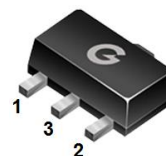
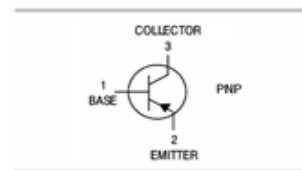


Features

- High saturation voltage
- Complementary to TFMMT493E
- Excellent h_{FE} linearity
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF



SOT-89

Mechanical Data

- Case: SOT-89
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TFMMT593E	SOT-89	1000 pcs / Tape & Reel	593

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

Parameter	Symbol	Value	Unit
Collector-Base Breakdown 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

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation($T_A = 25^\circ\text{C}$)	P_{tot}	550	mW
Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu\text{A}, I_E = 0$	-120	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}, I_B = 0$	-100	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -100\mu\text{A}, I_C = 0$	-5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -100\text{V}, I_E = 0$	-	-	-0.1	μA
Collector-Emitter cut-off current	I_{CES}	$V_{CES} = -100\text{V}, I_C = 0$	-	-	-0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -4\text{V}, I_C = 0$	-	-	-0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = -5\text{V}, I_C = -1\text{mA}$	100	-	-	-
		$V_{CE} = -5\text{V}, I_C = -250\text{mA}$	100	-	-	-
		$V_{CE} = -5\text{V}, I_C = -500\text{mA}$	100	-	300	-
		$V_{CE} = -5\text{V}, I_C = -1\text{A}$	50	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -250\text{mA}, I_B = -25\text{mA}$	-	-	-0.2	V
		$I_C = -500\text{mA}, I_B = -50\text{mA}$	-	-	-0.3	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -500\text{mA}, I_B = -50\text{mA}$	-	-	-1.1	V
Base-emitter Voltage	$V_{BE(on)}$	$V_{CE} = -5\text{V}, I_C = -1\text{A}$	-	-	-1.0	V
Transition Frequency	f_T	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 100\text{MHz}$	50	-	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$	-	-	5	pF

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

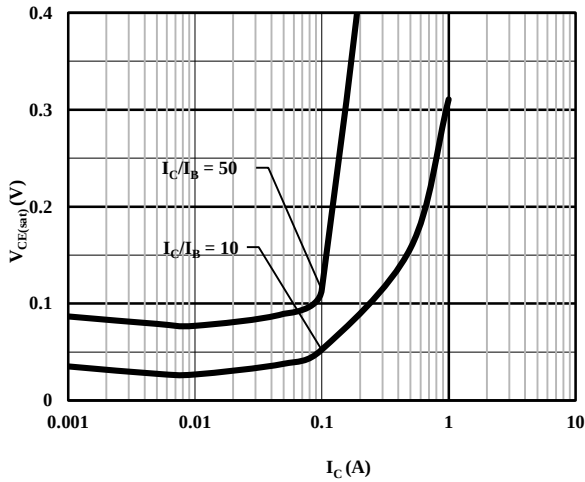


Fig. 1 Collector-Emitter Saturation Voltage vs. Collector Current

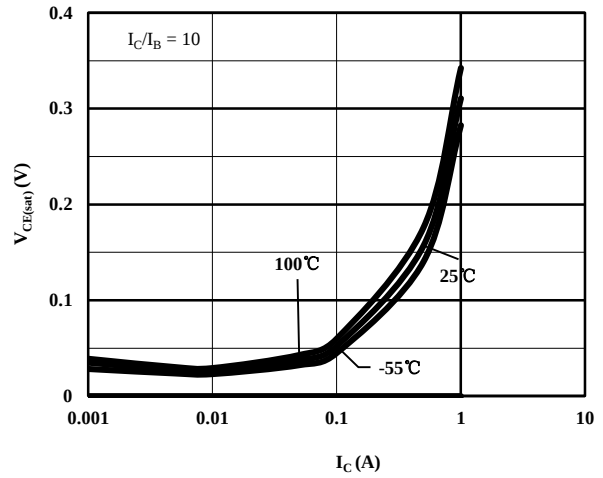


Fig. 2 Base-emitter Saturation Voltage vs. Collector Current

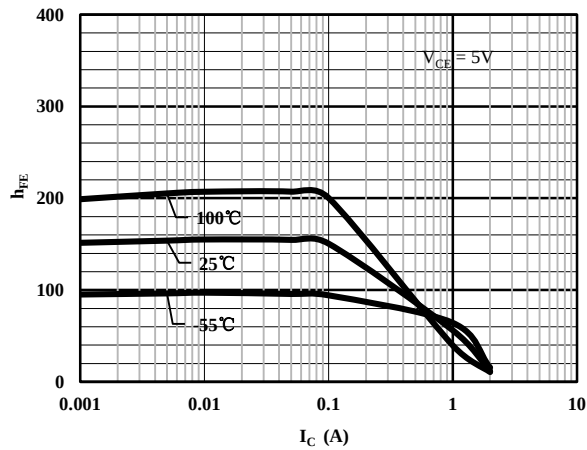


Fig. 3 DC Current Gain vs. Collector Current

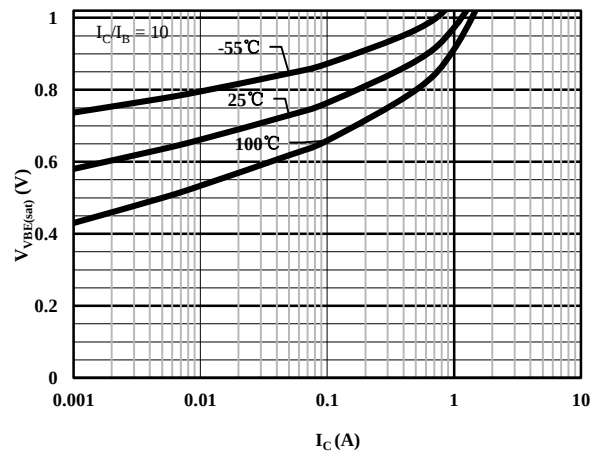


Fig. 4 Collector-Emitter Saturation Voltage vs. Collector Current

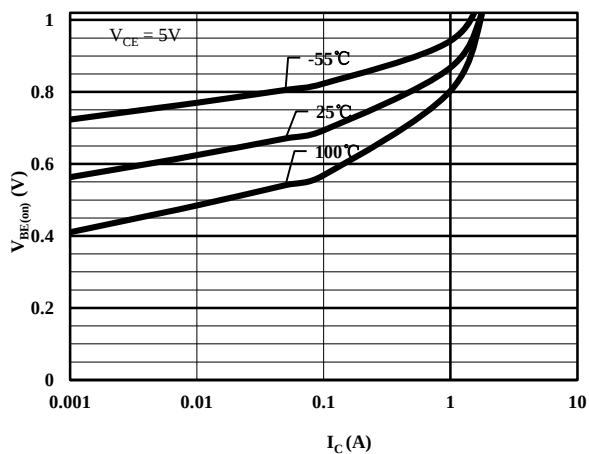


Fig. 5 Base-emitter Voltage vs. Collector Current

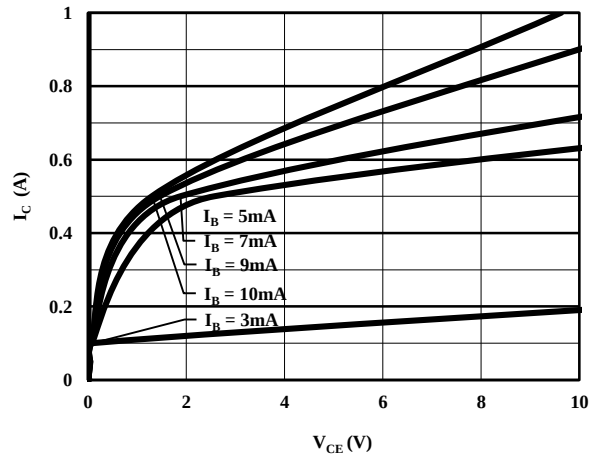
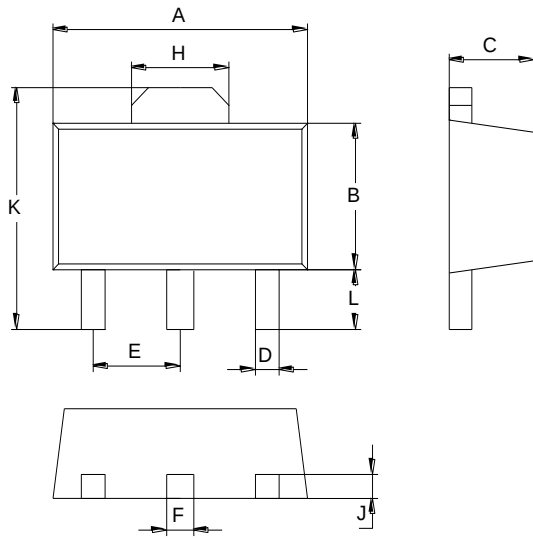


Fig. 6 Output Characteristics

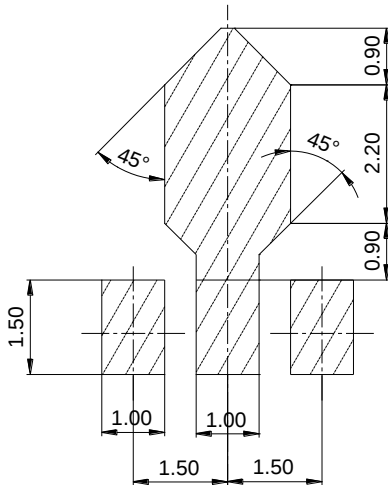
Package Outline Dimensions (Unit: mm)



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



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