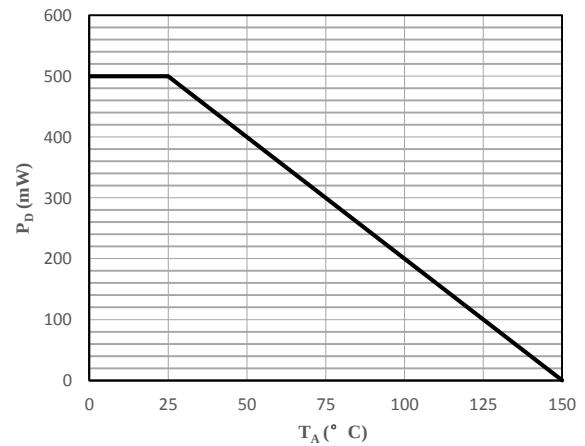


Fig 6 Steady State Power Derating

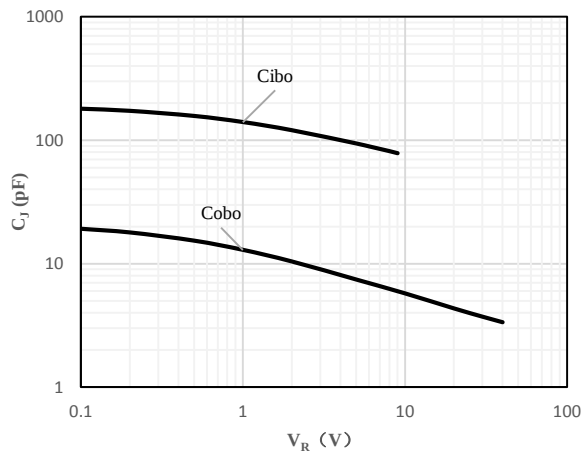
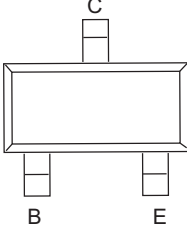
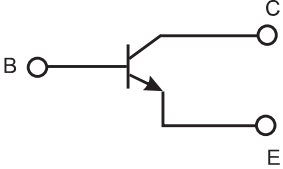


Fig 7 C_J vs. V_R

Pinning information

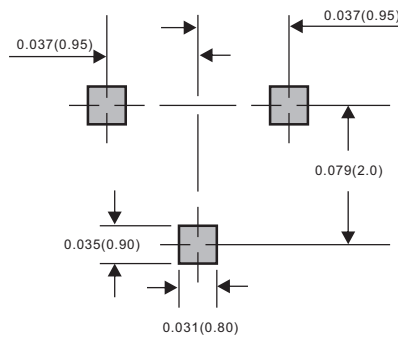
Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
FMMT495-Q1	495

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)