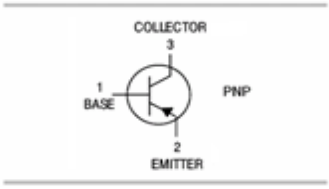
PNP Silicon Epitaxial Planar Transistor

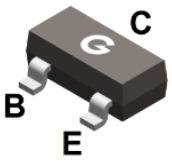
TFMMT591

Features

HF

- High saturation voltage
- Complementary to TFMMT491
- Excellent h_{FE} linearity
- h_{FE} characteristic up to -2A for high current gain hold up
- Halogen free
- Qualified to AEC-Q101 standards for high reliability





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
TFMMT591	SOT-23	3000 pcs / Tape & Reel	591

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-80	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base 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	500	mW
Thermal Resistance Junction-to-Air *2	$R_{\theta JA}$	191	°C/W
Thermal Resistance Junction-to-Case *2	$R_{\theta JC}$	74	°C/W
Thermal Resistance Junction-to-Lead *2	$R_{\theta JL}$	45	°C/W
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	-80	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = -10mA, I_B = 0	-60	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = -100μA, I_C = 0	-5	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = -60V, I_E = 0	-	-	-100	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = -4V, I_C = 0	-	-	-100	nA
DC Current Gain	h_{FE}	V_{CE} = -5V, I_C = -1mA	100	-	-	-
		V_{CE} = -5V, I_C = -500mA	100	-	300	-
		V_{CE} = -5V, I_C = -1A	80	-	-	-
		V_{CE} = -5V, I_C = -2A	15	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = -500mA, I_B = -50mA	-	-	-0.3	V
		I_C = -1A, I_B = -100mA	-	-	-0.6	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = -1A, I_B = -100mA	-	-	-1.2	V
Base-emitter Voltage	$V_{BE(on)}$	V_{CE} = -5V, I_C = -1A	-	-	-1	V
Transition Frequency	f_T	V_{CE} = -10V, I_C = -50mA f = 100MHz	150	-	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = -10V, I_E = 0, f = 1MHz	-	-	10	pF

Notes:

1. For a device mounted with the collector lead on 15mm × 15mm 1oz copper that is on a single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state
2. The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B

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

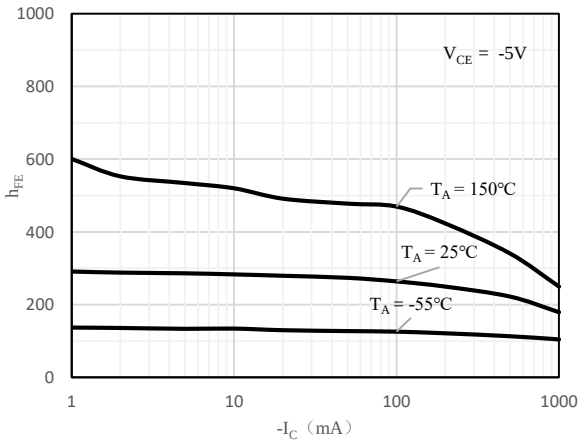


Fig 1 h_{FE} vs. I_C

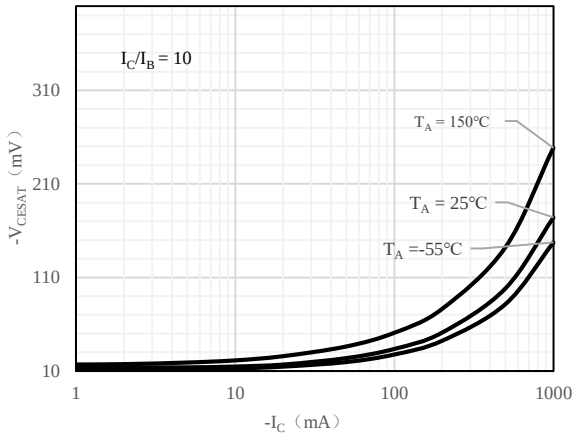


Fig 2 $V_{CE(sat)}$ vs. I_C

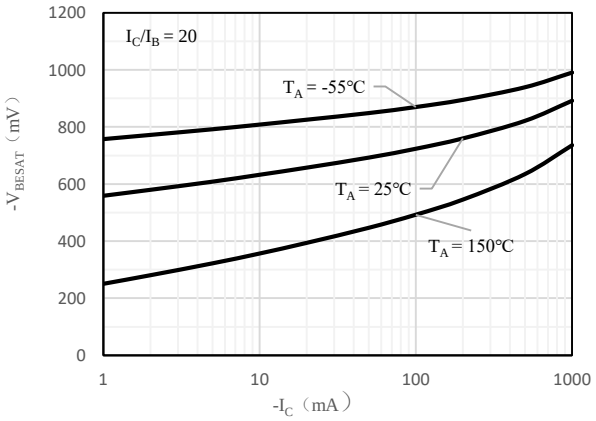


Fig 3 $V_{BE(sat)}$ vs. I_C

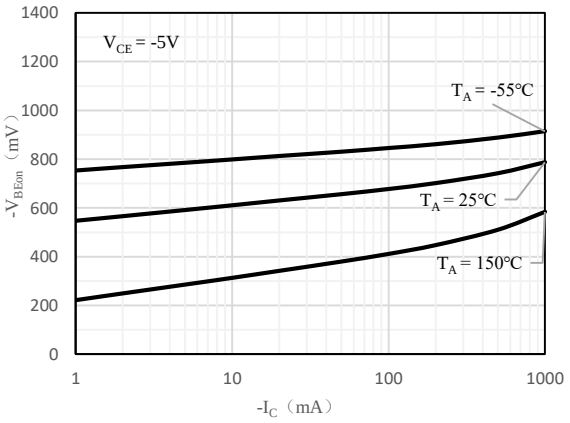


Fig 4 $V_{BE(ON)}$ vs. I_C

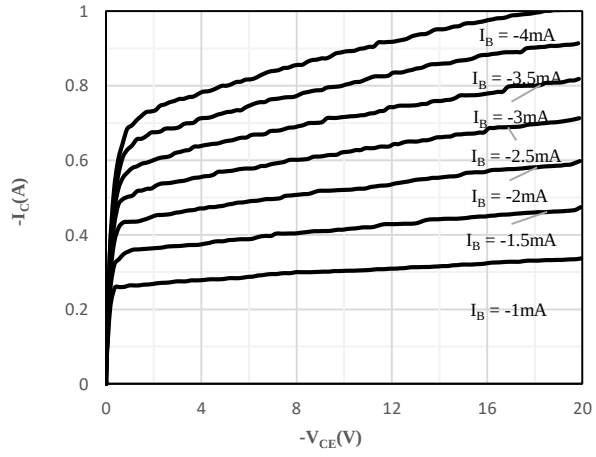


Fig 5 I_C vs. V_{CE}

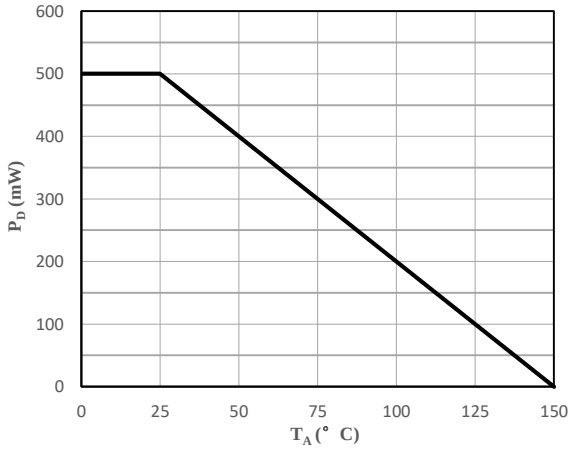
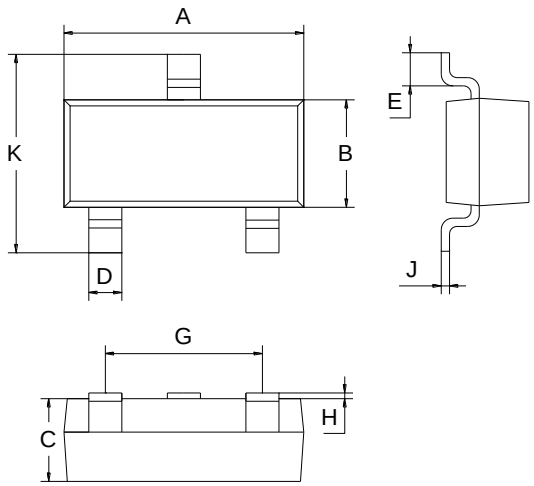


Fig 6 P_D vs. T_A

Package Outline Dimensions (Unit: mm)

SOT-23



SOT-23		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Mounting Pad Layout (Unit: mm)

SOT-23

