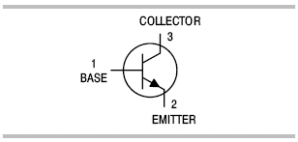
NPN Silicon Epitaxial Planar Transistor

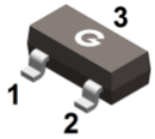
TFMMT493

Features

- Medium power transistor
- Complement to TFMMT593
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

HF





SOT-23

Mechanical Data

- Case: SOT-23
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TFMMT493	SOT-23	3000 pcs / Tape & Reel	493

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Breakdown Voltage	V_{CEO}	100	V
Emitter-Base Breakdown Voltage	V_{EBO}	5	V
Collector Current (Continuous)	I_C	1	A
Collector Current (Pulse)	I_{CM}	2	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C) *1	P_D	0.5	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	230	°C/W
Thermal Resistance Junction-to-Air *2	$R_{\theta JA}$	336	°C/W
Thermal Resistance Junction-to-Case *2	$R_{\theta JC}$	156	°C/W
Thermal Resistance Junction-to-Lead *2	$R_{\theta JL}$	136	°C/W
Junction Temperature	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Notes:

1. The data tested by surface mounted on a minimum recommended FR-4 board
2. The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B

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	120	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0	100	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	5	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 100V, I_E = 0	-	-	0.1	μA
Collector Cut-off Current	I_{CES}	V_{CES} = 100V	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 4V, I_C = 0	-	-	0.1	μA
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 1mA	100	-	-	-
		V_{CE} = 10V, I_C = 250mA	100	-	300	-
		V_{CE} = 10V, I_C = 500mA	60	-	-	-
		V_{CE} = 10V, I_C = 1A	20	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 0.5A, I_B = 0.05A	-	-	0.3	V
		I_C = 1A, I_B = 0.1A	-	-	0.6	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 1A, I_B = 0.1A	-	-	1.15	V
Base-emitter On Voltage	$V_{BE(on)}$	I_C = 1A, V_{CE} = 10V	-	-	1.0	V
Output Capacity	C_{ob}	V_{CB} = 10V, f = 1MHz	-	-	10	pF
Current-Gain—Bandwidth Product	f_T	I_C = 0.05A, V_{CE} = 10V f = 100MHz	150	-	-	MHz

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

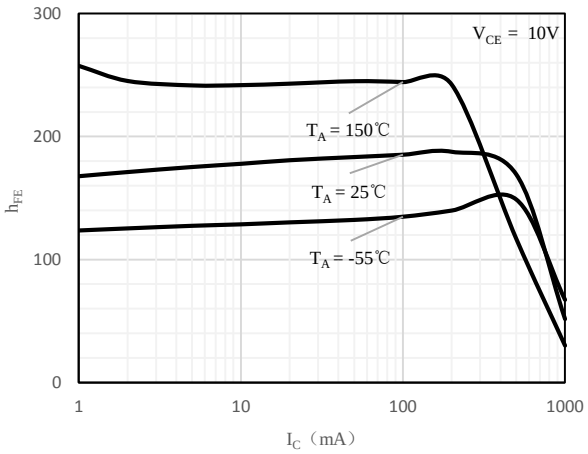


Fig 1 h_{FE} vs. I_C

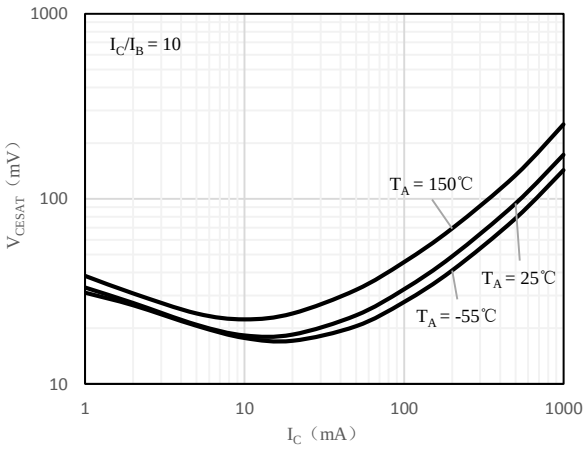


Fig 2 $V_{CE(sat)}$ vs. I_C

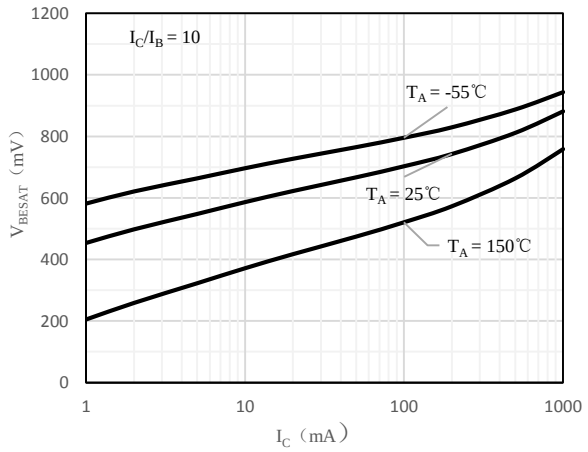


Fig 3 $V_{BE(sat)}$ vs. I_C

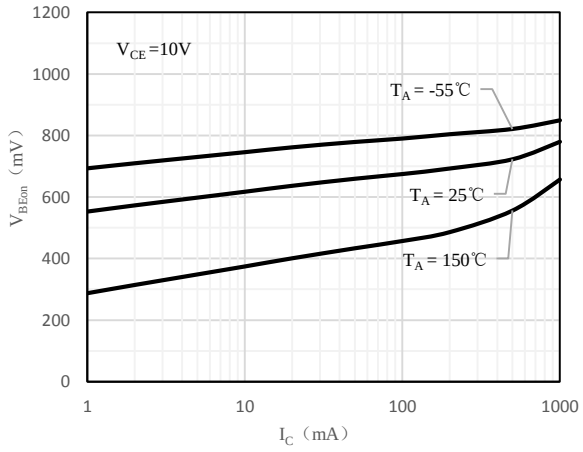


Fig 4 $V_{BE(ON)}$ vs. I_C

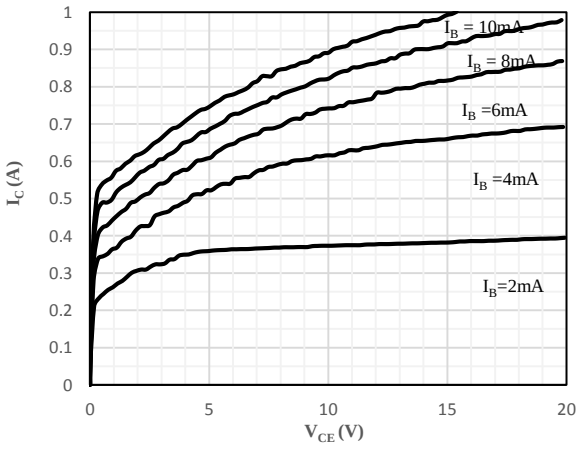


Fig 5 I_C vs. V_{CE}

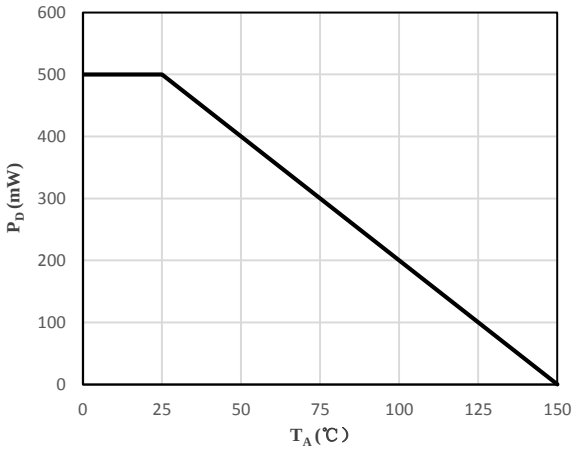


Fig 6 P_D vs. T_A

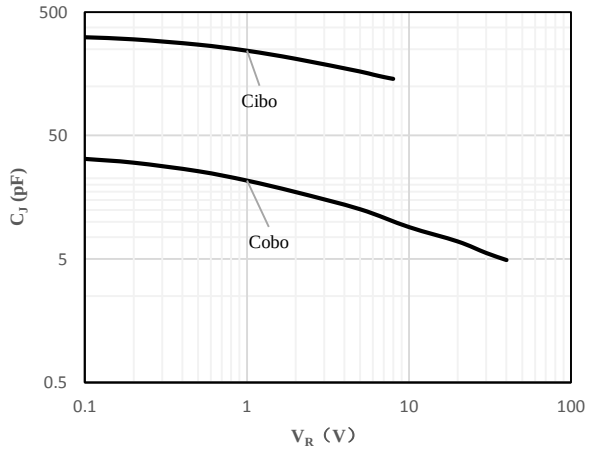
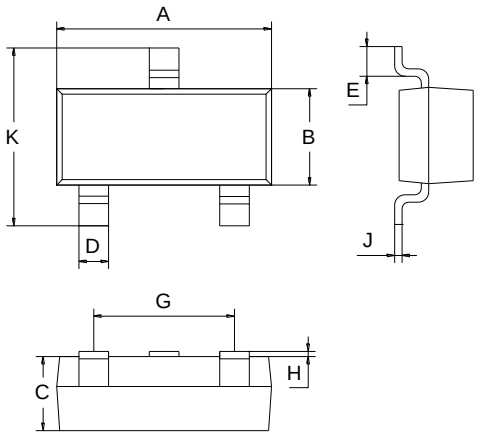


Fig 7 C_J vs. V_R

Package Outline Dimensions (Unit: mm)



SOT-23		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.9	1.1
D	0.3	0.5
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.05	0.15
K	2.20	2.60

Package Outline Dimensions (Unit: mm)

SOT-23

